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Common Ground Patch Technical Report

Contents

Executive	Summary5
1.0 In	troduction5
1.1.	Background5
1.2.	Aims
1.3.	Technology7
1.4.	Structure7
2.0 Sy	rstem
2.1.	Requirements7
2.1.1.	Functional Requirements7
2.1.1.1	. Use Case Diagram7
2.1.1.1	.1 Requirement 17
2.1.1.1	.2 Description & Priority8
2.1.1.1	.3 Use Case
2.1.1.2	.1 Requirement 2
2.1.1.2	.2 Description & Priority10
2.1.1.2	.3 Use Case
2.1.1.3	.1 Requirement 3
2.1.1.3	.2 Description & Priority12
2.1.1.3	.3 Use Case
2.1.1.4	.1 Requirement 4
2.1.1.4	.2 Description & Priority14
2.1.1.4	.3 Use Case
2.1.1.5	.1 Requirement 5
2.1.1.5	.2 Description & Priority16
2.1.1.5	.3 Use Case
2.1.1.6	.1 Requirement 6
2.1.1.6	.2 Description & Priority19
2.1.1.6	.3 Use Case
2.1.1.7	.1 Requirement 7
2.1.1.7	.2 Description & Priority
2.1.1.7	.3 Use Case

2.1.1.8.1	Requirement 8	. 24
2.1.1.8.2	Description & Priority	. 24
2.1.1.8.3	Use Case	. 25
2.1.1.9.1	Requirement 9	. 27
2.1.1.9.2	Description & Priority	. 27
2.1.1.9.3	Use Case	. 27
2.1.2	Data Requirements	. 29
2.1.3	User Requirements	. 29
2.1.4	Environmental Requirements	. 30
2.1.5	Usability Requirements	. 30
2.1.6	Revisions	. 30
2.2 D	esign & Architecture	.31
2.2.1	Architecture Diagram	.31
2.3 Ir	nplementation	.31
2.3.1	Registration	.31
2.3.2	Login and Log Out	. 34
2.3.3	Importing and Configuring Firebase	.36
2.3.4	Q&A	. 37
2.3.5	Submitting a request for labour	.41
2.3.6	Submitting a request for Donated Items	.43
2.3.7	Send application	. 47
2.3.8	Search Bar	. 49
2.3.9	Pagination	. 50
2.4 G	raphical User Interface (GUI)	. 51
2.4.1	index Web Page Graphical User Interface (GUI)	.51
2.4.2	Login Web Page Graphical User Interface (GUI)	. 52
2.4.3	Register Web Page Graphical User Interface (GUI)	. 54
2.4.4	Home Web Page Graphical User Interface (GUI)	. 55
2.4.5	Nav Bar Graphical User Interface (GUI)	. 56
2.4.6	Q&A Web Page Graphical User Interface (GUI)	. 57
2.4.7	Answers Web Page Graphical User Interface (GUI)	. 58
2.4.8	Land Listing Web Page Graphical User Interface (GUI)	. 59
2.4.9	CV Web Page Graphical User Interface (GUI)	. 60
2.4.10	Generated CV Email Graphical User Interface (GUI)	. 62
2.4.11	Seeds Web Page Graphical User Interface (GUI)	. 62
2.4.12	Plants Web Page Graphical User Interface (GUI)	. 63

2.4.13 Tre	ees Web Page Graphical User Interface (GUI)	64
2.4.14 To	ools Web Page Graphical User Interface (GUI)	65
2.4.15 Ap	oplication Form Web Page Graphical User Interface (GUI)	66
2.4.16 Ge	enerated Application Form Email Graphical User Interface (GUI)	66
3. Testing		67
3.1 Func	tional Testing	67
3.2 Brow	vser Testing	83
3.3 Perfo	ormance Testing	84
3.3.1 inc	dex Web Page Performance Testing	85
3.3.2 Lo	gin Web Page Performance Testing	85
3.3.3 Re	egister Web Page Performance Testing	86
3.3.4 Ho	ome Web Page Performance Testing	86
3.3.5 Q&	&A Web Page Performance Testing	87
3.3.6 an	nswer Web Page Performance Testing	87
3.3.7 La	nd Listing Web Page Performance Testing	88
3.3.8 CV	/ Web Page Performance Testing	88
3.3.9 Se	eds Web Page Performance Testing	89
3.3.10 Pla	ants Web Page Performance Testing	89
3.3.11 Tre	ees Web Page Performance Testing	90
3.3.12 To	ools Web Page Performance Testing	90
3.3.13 Ap	oplication Form Web Page Performance Testing	91
1. Evaluat	tion	91
2. Conclusio	ns	91
2.1 Advanta	ages / Strengths	91
2.2 Disadva	antages/Limitations	92
3. Further D	evelopment or Research	92
4. Reference	es	93
5. Appendice	es	93
5.1 AI Di	sclaimer	93
AI Disclaimer	·	93
AI Acknowledg	ement Supplement	94
Computer Proj	ect Technical report]	94
AI Acknowledg	ment	95
Description of <i>i</i>	AI Usage	95
Evidence of Al	Usage	96
5.2 Proje	ect Proposal	97

1.0) Objectives					
2.0) Background					
3.0) State of the Art					
4.0	Technical Approach					
7.0	Technical Details					
6.0) Special Resources Required					
1.	Project Plan					
2.	Testing					
8.	References					
6.2	2 Project Analysis & Planning					
I	Project Analysis					
	Technology					
Pro	roject Planning					
(Gantt Chart					
Ref	ferences					
(6.1 Reflective Journals					
(6.1.1 October Reflective Journal					
(6.1.2 November Reflective Journals					
6	6.1.3 December Reflective Journals					
(6.1.4 January Reflective Journals					
6	6.1.5 February Reflective Journals					
6	6.1.6 March Reflective Journals					
(6.1.7 April Reflective Journals	116				

Executive Summary

This report depicts the details of the creation of the "Common Ground Patch" web application. This web application was created to form an online community centred around users with a passion for gardening and promoting Sustainable Development Goals. This web application serves the purpose of allowing users to register, share knowledge, exchange resources and make requests for gardening on private land. To this end, the process of the functional requirements is described and visualised using a use case diagram. This included the priority ranked one requirement Register Users, Login Users, Post Questions, Answer Questions, Post Items, Request Items, Request Labour and Labour Application. In addition, the priority rank 2 Display Advertisements process is also described along with a use case diagram. The project's non-functional requirements for data, users, environment and usability are outlined in bullet points. The appendix features the "Common Ground Patch" web application proposal c.

1.0 Introduction

1.1. Background

The project was initiated to tackle challenges faced by gardening enthusiasts, such as financial limitations, lack of resources, or physical barriers, hindering their ability to fully engage in gardening activities. The aim of this computer project is to create an easy-to-use and understandable platform that addresses these issues.

The "Common Ground Patch" website aligns with the objectives of Sustainable Development Goal, SDG 13, by promoting environmentally friendly gardening practices. It supports resource sharing, reduces waste, and increases access to gardening materials, which complies with sustainability principles. The encouragement of donating plants, seeds, trees and gardening tools reduces the need for new purchases, leading to more sustainable gardening practices. This method not only cuts down on greenhouse gas emissions through reduced consumption of resources but also raises environmental consciousness among the web application's users, which is vital in tackling climate change.

A unique feature of the website is that it allows users to either offer or seek manual assistance for gardening on privately owned land. This is beneficial to web application users

who are looking for gardening opportunities and may not have the financial means to peruse on their own. In addition, this benefits users who are private property landowners who need physical help gardening due to time, health or physical limitations. It provides a reliable way to find gardening help, surpassing traditional methods like relying on neighbours. This differentiates the "Common Ground Patch Website" form already existing websites centred around gardening such as PlantSwap.org. (PlantSwap.org, 2023)

Furthermore, the platform's scope is both local and international, connecting the "Common Ground Patch" web application's worldwide users. This broadens their network and understanding of different plants and gardening techniques through the Q&A platform. Such a global reach brings diversity to the gardening community as the web application is not limited by governmental or geometrical boundaries (Gardens, 2023).

The website also serves as a valuable platform for businesses to promote their products or services to an engaged gardening audience, via digital advertisements on the web application's webpages. This has the potential to increase the business's visibility and influence within the gardening community. This is a potential source of revenue for the "Common Ground Patch" web application.

1.2. Aims

- Create a free-to-use website that caters to gardening enthusiasts in order to generate an online gardening community.
- In the pursuit of increasing the rate of global greenhouse gas emissions reduction align the "Common Ground Patch" website with the objectives of Sustainable Development Goal, SDG 13.
- Develop a user registration system to allow users to create an account in the web application system in order to access the web application functions by logging in.
- Enable a platform for users to post questions and answer posted questions which cover gardening-related topics.
- Enable a platform for the donation and application of receiving gardening items such as trees, plants, seeds and gardening tools.
- Facilitate the unique feature of allowing users to request labour on specified private land suitable for gardening to all the web application users.
- Facilitate the creation and submission of CV application forms by users answering labour requests to physically help with gardening on specified private land owned by other users.
- Logically the web application needs to allow users to view CVs submitted to them for either application forms to receive donated items or to volunteer to work on advertised private land.
- Generate revenue through the sale of advertising space within the web application to third-party businesses.

1.3. Technology

For the frontend implementation, I used HTML, CSS, and JavaScript within Visual Studio for the foundational structure, styling, and interactive elements. I included the UI framework Bootstrap to improve the appearance of the website's frontend.

Firebase will be implemented for the web application's back-end, including the Firestore databases and user authorization.

1.4. Structure

From this point forward the structure of the technical report will feature the nine functional requirements of the web application "Common Ground Patch". Each functional requirements will be listed in ranked order that clearly displays the requirement's objective and priority rank. Each requirement process will be depicted along with a use case diagram. Following the detailed description of the functional requirements processes are the defined non-function requirements. This includes Data, User, environmental and usability requirements of the "Common Ground Patch" web application. Then the report will outline the design, system architecture and components used for this project. Then the report will outline the key algorithms, classes and functions utilized in the building of the project code. Then the report will outline the testing carried out followed by the system evaluation. Following this are the projects conclusion, further Development and research possibilities. Then the reports references are viewable. After this is the appendices which contains the project proposal for the "Common Ground Patch" web application proposal Project Analysis & Planning.

2.0 System

2.1. Requirements

2.1.1. Functional Requirements

- 1st requirement: priority rank 1 for the requirement Register users.
- 2nd requirement: priority rank 1 for the requirement Login users.
- 3rd requirement: priority rank 1 for the requirement Post Questions.
- 4th requirement: priority rank 1 for the requirement Answer Questions.
- 5th requirement: priority rank 1 for the requirement Post Items.
- 6th requirement: priority rank 1 for the requirement Request Items.
- 7th requirement: priority rank 1 for the requirement Request Labour.
- 8th requirement: priority rank 1 for the requirement Labour Application.
- 9th requirement: priority rank 2 for the requirement Display Advertisements.

2.1.1.1. Use Case Diagram

2.1.1.1.1 Requirement 1

Requirement 1: Register Users.

2.1.1.1.2 Description & Priority

Registers Users is the process of new users to create an account on the web application "Common Ground Patch" system using a valid username, based on the user's email, and password. This is essential as a user must have an account, they can log into in order to access all the webpages of the web application "Common Ground Patch". Due to the importance of this requirement, it has been assigned a priority rank 1.

2.1.1.1.3 Use Case

meaningful tag - R1RU

Scope

The scope of this use case is to allow users to register an account to the "Common Ground Patch" web application's system by utilizing an authentic email as a username and input a valid value for a password.

Description

This use case describes the interaction between the new user and website system when a user is registering an account for the web application "Common Ground Patch".

Use Case Diagram



Figure 1: Use Case Diagram for Registering User

Flow Description

Precondition

The system has started, and the new user is on the web application "Common Ground Patch" index webpage. The new user must have a valid email address in which they can use as a username.

Activation

This use case starts when the new user clicks on the button labelled register located at the bottom of the index webpage of the login webpage of the web application "Common Ground Patch".

Main flow

- The system will register the new user clicking on the button labelled register button on the web application "Common Ground Patch" index webpage and present the new user with the registration webpage for the web application. (see A1)
- 2. The new user must input a valid email address as a username and a valid value for a password.
- The system validated the inputted username and password values. (see E1)
- 4. The new user clicks on the register button. The system saves the inputted data as a registered user. (see E2)
- 5. The system confirmed the creation of the new users account to the new user.

Alternate flow

- A1 : <navigate to Login Webpage>
 - 1. The system will register the new user clicking on the button labelled login button on the web application "Common Ground Patch" register webpage and present the new user with the login webpage for the web application.
 - 2. The use case continues at position 2 of the main flow.

Exceptional flow

- E1 : <Invalid user details>
 - 1. The system verifies that the inputted values for either username or password are not valid.
 - 2. The system will alert the user when the invalid values are inputted.

E2 : <blank user details>

1. The system verifies that the new user has inputted values for both username and password when the new user clicks on the register button.

2. The system will alert the user when these values have not been inputted into the required fields upon the register button being clicked. The system won't create an account and the new user is informed to reregister with inputted values for all fields.

Termination

The system allows the new user to navigate to the login webpage by clicking on the login button located in the register webpage.

Post condition

The system goes into a wait state.

2.1.1.2.1 Requirement 2

Requirement 2: Login Users.

2.1.1.2.2 Description & Priority

Login users is the process of registered users logging into their account on the web application "Common Ground Patch" system using a valid username, based on the user's email, and password. This is essential as a user must login to their account to access all the webpages of the web application "Common Ground Patch". Due to the importance of this requirement, it has been assigned a priority rank 1.

2.1.1.2.3 Use Case meaningful tag – R2LU

Scope

The scope of this use case is to allow users to login to their registered account on the "Common Ground Patch" web application's system by inputting their account's registered username and password.

Description

This use case describes the interaction between the user and website system when a user is logging into their account on the web application "Common Ground Patch".

Use Case Diagram



Figure 2: Verify User- Use Case Diagram

Flow Description

Precondition

The system has started, and the new user is on the web application "Common Ground Patch" index webpage. The new user must have already registered an account on the web application.

Activation

This use case starts when the new user clicks on the button labelled login located at the bottom of the either the index webpage or register webpage of the web application "Common Ground Patch".

Main flow

- The system will register the user clicking on the button labelled login button on the web application "Common Ground Patch" index webpage and present the user with the login webpage for the web application. (see A1)
- 2. The user must input the valid username and password for their account.
- 3. The new user clicks on the login button.
- 4. The system verifies that there is a registered account with the same inputted values for username and password. (see E1 and E2)

5. The user has successfully logged into their account and the system presents the user with the home page of the web application "Common Ground Patch".

Alternate flow

A1 : <navigate to Login Webpage>

- 1. The system will register the user clicking on the button labelled login button on the web application "Common Ground Patch" register webpage and present the user with the login webpage for the web application.
- 2. The use case continues at position 2 of the main flow.

Exceptional flow

E1 : <Invalid user details>

- 1. The system verifies that the inputted values for either username or password are not valid upon the user clicking the login button.
- 2. The system won't login to any account and the user is informed to login again with inputted values for all fields.

E2 : <blank user details>

- 1. The system verifies that the user has inputted values for both username and password when the new user clicks on the login button.
- 2. The system will alert the user when these values have not been inputted into the required fields upon the login button being clicked. The system won't login to any account and the user is informed to login again with inputted values for all fields.

Termination

The system presents the user with the home webpage for web application "Common Ground Patch".

Post condition

The system goes into a wait state.

2.1.1.3.1 Requirement 3

Requirement 3: Post Questions.

2.1.1.3.2 Description & Priority

Users should be able to post questions by imputing a question, username and date of submission. These inputs are saved to the system as a record and each record is viewable by all users of the web application "Common Ground Patch". This is essential function of the web application as it helps facilitates the aim of allowing all users to ask and answer questions regarding gardening. Due to the importance of this requirement, it has been assigned a priority rank 1.

2.1.1.3.3 Use Case meaningful tag – R3PQ

Scope

The scope of this use case is to allow users to post question on the Q&A webpage of "Common Ground Patch" web application by submitting a valid value for the fields Question username and date/time to the system as a record. The system will also make these records viewable to all users in a table with the headers Question, Username, Date and Answer. The system creates an answer button under the heading Answer for each row.

Description

This use case describes the interaction between the user and website system when a user is submitting a question.



Use Case Diagram



Flow Description

Precondition

The system has started, and the user is on the web application "Common Ground Patch" index webpage. The user must have already registered and logged into their account.

Activation

The system will present the user with the Q&A webpage of the web application "Common Ground Patch" when the user clicks on the Q&A nav-link on the navbar.

Main flow

- 1. The system will register the user clicking on the nav-link Q&A from the navbar on web application "Common Ground Patch" from any webpage, bar the index, login and register webpage, and present the user with the Q&A webpage of the web application.
- 2. The user must input a valid question, username and date/time posted in the appropriate text boxes in the form submission.
- 3. The new user clicks on the submit button in the form submission.
- 4. The system saves valid imputes as a row to a database table. The system presents to all users a new row to the table on the Q&A page using the submitted values for question, username and date/time under the appropriate table headers "Question", "Username" and "Date". The last table header "Answer" is populated by a button labelled answer which is generated upon the user clicking the submit button (see E1)

Exceptional flow

E1 : <blank Form Submission details>

- 1. The system verifies that the user has inputted values for the fields question, username and datetime when the new user clicks on the submit button.
- 2. The system will alert the user when these values have not been inputted into the required fields upon the submit button being clicked. The system won't save a record to the database or create a row in the table on the Q&A webpage.

Termination

The system presents the user with the newly added row to the Q&A webpage of the web application "Common Ground Patch".

Post condition

The system goes into a wait state.

2.1.1.4.1 Requirement 4

Requirement 4: Answer Questions.

2.1.1.4.2 Description & Priority

This requirement allows users to answer posted questions on topics regarding gardening. This is essential function of the web application as it helps facilitates the aim of allowing all users to ask and answer questions regarding gardening. Due to the importance of this requirement, it has been assigned a priority rank 1.

2.1.1.4.3 Use Case meaningful tag – R4AQ

meaningrui tag – R²

Scope

The scope of this use case is to allow users to be able to answer post questions located on row within the Q&A webpage table on the web application "Common Ground Patch" by clicking on the answer button located within a row. The system presents the user with the answers webpage. Then the user must then fill out all required fields within the form submission on the answers webpage and clicking on submit.

Description

This use case describes the interaction between the user and website system when a user answers a submitted question.



Use Case Diagram

Figure 4: Use Case Diagram of Comment Q&A

Flow Description

Precondition

The system has started, and the user has accessed the web application "Common Ground Patch" Q&A webpage by logging into their registered account.

Activation

The system will register the user clicking on the nav-link Q&A on web application "Common Ground Patch" from any webpage, bar the index, login and register webpage, and present the user with the Q&A webpage of the web application.

Main flow

- 1. The user clicking on the button labelled answer within a Q&A table row on the web application's Q&A webpage, which contains the question the user wishes to answer.
- 2. The system presents the user with the answers webpage for the web application.
- 3. The user must input valid values into the all fields within the form submission.
- 4. The new user clicks on the submit button in the form submission.
- 5. The user clicks on the submit button.
- 6. The system saves valid imputes as a row to a database table. The system presents to all users a new row to the table on the answers webpage. (see E1)

Exceptional flow

E1 : <blank Form Submission details>

- 1. The system verifies that the user has inputted values for all the required fields within the form submission when the new user clicks on the submit button.
- 2. The system will alert the user when these values have not been inputted into the required fields upon the submit button being clicked. The system won't save a record to the database or create a row in the table on the answer webpage.

Termination

The system presents the user with the newly added row to the answer webpage of the web application "Common Ground Patch".

Post condition

The system goes into a wait state.

2.1.1.5.1 Requirement 5

Requirement 5: Post Items.

2.1.1.5.2 Description & Priority

Users should be able to post donations by imputing valid values to all required fields within the form submission on any donated items webpages. These inputs are saved to the system as a record and each record is viewable by all users of the web application "Common Ground Patch". This is an essential function of the web application as it helps facilitates the aim of allowing all users to donate

gardening items to other users. Due to the importance of this requirement, it has been assigned a priority rank 1.

2.1.1.5.3 Use Case meaningful tag – R5PI

Scope

The scope of this use case is to allow users to post a description of items the user wishes to donate on any of the item donation webpages of "Common Ground Patch" web application. These webpages include the plant donation webpage, the plant donation webpage, the plant donation webpage and the plant donation webpage. This is accomplished by submitting a valid value for the fields description of item, username, date/time and location to the system as a record. The system will also make these records viewable to all users in a table with the headers "Description of Item", "Donator", "Date & Time of Availability", "Location" and "Apply". The system creates an apply button under the heading Answer for each row.

Description

This use case describes the interaction between the user and the website system when a user is submitting a gardening item to be donated.



Use Case Diagram

Figure 5: Use Case Diagram of Post Items

Flow Description

Precondition

The system has started, and the user is on the web application "Common Ground Patch" index webpage. The user must have already registered and logged into their account.

Activation

The system will present the user with their chosen donated items webpage of the web application "Common Ground Patch" when the user clicks on either plants, seeds, trees or tool from the dropdown of the donated item nav-link on the navbar.

Main flow

- The system will register the user clicking on the plant option on the dropdown of the donated items nav-link on web application "Common Ground Patch" navbar from any webpage, bar the index, login and register webpage. Then the system and present the user with the selected donation webpage of the web application. (see A1, A2 andA3)
- 2. The user must input a valid for the fields description of item, username, date/time and location in the appropriate text boxes in the form submission.
- 3. The new user clicks on the submit button in the form submission. (see E1)
- 4. The system saves valid imputes as a row to a database table. The system presents to all users a new row to the table on the plant donated item webpage using the submitted values for description of item, username, date/time and location under the appropriate table headers "Description of Item", "Donator", "Date & Time of Availability" and "Location". The last table header "Apply" is populated by a button labelled apply which is generated upon the user clicking the submit button.

Alternate flow

A1: <navigate to Tools Donated Items Webpage>

- The system will register the user clicking on the tools option on the dropdown of the donated items nav-link on web application "Common Ground Patch" navbar from any webpage, bar the index, login and register webpage. Then the system and present the user with the selected donation webpage of the web application.
- 2. The use case continues at position 2 of the main flow.

A2: <navigate to Trees Donated Items Webpage>

- The system will register the user clicking on the trees option on the dropdown of the donated items nav-link on web application "Common Ground Patch" navbar from any webpage, bar the index, login and register webpage. Then the system and present the user with the selected donation webpage of the web application.
- 2. The use case continues at position 2 of the main flow.

A3: <navigate to Seeds Donated Items Webpage>

- The system will register the user clicking on the seeds option on the dropdown of the donated items nav-link on web application "Common Ground Patch" navbar from any webpage, bar the index, login and register webpage. Then the system and present the user with the selected donation webpage of the web application.
- 2. The use case continues at position 2 of the main flow.

Exceptional flow

E1 : <blank Form Submission details>

- The system verifies that the user has inputted values for the fields question, username and datetime when the new user clicks on the submit button.
- 2. The system will alert the user when these values have not been inputted into the required fields upon the submit button being clicked. The system won't save a record to the database or create a row in the table on the donated item webpage selected.

Termination

The system presents the user with the newly added row to the selected donated items webpage of the web application "Common Ground Patch".

Post condition

The system goes into a wait state.

2.1.1.6.1 Requirement 6

Requirement 6: Request Items.

2.1.1.6.2 Description & Priority

Users should be able to request donated items by imputing valid values to all required fields within the form submission on the application form webpage. These inputs are saved to the system as a record and each record is viewable by the user who donated the item within the Applications For Items webpage of the web application "Common Ground Patch". This is an essential function of the web application as it helps facilitates the aim of allowing all users to donate gardening items to other users. Due to the importance of this requirement, it has been assigned a priority rank 1.

2.1.1.6.3 Use Case

meaningful tag – R6RI

Scope

The scope of this use case is to allow users to be able to request to receive posted donated items displayed in the any of the donated items webpage table's records on the web application "Common Ground Patch" by clicking on the apply button located within a row. The system then presents the user with the application form webpage. The user must then fill out all required fields within the form submission on the application form webpage and clicking on submit. Once the submit button is clicked on the website redirects the user to the default email client with a pre-filled email draft. The submitted data from the application forms are used as the email address, subject and body of an email. The user can then send the email.

Description

This use case describes the interaction between two users and a system when one user requests to receive a donated item by submitting an application form to the website system and system forwards the request information, via clients default email, to the user who posted the donated item within the table on the Applications For Items webpage.



Use Case Diagram



Flow Description

Precondition

The system has started, and the user has accessed the web application "Common Ground Patch" by logging into their registered account.

Activation

The system will present the user with their chosen donated items webpage of the web application "Common Ground Patch" when the user clicks on either plants, seeds, trees or tool from the dropdown of the donated item nav-link on the navbar.

Main flow

- 1. The system will register the user clicking on the plant option on the dropdown of the donated items nav-link on web application "Common Ground Patch" navbar from any webpage, bar the index, login and register webpage. Then the system and present the user with the selected donation webpage of the web application. (see A1, A2 and A3)
- 2. The user clicks on the apply button within a row of the table containing the donated item they wish to request to receive.
- **3.** The system will register the user clicking on the apply button within any row of the table and present the user with the application form webpage of the web application.
- 4. The user will fill out all the fields within the application form submission.
- 5. The user clicks on the submit button in the form submission.
- 6. The system redirects the user to their default email client with a pre-filled email draft using data submitted from the application forms as the forwarding email address, subject and body of an email. (see E1)
- 7. The user can then send the email.

Alternate flow

A1: <navigate to Tools Donated Items Webpage>

- The system will register the user clicking on the tools option on the dropdown of the donated items nav-link on web application "Common Ground Patch" navbar from any webpage, bar the index, login and register webpage. Then the system and present the user with the selected donation webpage of the web application.
- 2. The use case continues at position 2 of the main flow.

A2: <navigate to Trees Donated Items Webpage>

- The system will register the user clicking on the trees option on the dropdown of the donated items nav-link on web application "Common Ground Patch" navbar from any webpage, bar the index, login and register webpage. Then the system and present the user with the selected donation webpage of the web application.
- 2. The use case continues at position 2 of the main flow.

A3: <navigate to Seeds Donated Items Webpage>

 The system will register the user by clicking on the seeds option on the dropdown of the donated items nav-link on web application "Common Ground Patch" navbar from any webpage, bar the index, login and register webpage. Then the system and present the user with the selected donation webpage of the web application. 2. The use case continues at position 2 of the main flow.

Exceptional flow

E1 : <blank Form Submission details>

1. The system verifies that the user has inputted values for all the required fields within the form submission when the new user clicks on the submit button.

The system will alert the user when these values have not been inputted into the required fields upon the submit button being clicked. The system won't save a record to the database or create a row in the table on the within the table on the Applications For Items webpage.

Termination

The system presents the user submitting the request with a application form full of blank fields while the user who submitted the donated item can view the additional row to the table within their Application For Items webpage of the web application "Common Ground Patch".

Post condition

The system goes into a wait state.

2.1.1.7.1 Requirement 7

Requirement 7: Request Labour.

2.1.1.7.2 Description & Priority

Users should be able to make requests to other users for labour gardening their private on a volunteer bases land by imputing valid values to all required fields within the form submission on Listed Land webpage. These inputs are saved to the system as a record and each record is viewable by all users of the web application "Common Ground Patch". This is an essential function of the web application as it helps facilitates the aim of allowing all users to request other users to physical help gardening their privately owned land. Due to the importance of this requirement, it has been assigned a priority rank 1.

2.1.1.7.3 Use Case

meaningful tag – R7RL

Scope

The scope of this use case is to allow users to request labour from other users to garden on their private land on the land listed webpages of "Common Ground Patch" web application. This is accomplished by submitting a valid value for the fields description of land, username, date/time, date/time and location to the system as a record. The system will also make these records viewable to all users in a table with the headers "Description of Land", "Donator", "Start Date", "End

Date" "Location" and "Apply". The system creates an apply button under the heading Answer for each row.

Description

This use case describes the interaction between the user and website system when a user is a request for help with physical labour to all users of the web application.

Use Case Diagram



Figure 7: Use Case Diagram of Request Labour

Flow Description

Precondition

The system has started, and the user is on the web application "Common Ground Patch" index webpage. The user must have already registered and logged into their account.

Activation

The system will present the user with the land listed webpage of the web application "Common Ground Patch" when the user clicks on the listed land navlink on the navbar.

Main flow

1. The system will register the user clicking on the land listed nav-link on web application "Common Ground Patch" navbar from any webpage, bar

the index, login and register webpage. Then the system and present the user with the land listed webpage of the web application. (see A1, A2 and A3)

- 2. The user must input a valid for the fields description of land, username, date/time, date/time and location in the appropriate text boxes in the form submission.
- 3. The new user clicks on the submit button in the form submission.
- 4. The system saves valid imputes as a row to a database table. The system presents to all users a new row to the table on the land listed webpage using the submitted values for description of land, username, date/time, date/time and location under the appropriate table headers "Description of Item", "Donator", "Start Date", "End Date" and "Location". The last table header "Apply" is populated by a button labelled apply which is generated upon the user clicking the submit button (see E1)

Exceptional flow

E1 : <blank Form Submission details>

- 1. The system verifies that the user has inputted values for the fields question, username and datetime when the new user clicks on the submit button.
- 2. The system will alert the user when these values have not been inputted into the required fields upon the submit button being clicked. The system won't save a record to the database or create a row in the table on the land listed webpage selected.

Termination

The system presents the user with the newly added row to the land listed webpage of the web application "Common Ground Patch".

Post condition

The system goes into a wait state.

2.1.1.8.1 Requirement 8

Requirement 8: labour application.

2.1.1.8.2 Description & Priority

Users should be able to request donated items by imputing valid values to all required fields within the form submission on the application form webpage. These inputs are saved to the system as a record and each record is viewable by the user who donated the item within the Applications webpages of the web application "Common Ground Patch". This is an essential function of the web application as it helps facilitates the aim of allowing all users to donate gardening

items to other users. Due to the importance of this requirement, it has been assigned a priority rank 1.

2.1.1.8.3 Use Case meaningful tag – R8LA

Scope

The scope of this use case is to allow users to be able to request to garden voluntarily on a user's private land they advertised for physical help gardening within the land listed webpage of the web application "Common Ground Patch" by clicking on the apply button located within a row on the table within the land listed webpage. The system presents the user with the application CV webpage. Then the user must fill out all required fields within the form submission on the application CV webpage and click on submit. Once the submit button is clicked on the website redirects the user to the default email client with a pre-filled email draft. The submitted data from the CV webpage are used as the email address, subject and body of an email. The user can then send the email.

Description

This use case describes the interaction between two users and a system when one user requests to work by submitting an application CV to the website system and the system forwards the request information to the user who the request for labour in the Land Listed webpage.



Use Case Diagram

Figure 8: Use Case Diagram of Labour Application

Flow Description

Precondition

The system has started, and the user has accessed the web application "Common Ground Patch" by logging into their registered account.

Activation

The system will present the user with the Land Listed webpage of the web application "Common Ground Patch" when the user clicks on the Land Listed nav-link on the navbar.

Main flow

- The system will register the user clicking on the Land Listed nav-link on web application "Common Ground Patch" navbar from any webpage, bar the index, login and register webpage. Then the system and present the user with Application CV webpage of the web application. (see A1, A2 and A3)
- 2. The user clicks on the apply button within a row of the table containing the donated item they wish to request to receive.
- **3.** The system will register the user clicking on the apply button within any row of the table and present the user with the application form webpage of the web application.
- **4.** The user will fill out all the fields within the application CV form submission.
- 5. The user clicks on the submit button in the form submission.
- 6. The system redirects the user to their default email client with a pre-filled email draft using data submitted from the application forms as the forwarding email address, subject and body of an email. (see E1)
- 7. The user can then send the email.

Exceptional flow

E1 : <blank Form Submission details>

- 1. The system verifies that the user has inputted values for all the required fields within the form submission when the new user clicks on the submit button.
- 2. The system will alert the user when these values have not been inputted into the required fields upon the submit button being clicked. The system won't save a record to the database or create a row in the table on the Applications to work on land webpage.

Termination

The system presents the user submitting the request with an application CV webpage full of blank fields while the user who submitted the donated item can view the additional row to the table within their Application to work on land webpage of the web application "Common Ground Patch".

Post condition

The system goes into a wait state.

2.1.1.9.1 Requirement 9 Requirement 9: Display Advertisements.

2.1.1.9.2 Description & Priority

In order to generate a revenue, the web application "Common Ground Patch" web application sales team should allow third party companies to rent ad space within the application for their company's own digital advertisements. The web application system will then display the advertisement within the designated section under the navbar in all webpages, bar the index, login, registration webpages, to be viewed by all users. Due to the importance of this requirement, it has been assigned a priority rank 2.

2.1.1.9.3 Use Case

meaningful tag – R2DA

Scope

The scope of this use case is to allow the third party companies to contact the web application "Common Ground Patch" web application sales team in order to negotiate a contract on the price and timeframe for renting the web applications ad space to display the third companies already generated digital advertisement. Once the sale is successful with both parties signing the sales contracts the system will hold and display the advertisement to all of the web applications users who login to their account.

Description

This use case describes the interaction between the sales team of the web application "Common Ground Patch" and third part companies when the thirdparty companies negotiated the price and timeframe of advertising their own digital advertisement to within the web application to all the web application's users.

Use Case Diagram



Figure 9: Use Case Diagram of Display Advertisements

Flow Description

Precondition

The company who wishes to rent ad space from the web application "Common Ground Patch" to digitally advertise their product or service must already have a suitable advertisement to use.

Activation

The company who wishes to rent ad space from web application "Common Ground Patch" starts the process by contacting the web application "Common Ground Patch" sales team.

Main flow

- 1. A company phones the web application "Common Ground Patch" sales team to request to rent ad space from web application "Common Ground Patch" for their digital advertisement. (see A1)
- 2. The company will negotiate the terms of the contract with the web application "Common Ground Patch" sales team.
- 3. Both Parties sign the contract. (see E1)

- 4. The company transfers the agreed upon payment to the sales team.
- 5. The company sends a copy of their digital advertisement to the sales team, who then saves it to the system.
- 6. The system then displays the digital advertisement is the designated ad space in all relevant webpages within the web application "Common Ground Patch".
- 7. All registers users can now log onto the web application "Common Ground Patch" and view the digital advertisement for a duration specified in the contract.

Alternate flow

A1 : <Request advertisement to be displayed>

- A company emails the web application "Common Ground Patch" sales team to request to rent ad space from web application "Common Ground Patch" for their digital advertisement..
- 2. The use case continues at position 2 of the main flow.

Exceptional flow

- E1 : <negotiation fall through>
 - 1. The third party and the sales team cannot come to an agreement and the sale fall through.
 - 2. The process terminates here.

Termination

The system presents all user with the digital advertisement within the ad space on all webpages within the "Common Ground Patch" web application bar the index, login and register webpages, for the duration specified in the contract.

Post condition

The system and sales team goes into a wait state.

2.1.2 Data Requirements

- Secure Login and Signup with authentication, users having their information stored in a database.
- Users having unique access to relevant databases for specificity.
- Information will be stored in secure separate databases that are linked together.
- Users can have access to various databases relevant to them.
- Databases are separated but linked through multi-relational connections using Firebase.

2.1.3 User Requirements

Common Ground Patch users must meet the following requirements to avail of all the applications functionality:

- Users need to use a PC or laptop devise to visit the Common Ground Patch website.
- Users' device must have internet access to visit the Common Ground Patch website using Microsoft edge.
- To gain access to the Common Ground Patch website users need to register and login to the website.

2.1.4 Environmental Requirements

The following are the requirements to develop this application.

- Application was developed on a windows laptop devise.
- Internet access was needed to visit the Common Ground Patch website.
- Visual studio was used to develop the Common Ground Patch website front end code using html, CSS and JavaScript.

2.1.5 Usability Requirements

For this application to be effective, it is essential for it to be easily navigated and accessed by a wide range of users. These requirements include:

- The users must have easy access to navigate to each page.
- Registration and login for users to record their information.
- The database should record every successful form submission to the appropriate table.
- Implement dynamic webpages to account for scalability.
- Accountability for User errors such as ensuring all fields in a form submission to be filled before any onclick event successfully occurs.
- Simplistic for users to learn.
- Application and functionality should be relevant to the User, which refers to being built to purpose.

2.1.6 Revisions

The original recruitments for requesting to receive the donated items and requesting to work of advertised private land was to populate tables, in two different web pages, designed to receive the document created by a user submitting the HTML form from the CV or Application form webpages. This was changed to allow users to send emails containing the data submitted in the HTML form from the CV or Application form webpages, directly to the user who submitted a donated item or request for labour. Transitioning to sending email simplifies the recruitment process, improving usability and facilitating smoother interaction between users on the web application by promoting direct communication between users.

Due to time constraints maps and location-based features facilitated by a Map API, such as Google Maps API, Mapbox or Leaflet, was not implemented in the "Common Ground Patch" web application.

2.2 Design & Architecture

2.2.1 Architecture Diagram

The figure below shows the architecture diagram of the "Common Ground Patch" web application. This diagram displays that the frontend of the web applications, which all users interact with, consists of files containing HTML, CSS and JavaScript. The Frontend sends respond and request data to and from the backend which consists of Firebase Authentication and Firestore Database from the Firebase project "practise". Additionally, the front end interacts with the devise email stored in the device's session storage to create a pre-filled email to a specified user's email address the other user can send to.



Figure 10: Architecture Diagram "Common Ground Patch" web application

2.3 Implementation

2.3.1 Registration

Registration of users to authorised users to login and access the rest of the web application. As shown in the figure below users must fill out the text fields of the form before clicking submit to register as a user. Users must register using their email as a username and a password consisting of uppercase letters, lowercase letters, a special character and a number.



Figure 11: the register.html code

The registration of a new user is handled by implementing the backend Firebase Authentication with the following JavaScript code.

と Firebase	practise 👻				6 +	0	P	é	A
A Project Overview	Authenticat	ion							
Project shortcuts	Users Sign-in method	Templates	Usage	Settings	Extensions				
Authentication									
Realtime Database	Q Search by	y email address	, phone numbe	er, or user UID	Add user	C	:		
Firestore Database	Identifier	Providers	Created 🚽	Signed In	User UID				
What's new Extensions (NEW)	sarah@gma	$\mathbf{\mathbf{Y}}$	Apr 23,	Apr 30,	yKRzpdrFOlayrE				
A Release Monit (NEW)	emma@gm		Mar 24,	Apr 1, 2	XtdvGAFW7iZ2z				
Product categories	anu@gmail		Mar 7,	Mar 7,	IrCIAQv0E2VQE				
Build ~	hi@gmail.c	$\mathbf{>}$	Mar 7,	Mar 7,	zT0sHrh3cFTM				

Figure 12: Firebase Authentication within the "practise" project

The figure below displays the code used to import Firebase modules such as initialising the Firebase app, accessing the Firebase Realtime Database and Firebase authentication. Firebase authentication facilitates managing authentication through the functions "getAuth", "createUserWithEmailAndPassword", "updateProfile", "sendEmailVerification" and "sendPasswordResetEmail". The "firebaseConfig" contains the necessary credentials to enable the website application to interact with "practise" project Firebase services such as database storage and user authentication.

d+-firbase>					
<pre>(script type="module")</pre>					
<pre>import { initializeApp } from "https://www.gstatic.com/firebasejs/10.8.0/firebase-app.js";</pre>					
<pre>import { getDatabase, set, ref } from "https://www.gstatic.com/firebasejs/10.8.8/firebase-database.js";</pre>					
<pre>import { getAuth, createUserNithEmailAndPassword, updateProfile, sendEmailVerification, sendPasswordResetEmail } from "https://www.gstatic.com/firebasejs/18.8.0/firebase-auth.js";</pre>					
const firebaseConfig = {					
apiKey: "AlzaSyDVsxV9iY9hlisYmpQAB75V1S2g5GFqnc0",					
authDomain: "practise-92fd9.firebaseapp.com",					
projectId: "practise-92fd9",					
<pre>storageBucket: "practise-92fd9.appspot.com",</pre>					
<pre>messagingSenderId: "735795758312",</pre>					
appId: "1:735795758312:web:bba76482532f0d0f45f55d",					
measurementid: "G-SJVWHWPJ9M",					
<pre>databaseURL: "https://practise-92fd9-default-rtdb.europe-west1.firebasedatabase.app",</pre>					
3					

Figure 13: importing Firebase and configuring Firebase for project "practise".

The JavaScript code displayed in the figure below, facilitates user registration for the "Common Ground Patch" web application. This is accomplished by collecting references to the different HTML elements within the HTML form, viewable in the figure 11, such as the input fields email, password confirm password, first name and surname, using the HTML element's unique IDs. Additionally, the code checks if the password meets complexity requirements and matches the confirmation password upon the user triggering the "RegisterUser" by clicking on "submit" in the HTML form. When the form is successfully submitted the "createUserWithEmailAndPassword" function from the Firebase authentication module is triggered to create a new user with the provided email and password. when the user is successfully registered, the user's information, which additionally includes first name and surname, is stored in the Firebase Realtime Database under a designated "UsersAuthList" node, associated with the user's unique IDs, UID. The "sendEmailVerification" function from the Firebase authentication sends an email verification to the new user upon successful registration.

```
onst app = initializeApp(firebaseConfig);
const db = getDatabase();
const auth = getAuth(app);
  et AuthForm = document.getElementById('AuthForm');
     submode = document.getFinementsyld(submode );
emailInput = document.getFinementById('emailInput');
passwordInput = document.getElementById('ParswordInput');
confirmPasswordInput = document.getElementById('Enritationality');
firstname = document.getElementById('Firstname');
surname = document.getElementById('Surname');
                                                                                                                    sswordInput');
let RegisterUser = evt =>{
    evt.preventDefault();//pervents the default form submission
       const passwordRegex = /^(?-.*[a-z])(?=.*[A-Z])(?=.*\d)(?=.*[@$!%*?&])[A-Za-z\d@$!%*?&]{8,}$/;
       //check if the password meets the required format
if (!passwordRegex.test(PasswordInput.value)) {
    alert("Password must be at least 8 characters
                                                                                              ters long and include at least one lowercase letter, one uppercase letter, one digit, and one special character."):
       if (PasswordInput.value !== ConfirmPasswordInput.value) {
  t("Passwords do not match. Please enter matching password
 alert("
        //create a new user with email and password
createUserWithEmailAndPassword(auth, emailInput.value, PasswordInput.value)
             ateuserwithemailAndPassword(auth, emailInput.value, P3
en (((redentials)->{
    console.log("reg successful");
    set(ref(db,'UsersAuthList/"+ Credentials.user.uid),{
    firstname: Firstname.value,
    surname: Surname.value,
    surname: Surname.value,
sendEmailVerification(auth.currentUser)
   .then(() -> console.log("Email verification sent"))
.catch((error) -> console.error(error));
        .catch((error)=>{
    alert(error.message);
    console.log(error.code);
               console.log(error.message);
AuthForm.addEventListener('submit', RegisterUser);
```

Figure 14: register JavaScript

2.3.2 Login and Log Out

The figure below displays the HTML form used to authenticate users when the values for both a registered email and password is inputted into the input fields. The "registerbtn" button triggers the "signInWithEmailAndPassword" function when clicked on. The "forgotPasswordbtn" button triggers the process to reset the user's password when clicked on. The "loginbtn" button brings the user to the register webpage when clicked on.



Figure 15: login.html code of form

The figure below depicts the JavaScript imports for Firebase modules, initialising the Firebase app and fetching references to the Firebase Database and authentication services. The import "getAuth" retrieves the Firebase authentication service. The import "signInWithEmailAndPassword" facilitates users to log into the "Common Ground Patch" website's remaining web pages by using their email and password credentials. The import "sendPasswordResetEmail" facilitates resetting a user's password by sending a password reset email to the user. The "firebaseConfig" contains configuration settings required to initialise and connect to the Firebase services within the Firebase project "pratise".



Figure 16: importing Firebase and configuring Firebase for the project "practise".

The figure below depicts the JavaScript "SignInUser" function which is triggered when the HTML Form in the figure 15 is submitted when the "loginbtn" is clicked on. The

"evt.preventDefault();" allows the "signInWithEmailAndPassword" function from Firebase authentication services to initiate the sign-in process. the "signInWithEmailAndPassword" function retrieves user data from the database based on their unique identifier and stores the data in session storage. The If statement ensures that users who input registered data are brought to the "Common Ground Patch" home webpage otherwise the ".catch" alerts the user to an error that has occurred when unregistered data are inputted.



Figure 17 & 18: JavaScript for signInWithEmailAndPassword function

The figure below depicts the JavaScript "sendPasswordResetEmail" function that invokes Firebases authentication services to send a password reset email to the user's email address only if there is an email input field according to the if statement seen.



Figure 19: JavaScript for resetting user's password

The figure 20 depicts JavaScript code that retrieves the existing user credentials, "UserCreds" and user information, "UserInfo" stored in the session. The "checkCred"
function brings users to the login page if existing "UserInfo" and "UserCreds" cannot be found in the session storage enforcing authentication for every "Common Ground Patch" webpage bar login and register web pages. The "signoutbutton" located in the HTML navbar, as can be seen in figure 19, triggers the JavaScript of signout function when clicked on which clears session storage and brings the user to the logout button.



Figure 20: highlighted HTML code of signout button in the nav bar.



Figure 21: JavaScript code of signout button.

2.3.3 Importing and Configuring Firebase

The figure below depicts the Firebase imports and credentials implemented in every "Common Ground Patch" webpage bar home, login and register web pages. JavaScript imports firebase-app.js and firebase-firestore.js enables access to Firebase services. "firebaseConfig" object contains the credentials to initialise and connect to the Firebase Firestore database within the firebase project "practise". The variable db shown in the figure below, enables interaction between the frontend web application and backend Firestore database.



Figure 22: Importing Firebase and configuring Firebase with the project "pratise"

2.3.4 Q&A

The Figure below depicts the code of the HTML form and table available on the Q&A web page.





The figures below display the JavaScript function "AddQuestion" which is triggered when the submit button shown in the figure 23 is clicked. This function retrieves the values entered in the form fields and the if statement, which ensures there are values in all form fields, contains these values in a new document which is added to the "questions" collection in the Firestore Database. This can be seen in figure 26. After a document is added to the Firestore Database ".then" logs the ID of the document to the console using the line "console.log("Document written with ID: ", docRef.id);", resets the form using the line "document.getElementById('donationForm').reset();" and then triggers the "fetchDonations" function. The ".catch" handles the occurrences of errors.



Figures 24 & 25: Q&A JavaScript addQuestion function



Figure 26: The Firestore Database "questions" collection

The figure below depicts the "fetchDonations" function which retrieves data within a document from the "questions" collection in the Firestore database and dynamically populates a table row within the HTML table body, "tbodyEL", with the retrieved document data. This function uses the document data to populate the columns "question", "username" and "datatime" as well as create an "Answers" button at the end of the row within the answer column. This function is called when the page loads according to the following JavaScript "document.addEventListener('DOMContentLoaded', fetchDonations);".



Figures 27 & 28: Q&A JavaScript FetchDonations functions

The figure below displays the "bringToForm" function which is triggered when the "answers" button with a HTML table row, tr, is clicked on. It retrieves the question text associated with the tr containing the clicked-on "Answers" button and constructs a URL parameter, "questionID", by encoding the question text. Then the function brings the user to "answers.html" web page while passing the "questionID" as a URL parameter.,



Figure 29: Q&A JavaScript bringToForm functions

The figures 30, 31 and 32 depicts the HTML and JavaScript code for the answers.html that uses similar HTML form, HTML tables and JavaScript functions. Figure 30 displays the "answersTableBody", similar to the Q&A.html table and "answerForm" which is similar to the "donationForm". However, the "answers.html" only form fields available and table columns being "Answer", "username" and "datetime".



Figure 30: answers.html

The figures below displays an "addAnswer" function which is similar to the "addQuestion" function in the figure 24. The "addAnswer" function retrieves input values from the form fields using "document.getElementById()" and is added to the Firestore database "answer" collection as a document, as can be seen in figure 33. This occurs only after meeting the requirements of the if statement which checks there are inputs in all answers.html form fields. The question ID, obtained from URL parameters, "urlParams", using new "URLSearchParams(window.location.search);" is included in the document. The code handles asynchronous interactions with the Firestore database as the ".then" is executed then the if statement is successful. While the ".catch" is triggered when errors occur that need to be handled. The event listener triggered the AddAnswer function when the answerForm submit button is clicked.

nction addAnswer(e){ e.preventDefault();//pervents the default form submission const answer -document.getElementById('answer').value; const username -document.getElementById('username').value; const datetime -document.getElementById('datetime').value; /checks if all fields are if (answer && username && datetime) { db.collection("answers").add({ answer: answer, username: username, datetime: datetime, questionId: questionId, }).then(() → { answerForm.reset();//Reset form frields fetchAnswers(); }).catch(error -> { console.error("Error adding answer: ", error); const urlParams - new URLSearchParams(window.location.search); const questionId = urlParams.get('questionId'); if (IquestionId) { console.error("Question ID not found in URL parameters"); console.log("Question ID:", questionId);

answerForm.addEventListener('submit', addAnswer);

Figures 31 & 32: JavaScript addAnswer and fetchAnswers functions for answers.html

と Firebase	practise Cloud Firestore		6 + 0 🖻 😫
A Project Overview	♠ > answers > H24pLc	zxk25Zc.	🛆 More in Google Cloud 🗸
Project shortcuts Authentication	🗢 (default)	🕒 answers \Xi 🗄	H24pLczxk25ZcSAvyjGO
Realtime Database	+ Start collection	+ Add document	+ Start collection
🗢 Firestore Database	LandListing	H24pLczxk25ZcSA >	+ Add field
What's new Extensions (NEW) Release Monit (NEW) Product categories	: answers > donations plants_donations questions seeds_donations	HTFXJ4V55WOHUUP_ NTgsA38hYNABuNp_ YBr0ZMB4j6PwzWM_ YjVYHfUDxqtFJdu_ cGaNCEC4w04FHxQ_	answer: "Plant in a location exposed to the sum with well-drained soil." datetime: "2024-04-01T12:12" username: "emma@gmall.com"
Build ~	trees_donations	jsgku3ESMpFV30Z xRQVDTWM910TpSA xZU10703fPt0EV5	
Analytics		z794eUTScXYPyJC	

Figure 33: Firestore Database "answer" collection.

The figure below displays the "fetchAnswers" function which is similar to the "fetchDonation" function in figures 27 and 28. The "fetchAnswers" function, which is triggered after a successful "addAnswer" function, first clears the values from input fields in the "answersTableBody" to prepare for new inputted values. The function retrieves "answers" to a specific question ID, "questionId" and iterates through the documents using "querySnapshot.forEach(doc => {})" to extract values of "answer", "username" and "datetime" from each document. These values are added to the "answersTableBody". The "window.addEventListener('load', fetchAnswers);" invokes the" fetchAnswers" function when the web page loads, ensuring the answers are fetched and displayed when a user opens the web page.



Figures 34: JavaScript fetchAnswers functions for answers.html

2.3.5 Submitting a request for labour

The LandListing.html file HTML "donationForm", HTML table and JavaScript functions work similarly to the "Q&A.html" file discussed above. One of the biggest differences is the number and names used for the different input fields which correspond to the different table column titles. Another difference is that the JavaScript "addDonation" Function performs the same function as "addQuestion" by adding the values collected from the input fields as documents to the Firestore

Database "LandListing" collection. Additionally, The "bringToCVForm" function performs a similar function as "bringToForm" function by bringing the user to the CV webpage when the "Apply" button generated in the last column of every submitted row was clicked on.



Figure 35: LandListing.html donationform and table



Figures 36 &37: JavaScript AddDonation function for LandListing.html



Figure 38: Firestore Database "LandListing" collection.



Figure 39: JavaScript fetchDonations functions forLandListing.html



Figure 40: JavaScript bringToForm functions forLandListing.html

2.3.6 Submitting a request for Donated Items

The multiple "Donated Items" web pages, which consist of "PlantItemListing.html", "SeedaltemListing.html", "TreesItemListing.html" and "ToolsItemListing.html" files, HTML "donationForm", HTML table and JavaScript functions work similarly to the "LandListing.html" file discussed above. One of the biggest differences is the number and names used for the different input fields which correspond to the different table column titles. Another difference is that the JavaScript "addDonation" Function performs similarly by adding the values collected from the input fields as documents to different Firestore Database collections. The "addDonation" Function of the "PlantItemListing.html" adds data documents to the Firestore Database "plants_donations" collection. The "addDonation" Function of the "SeedaltemListing.html" adds data documents to the Firestore Database "seeds_donations" collection. The "addDonation" Function of the "TreesItemListing.html" adds data documents to the Firestore Database "trees_donations" collection. The "addDonation" Function of the "ToolsItemListing.html" adds data documents to the Firestore Database "donations" collection. Additionally, the "bringToForm" function performs a similar function as "bringToCVForm" function by bringing the user to the Application webpage when the "Apply" button generated in the last column of every submitted row is clicked on.



Figure 41: Html form and table code for the Donated Items webpages



Figure 42: JavaScript addDonation Function for the TreesItemListing.html file



Figure 43: JavaScript fetchDonations and bringToForm Functions for the TreesItemListing.html file



Firebase	practise 👻 Cloud Firestore		6 + 0 🖻 😫
Project Overview	♠ > plants_donation >	FZZhcgMJghSC.	🛆 More in Google Cloud 🗸
roject shortcuts	🗢 (default)	🖪 plants_donati \Xi 🚦	FZZhcgMJghSCJeLiD8Sj
Authentication	+ Start collection	+ Add document	+ Start collection
Firestore Database	LandListing	FZZhcgMJghSCJeL >	+ Add field
	answers	FvX6I2Hz6BLx4vc	datetime: "2024-04-29T12:12"
nats new	donations	hbl0VTPsQGdhrrl	descriptionItem: "lavender"
Beleace Menit	<pre>plants_donations ></pre>	k1IKhMScyhQl3Q5	location: "dublin"
	questions	oKS7q0U4e1gFoYi…	username: "emma@gmail.com"
duct categories	seeds_donations		
uild ~	trees_donations		
Firebase	practise 👻 Cloud Firestor	e	6 + 0 5
Project Overview	♠ > seeds_donation	> 0UgkP0mTa0Dk.	🛆 More in Google Clo
oject shortcuts	🗢 (default)	📕 seeds_donati 🚖	: OUgkP0mTa0DkcagPlYbd
Authentication	+ Start collection	+ Add document	+ Start collection
Realtime Database	LandListing	0UgkP0mTa0Dkcag	> + Add field
Firestore Database	answers	ZSsLfljUnpliPru	datetime: "2024-04-29T12:12"
nat's new	donations	hMqobr20BdcbHex	descriptionItem: "rosemary see
Extensions NEW	plants_donations	ijyU5nkKwFXnC3P…	location: "dublin"
Release Monit (NEW)	questions	lPxnP1y30QpKvW6	username: "emma@gmail.com"
oduct categories	: seeds_donations >	ppULD6UYjRnSfe9	
uild 🗸 🗸	trees_donations	rXbsGeD1BF1AnWB	
Firebase	practise 👻 Cloud Firestor	e	6 + 0 🖻 🔅 🔼
Project Overview	A → donations → 6AV	VPx7Y9XHCf.	⚠ More in Google Cloud 🗸
ject shortcuts	🗢 (default)	📕 donations \Xi 🚦	6AWPx7Y9XHCfQ3HghWml
Authentication	+ Start collection	+ Add document	+ Start collection
Realtime Database	LandListing	6AWPx7Y9XHC >	+ Add field
Firestore Database	answers	CkEHSq7zhbw	datetime: "2024-02-29T12:12"
at's new	donations >	KWZa0otEID4	descriptionItem: "rake"
Extensions (NEW)	plants_dona	MNO3pY8qWQ3	location: "dublin"
		Nyo IlludeybyD	ucorpore : "hob@gmail.com"
Release Monit (NEW)	questions	Nyqoowkybyr	username, bobleginam.com
Release Monit NEW	questions seeds_donat…	Z22ygucgCuX	username, bob@gnam.com
Release Monit (NEW)	questions seeds_donat… trees_donat…	Z22ygucgCuX gQtboHs7nE3	user name. boblighnan.com
Release Monit (NEW) oduct categories	questions seeds_donat… trees_donat…	gQtboHs7nE3 yF9Jzrxfadq	user name . boolgymail.com

Figures 44 & 45 & 46 & 47: Firestore Database "trees_donations". "plants_donations", "seeds_donations" and "donations" collections.

2.3.7 Send application.

<pre>cform id="applicationForm"></pre>
<pre><div class-'apllication-details'=""></div></pre>
<pre><label class="form-label">Sending Form to Email Address</label></pre>
<pre><input class="form-control" id="email" name="email" type-'email'=""/></pre>
<pre>clabel class="form-label">Full Name</pre>
<pre>cinput class="form-control" type-'name' id="username" placeholder="Enter your username"/> </pre>
<pre>viaue: class= form-later //strong/claster/strong//idea/ /inst_class="form-control" time_lasting" arm_listing" algobalder_"tates your location"/></pre>
choos characterized type location fue location made location platenoider enter your location //
<pre></pre>
<pre>clabel_class="form-label">(strong>Email(/strong>(/label))</pre>
(input class-"form-control" type-uspremail" id-"uspremail" name-"uspremail" placeholder-"Enter email you wish to be contacted from" />
<pre></pre>
<pre>clabel class="form-label">Phone Number</pre>
<pre><input class="form-control" id="phone" name="phone" placeholder="Enter phone number you wish to be contacted from" type="phone"/></pre>
<lpre><lstong>TimeframeTimeframe</lstong></lpre>
<pre><textarea are="" available="" class="form-control" cols="100" id-"timeframe"="" name-"timeframe"="" placeholder-"enter="" rows-"3"="" timeframe="" to="" work"="" you=""></textarea></pre>
<label class="form-label">Motive</label>
<pre>(textarea class="form-control" id="motive" name="motive" rows="8" cols="100" placeholder=" Enter motive for appling"> </pre>
(label class- torm-label) (strong) work experience(strong) (clase)
closs to prace crass form-control in-workexperience name-workexperience rows is cors to pracehouse enter work experience (closs
c/brs
<pre>clabel_class_form_label*>cstrong>Reference_l</pre> /label>
(input class-"form-control" type-'references' id-"references1" name="references1" placeholder="Enter reference name" />
<pre>(label class-"form-label">Reference 2</pre>
<pre><input class="form-control" id="references2" name="references2" placeholder="Enter reference name" type="references"/></pre>
<pre><label class="form-label">Do you grant permission for donator to contact you via email</label></pre>
<pre>cinput class="form-control" type='permission1' id="permission1" name="permission1"placeholder='Type yes or no' /></pre>
(later class form later) (strong) to you grant permission for object of contact you via phone number/(strong)/(later)
chips
<pre> div class="button-container"></pre>
<pre><button class="submitapp" type="submit">Submit</button></pre>
·/br>
c/fame>
Figure 48: CV.ntmi code

Figure 49: applicationform.html

The JavaScript code shown in the figure below corresponds to the html code shown in figure 48. "SessionStorage.getItem("applicant-email")" retrieves the applicant's email stored in the sessionStorage. If it is missing an error message "Applicant email not found" is logged to the console. The email value is then assigned to the input field with the id 'email' using "document.getElementById('email').value = applicantEmail;". The form submission is intercepted by "document.getElementById('applicationForm').addEventListener('submit, function(event){}" preventing the default action. Inside the event listener, the HTML "applicationform" field values are collected to construct the email's forwarding address due to "const emailRecipient = document.getElementById('email').value;", and body due to const emailBody =, using a 'mailto' URL triggered by" window.location.href". The emails subject is set as "GCP application"



Figure 50: JavaScript that creates a pre-filled email draft of the user's filled-in CV form submitted

The only difference between the JavaScript depicted in the figure below and the JavaScript showcased in figure 50 is that it populates the email body with the values inputted to the fields of the "applicationform" in the applicationform.html.



Figure 51: JavaScript creates a pre-filled email draft of the user's filled-in application form submitted.



Figure 53: Donated items webpages and Land Listing webpage search bar HTML code.

The figure below depicts the JavaScript invoked when a user clicks on the HTML search button, "searchButtion", as is shown in figure 53. The "searchDonations" function retrieves the search query inputted from the HTML element with the id "searchInput" as is shown in figure 53. The function iterates through all the table body, "tbody", rows, tr, if the rows are present, until it locates all the rows which possess the matching value of the searched description "textcontent" within the first column, "(td:nth-child(1))". To accomplish this both the value and "textcontent" are converted to lowercase letters through ".toLowerCase();". After a successful "searchDonation" only the rows containing the search description are not visible due to "row.style.display = ';" while the rows not containing the search description are not visible due "row.style.display = 'none';". If no rows are found it logs a message stating "description not found".



Figure 54: Q&A search bar JavaScript code

The only difference between the JavaScript depicted in figures 55 and 56 below and the JavaScript showcased in the figure 54 is the user can search by both description and the location. description is "(td:nth-child(1))" while location is "(td:nth-child(4))" in the donated items webpages and "(td:nth-child(5))" in the Land Listing webpage. this corresponds with the "searchbar" HTML code depicted in figure 52, that requests users "search by description or location"





Figure 56: Land Listing webpage search bar JavaScript code

2.3.9 Pagination



Figure 57: Pagination HTML code

The figure below depicts the JavaScript code that corresponds to the HTML code in the footer of the following html files. This can be seen in figure 57. The JavaScript code establishes a pagination for the HTML tables rows in the previous mention html files. When these web pages load variables like "pageRows" are set up for the number of rows per page and current to track the current page.

"updatepragination" calculates the total number of pages, "totalPages", based on the table row count and rows per page. Then the code updates the pagination controls such as previous page buttons, next page buttons and displays the current page number in the UI. IF the current page is the first page it disables the previous page button. IF the current page is the last page it disables the next page button. "updateRows" cycle through table rows, making the rows within the current page range visible while hiding the rows outside current page range. Both "updateRows" and "updatepragination" are triggered by event listeners. A MutationObserver, tableObserver, moitors changes in the 'childlist' of the" tbody" such as new added rows trigger the "updatepragination" to ensure pagination stays updated.



Figure 58 & 59: Pagination JavaScript code

2.4 Graphical User Interface (GUI)

2.4.1 index Web Page Graphical User Interface (GUI)

The "Common Ground Patch" web application opens to the index web page where the user is informed of the function the "Common Ground Patch" web application serves. This page also

provides the user with the option to navigate to the register or login web pages by clicking on either the register or login buttons.



Figure 60: index web page

2.4.2 Login Web Page Graphical User Interface (GUI)

The "Common Ground Patch" web application login web page where the user must input a registered username and password as can be seen in the figure below. The username is required to be a valid email address. Once the correct information is inputted the user can log in by clicking on the "login" button at the bottom of the page. Alternatively, if the user has not registered yet they can click on the right of the "login" button is the "register" button users can click on to be redirected to the register web page.

CGP
Login
Step into the Flourishing world of green thumbs and gardening with the Common Ground Patch website! Here, you'll discover a thriving community buzzing with gardening enthusiasts of all skill levels, Ready to shere their passion and knowlege. But that's not all, unleash the spirit of generosity by listing your surplus plants, seeds, trees or gardening tools for fellow members to enjoy. Or, if you're in need, request donated gardening items to fuel your botanical adventures. And the collaboration doesn't stop there. Whether you're seeking a helping hand for your personal gardening projects or eager to lend your skills to others, the Common Ground Patch website provides the perfect platform to connect with like-minded individuals, turning your gardening aspirations into reality.
Email
Enter Email
Password
Forgot Password?
© NCI All rights reservered

Figures 61 & 62: login web page

The figure below depicts an error alert the user will receive if they attempt to log in using an unregistered email, password or a combination of both.

This page says	
Firebase: Error (auth/invalid-email).	
	ок

Figure 63: login error alert

The figure below features the "Forget Password?" button near the bottom of the login web page. The purpose of this button is to send a user a password recovery email if they click on it. However, this feature only works if a valid registered email address is inputted to the Email field. If a user clicks on the "Forget Password?" button without inputting a valid registered email address the user will be issued an alert as can be seen on the top of the screen in the figure below.

And the collaboration doesn't stop there. skills to others, the Common Ground P Sign in now to unlock the full potential	This page says Please enter your email before clicking 'Forgot Password?'	ardening projects or eager to lend your ike-minded individuals, turning your yriching gardening journey like never
Email		
Enter Email		
Password Enter Password		
	Forgot Password?	
	Login Register	
	© NCI All rights reservered	

Figure 64: login forgot password.

2.4.3 Register Web Page Graphical User Interface (GUI)

The "Common Ground Patch" web application register web page allows users to input data into all the text fields as seen in figures 61 & 62 below. Then click on the" register" button at the bottom of the screen in order to register as a user. For a user to successfully register each text field must be filled and the inputted password must match the confirm password. Additionally, the password must contain at least one lowercase letter, an uppercase letter, a number and a special character. To the left of the "register" button is a "login" button a user can click on to be brought to the login web page.

	Register
	Step into the Flourishing world of green thumbs and gardening with the Common Ground Patch website! Here, you'll discover a thriving community buzzing with gardening enthusiasts of all skill levels, Ready to shere their passion and knowlege.
	But that's not all, unleash the spirit of generosity by listing your surplus plants, seeds, trees or gardening tools for fellow members to enjoy. Or, if you're in need, request donated gardening items to fuel your botanical adventures.
	And the collaboration doesn't stop there. Whether you're seeking a helping hand for your personal gardening projects or eager to lend your skills to others, the Common Ground Patch website provides the perfect platform to connect with like-minded individuals, turning your gardening aspirations into reality.
	Don't miss out on the opportunity to join over ever-expanding community today. Register now to unlock the full potential of the Common Ground Patch website and embark on an enriching gardening journey like never before!
Em	ail
E	nter Email
Pas	sword
E	nter Password
Cor	nfirm Password
C	onfirm Password
Firs	st name
E	nter Firstname
Sur	name
E	nter Surname
	Login Register

Figures 65 & 66: register web page

The figure below depicts an error alert the user will receive if they attempt to register using a password that does not meet the requirements.

This page says		
Password must be at least 8 characters long and include at le lowercase letter, one uppercase letter, one digit, and one spe character.	ast one cial	
	ОК	

Figure 67: registration details not acceptable alert

2.4.4 Home Web Page Graphical User Interface (GUI)

Once the user successfully logs into the "Common Ground Patch" web application they are brought to the home page, where they can read about the purpose of this web application.



Figures 68 & 69: register web page

2.4.5 Nav Bar Graphical User Interface (GUI)

Once on the home web page, the user can navigate using the nav bar at the top of all of the "Common Ground Patch" web pages bar the login and register web pages. On the far right of the nav bar, seen in the figure below, displays the "Sign Out" button which will redirect users to the login web page once clicked on. The user then must log in again to access the home web page. To the left of the "Sign Out" button are the links to "Common Ground Patch" additional web pages the user can click on to visit these web pages. At the far left of the nav bar is the original customised logo of the "Common Ground Patch" web application.



Figure 70: "Common Ground Patch" nav bar

The figure below depicts the nav bar drop-down menu for the different donated items web pages and designated add space to be used to rent to organisations that pay to have their advertisements displayed.



Figure 71: "Common Ground Patch" nav bar drop-down menu and add space

2.4.6 Q&A Web Page Graphical User Interface (GUI)

The user can click on the "Q&A" link located in the nav bar to be redirected to the Q&A web page. The figure below depicts the Q&A web page user interface. Here the user can scroll down and view different questions users have already submitted. As pagination has been implemented to this webpage the user may navigate to the next or previous pages of the Q&A web page, using the "previous" and "next" buttons at the bottom of the screen, to view more submitted questions. input information into the text fields that ask to "Enter Question", "Enter Username" and "dd/mm/yyyy --:--", which means enter the date then time, before clicking on the "submit" button to create a new row to the table.

	Ad	d Spac	ce	Home	Q&A Listed Land	Donated Items	Sign
		Q & A					
(1	search by descript	tion	Search				
Please fill out th The date/time field refers to when the question is sut	i e followi	ng requi	red submit y	our	question		
Enter Question	• Enter use	ername	dd/mm/yyyy:		submit		
the following records all questions							
		Username		Date	•	Answers	
Question				202/	04 01712-12		
Question should my soil be wet if im growing a pine tree		emma@gmail.c	com	2024	1-04-01112:12	Answers	
Question should my soil be wet if im growing a pine tree how to grow carrots in containers		emma@gmail.o	udent.ncirl.ie	2024	I-05-05T21:37	Answers	
Question should my soil be wet if im growing a pine tree how to grow carrots in containers how to grow herbs for cooking		emma@gmail.o x20226314@str rachelC1234@g	om udent.ncirl.ie gmail.com	2024	I-05-05T21:37	Answers Answers Answers	
Question should my soil be wet if im growing a pine tree how to grow carrots in containers how to grow herbs for cooking should my soil be wet if im growing rosmary		emma@gmail.o x20226314@str rachelC1234@g emma@gmail.o	com udent.ncirl.ie gmail.com	2024 2024 2024 2024	I-05-05T21:37 I-05-12T12:12 I-04-01T12:12	Answers Answers Answers Answers Answers	

Figure 72 & 73: the Q&A web page screen

The figure below displays the working search function available on the Q&A web page. Users can input a description into the search field and click on the "search" button. If any row in the table contains a matching description in its first column, then only these rows will be viewable in the table. If the user clicks on any of the "answer" buttons located on the last column of each row they will be brought to the answer webpage for that specific question.

	Q & A			
pine tree		Search		
Please fill out the follow	ving required	submit you	r question	
The date/time field refers to when the question is submitted.				
Enter Question Enter	username dd/m	m/yyyy: 🗖	submit	
the following records all questions				
Question	Username	Date		Answers
should my soil be wet if im growing a pine tree	emma@gmail.co	n 2024-0	4-01T12:12	Answers
Prev	ious Page 1 of 1 Nex			

Figures 74: search bar Q&A web page

2.4.7 Answers Web Page Graphical User Interface (GUI)

The figures below displays the answer web page which allows users to input appropriate text into all fields to answer the question and to submit the answer by clicking on the "submit" button located below the fields. If the user scrolls down the page to the table all answers submitted for the specific question are viewable at the bottom of the page.

	н	ome Q&A Listed Land Donated Iter
	Add Space	
	Answers	
Enter Your Answer		
Type here		
Enter Your Username		
dd/mm/vvvv:		
submit		
Jubin		
	the following records all questions	
Answer	Username	Date
yes	rachelC1234@gmail.com	2024-05-12T12:12
yes	emma@gmail.com	2024-04-01T12:21
the soil should be moist not excessively wet	emma@gmail.com	2024-04-01T12:30

Figures 75 & 76: answers web page

2.4.8 Land Listing Web Page Graphical User Interface (GUI)

The user can click on the "Listed Land" link located in the nav bar to be redirected to the "Land Listing" web page, which can be seen in the figures below. The "Land Listing" web page, functions similarly to the "Q&A" web page as it allows users to submit input values and create a new row for the "Land Listing" web page. Each column of the newly created row is populated with a corresponding text field bar the last column which contains an "Apply" button. However, the "Land Listing" web page is designed to allow users to request physical help gardening on their private land therefore the following fields must contain a value before the user can click on the "submit" button. These text fields contain the placeholders "Description of Land", "Username", "dd/mm/yyyy ---:--" which refers to the starting date and time for requested labour, "dd/mm/yyyy ---:--" which refers to the starting mechanisms are implemented with the "next" and "previous" buttons.

	A	dd Space	Home	Q&A Listed Land	Donated Items
	Private Land	d Available	e to Work o	n	
	search by de	escription or location	Search		
ne first date/time field refer	s to when the volunteer work will sta	rt. The second date/time f	field refers to when the volu	nteer work will end.	
e first date/time field refer	s to when the volunteer work will sta • Username dd/m	rt. The second date/time f	ield refers to when the volu d/mm/yyyy:	nteer work will end.	submit
e first date/time field refer • Description of Land List of Private Land in which Description of Land	to when the volunteer work will sta Username dd/m Owners are requesting physical hel Land Owner	rt. The second date/time f Im/yyyy: d d p to garden on a voluntary Start Date	ield refers to when the volu d/mm/yyyy: y basis End Date	e Location	submit
 be first date/time field refer Description of Land List of Private Land in which Description of Land cottage garden 	s to when the volunteer work will sta • Username dd/m • Owners are requesting physical hel Land Owner x20226314@student.nirl.ie	rt. The second date/time f Im/yyyy: d d p to garden on a voluntary Start Date 2024-05-06T12:00	ield refers to when the volu d/mm/yyyy: y basis End Date 0 2024-05-10T18:00	e Location Location Location dublin, Ireland	submit Apply Apply
Description of Land Ust of Private Land in which Description of Land cottage garden townhouse	to when the volunteer work will sta Username dd/rr Owners are requesting physical hel Land Owner x20226314@student.nirl.ie angelacarroll1234@gmail.com	rt. The second date/time f Im/yyyy: d d p to garden on a voluntary Start Date 2024-05-06T12:00 2024-04-24T01:31	tield refers to when the volu d/mm/yyyy: I End Date 2024-05-10T18:00 1 2024-05-10T18:00	e Location Location Location dublin, Ireland dublin	submit Apply Apply Apply
Description of Land Ust of Private Land in which Description of Land cottage garden townhouse cottage garden	b Username dd/m Username dd/m Cuners are requesting physical hel Land Owner x20226314@student.nirl.ie angelacarroll1234@gmail.com emma@gmail.com	rt. The second date/time f Im//yyy: d d p to garden on a voluntary Start Date 2024-05-06T12:02 2024-04-24T01:31 2024-04-29T12:12	iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	e Location Location Location dublin, Ireland dublin dublin	submit Apply Apply Apply Apply
Description of Land Description of Land Description of Land cottage garden townhouse cottage garden greenhouse	 Username Username<	rt. The second date/time f nm/yyyy: d d p to garden on a voluntary Start Date 2024-05-06T12:02 2024-04-29T12:12 2024-04-29T12:12	Itel drefers to when the volu d/m/y vision y basis End Date 2024-05-10718:00 1 2024-05-12701:31 2 2024-04-30712:12 2 2024-05-29712:12	Location u Location dublin, Ireland dublin dublin galway, Ireland	submit Apply Apply Apply Apply Apply
Description of Land Description of Land Ust of Private Land in which Description of Land cottage garden townhouse cottage garden greenhouse greenhouse greenhouse 4x10m	b Username dd/m Username dd/m Use	rt. The second date/time f m/yyyy: d p to garden on a voluntary Start Date 2024-05-06T12:02 2024-04-24T01:31 2024-04-29T12:12 2024-03-12T12:12	Iteld refers to when the volu d/mm/y-y Itel colspan="2">Itel colspan="2" Itel colspan="2" Volume Colspan="2" <t< td=""><td>e Location Location Location dublin, Ireland dublin galway, Ireland dublin</td><td>submit Apply Apply Apply Apply Apply Apply Apply</td></t<>	e Location Location Location dublin, Ireland dublin galway, Ireland dublin	submit Apply Apply Apply Apply Apply Apply Apply

Figures 77 & 78: "Land Listing" web page screen

The figure below displays the working search function available on the "Land Listing" web page. If a user inputs either a description or location into the search field and click on the "search" button only rows containing the matching description or location become viewable in the table. If the user clicks on any of the "Apply" buttons located on the last column of each row they will be brought to the "CV" webpage for that specific question.

	Private L	and Av	ailab	le to \	Nork	on		
	town	house		Searc	ch			
Please fill ou	t the following to the volunteer work	to create	a requ	l est for 	physical	help f	or gard	ening
Please fill our he first date/time field refer • Description of Land	t the following rs to when the volunteer work • Username	to create will start. The sec dd/mm/yyyy	a requ	ne field refers t	o when the vol	help f	or gard	ening ^{submit}
Please fill our he first date/time field refer • Description of Land List of Private Land in which	t the following rs to when the volunteer work • Username h Owners are requesting phys	to create will start. The sec dd/mm/yyyy	a requier of the second date/time of the second date/t	est for j ne field refers t dd/mm/yyyyy	o when the vol	help f	or gard	ening ^{submit}
Please fill our he first date/time field refer • Description of Land List of Private Land in whick Description of Land	t the following rs to when the volunteer work • Username h Owners are requesting phys Land Owner	to create will start. The sec dd/mm/yyyy	a requier ond date/times ond date/times ond date/times on a volume on a volume of the start Date of th	dd/mm/yyyy atary basis	o when the vol	help f	or gard will end. Location	ening submit

Figure 79: "Land Listing" search by description

	Private Lan	d Available	to Work on		
	london		Search		
Please fill out t	ne following to c	create a request	for physical hel	o for gard	ening
The first date/time field refers to	when the volunteer work will st	art. The second date/time fiel	I refers to when the volunteer	vork will end.	
Description of Land	Jsername dd/r	mm/yyyy: 🗖 dd/i	۱m/yyyy: 🗖 • Loca	ition	submit
List of Private Land in which Ow	ners are requesting physical he	elp to garden on a voluntary b	asis		
Description of Land	Land Owner	Start Date	End Date	Location	Apply
courtyard	Black6543@gmail.com	2024-04-29T12:12	2024-05-02T12:12	london	Apply

Figure 80: "Land Listing" search by location

2.4.9 CV Web Page Graphical User Interface (GUI)

The figures below display the "CV" web page which allows users to scroll down and input appropriate text values into all fields present on the "CV" web page. These text field values are then used to construct a pre-filled email by utilising the user's device's default email, once the "submit" button, located below the fields, is clicked on.

	Home Q&A Listed Land Dona	ted Item
Add Space		
Apllication CV		
Sending Form to Email Address		
x20226314@student.nirl.ie		
Full Name		
Enter your username		
1 and a		
Enter your location		
Email		
Enter email you wish to be contacted from		
Phone Number		
Enter phone number you wish to be contacted from		
Timeframe		
Enter timeframe you are available to work		
	,	
Motive		
Enter motive for appling		
	h	
Work experience		
Enter work experience		
Reference 1		
Enter reference name		
Reference 2		
Enter reference name		
Do you grant permission for donator to contact you via email		
Type yes or no		
Do you grant permission for donator to contact you via phone number Type yes or no		
Submit		

Figures 81 & 82 & 83 & 84: CV web page screen

2.4.10 Generated CV Email Graphical User Interface (GUI)

The figure below is a real example of an email constructed after filling out and submitting the application form available on the "CV" web page. This pre-filled email appears as a pop-up and the user just has to click on send to send their application to the user who requested physical help gardening on their private land.

Mail - Emm	a Carroll - Ou	tlook																	-	- 0	ס
Message	Insert	Format text	Draw	Options																	
9 × G) ~ 🖗		~	~ B	I	⊻ S	<u>/</u> ~ ~	<u> </u>	₽~	0 ~	⇔ ~	2 ~	88 olo	8	ø×	• ~	ð	\checkmark	\$ v		
Send	~																	1	Ŷ	Û	Ø
То	O angela	carroll1234@gn	nail.com <a< th=""><th>angelacarro</th><th>11234@</th><th>gmail.com></th><th>×</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><td></td><th></th><th></th><td></td><td>Bcc</td></a<>	angelacarro	11234@	gmail.com>	×														Bcc
Cc																					
GCP applic	ation																				
ull Nam mail: en	e: Emma C Imacarroll	arroll @gmail.com																			
ocation: hone Ni	phisbourg umber: 08	ogh, Dublin Ire 5 2121212	eland																		
vailable Iotive fo	Timefram or Working	e to Work: Ma : wish to gard	iy to Sept Ien on a la	ember 20 arge expa	24 nse of la	and															
/ork Exp eference	erience: p	art -time retai tion: Bob Bob	l work at bington	the local	garden (center															
eference	es Informa	tion: Tim Time	othy																		
ermissic ermissic	on Granted on Granted	l for Donator 1 I for Donator 1	to Contac to Contac	t Applicaı t Applicaı	nt Via Er nt Via Ph	nail: yes 10ne Num	ber: yes														

Figure 85: CV web page full screen of pop-up pre-filled email.

2.4.11 Seeds Web Page Graphical User Interface (GUI)

The Figures below display the "Seeds" web page, one of the four links available in the "Donated Items" drop-down menu located in the nav bar, along with "Plants", "Trees" and "Tools" web pages. The "Seeds" web page has the same structure as the" Land Listing" web pages however the "Seeds" web page is designed to allow users to submit information about plant seeds they wish to donate. The user can submit a new row to the table by inputting appropriate information into all of the text fields to the left of the "submit" button and then clicking on the "submit" button. Additionally, the search bar functions similarly to the search bar of the "land listed" web page, allowing only the table rows that contain match the description and location as the values inputted into the search bar to be visible once the "search" button is clicked on. The figures *&* and the figures *&* display the pagination mechanisms implemented for the "Seeds" web page as is found in the Q&A, Land listing, Plants, Trees and Tools web pages of the "Common Ground Patch" web application.

			1	Home Q&A Listed	Land Dona	ated Items
	Add	Space				
	Seeds Availb	le for Dona	atio	n		
	search by description of	or location Search				
Please fill out th	e following requir	ed information	n to r	make you de	onatior	n
The date/time field refers to when the iter	n will be available.					
description of Item	• username c	dd/mm/yyyy: 🗖	• locati	on s	submit	
Description of Item	Donator	Date & Time of Availabi	ility	Location		Apply
Description of Item rosemary seeds	Donator emma@gmail.com	Date & Time of Availabi 2024-04-29T12:12	ility	Location dublin		Apply Apply
Description of Item rosemary seeds poppy seeds	Donator emma@gmail.com emma@gmail.com	Date & Time of Availabit 2024-04-29T12:12 2024-04-29T12:12	ility	Location dublin dublin		Apply Apply Apply
Description of Item rosemary seeds poppy seeds rows seed	Donator emma@gmail.com emma@gmail.com emma@gmail.com	Date & Time of Availabit 2024-04-29T12:12 2024-04-29T12:12 2024-04-29T12:12	ility	Location dublin dublin dublin		Apply Apply Apply Apply
Description of Item rosemary seeds poppy seeds rows seed 5 packetts of cottage flower seeds	Donator emma@gmail.com emma@gmail.com carrollemma8462@gmail.com	Date & Time of Availabit 2024-04-29T12:12 2024-04-29T12:12 2024-04-29T12:12 2024-04-29T12:12 2024-04-29T13:13	ility	Location dublin dublin dublin 23 kildare road, dublii	n, ireland	Apply Apply Apply Apply Apply
Description of Item rosemary seeds poppy seeds rows seed 5 packetts of cottage flower seeds lavender seeds	Donator emma@gmail.com emma@gmail.com carrollemma8462@gmail.com emma@gmail.com	Date & Time of Availabit 2024-04-29T12:12 2024-04-29T12:12 2024-04-29T12:12 2024-04-29T13:13 2024-04-29T12:12	ility	Location dublin dublin dublin 23 kildare road, dublin dublin	n, ireland	Арріу Арріу Арріу Арріу Арріу

Figures 86 & 87: Seeds web page screen page 1 Of 2

CGP	Add	Space	Home	Q&A Listed Land	Donated Items *	Si
	Seeds Avail	ble for Don	ation			
	search by description	n or location Searc	h			
Please fill ou The date/time field refers to when	It the following requ	ired informatio	n to make	e you donat	ion	
description of I	tem • username	dd/mm/yyyy: 🗖	 location 	submit		
Description of Item	Donator	Date & Time of Availabi	lity	Location	Apply	
sunflower seeds	emma@gmail.com	2024-03-27T12:12		dublin	Apply	
marygold seeds	emma@gmail.com	2024-04-29T12:12		dublin	Apply	
rose seeds	x20226314@student.nirl.ie	2024-05-05T22:12		Dublin Ireland	Apply	
	Previous	Page 2 of 2 Next				

Figures 88 & 89: Seeds web page screen page 2 Of 2

2.4.12 Plants Web Page Graphical User Interface (GUI)

The user can navigate to the "Plants" web page by clicking on the "Plants" link of the "Donated Items" drop-down menu located in the nav bar. The figures below display the "Plants" web page

which has the same functionality and structure as the "Seeds" web page however this webpage	is
focused on displaying rows of plants available for donation rather than seeds.	

A	dd Space	Home Q8	zA Listed Land Do	onated Items
Plants Av	vailble for Do	nation		
search by de	escription or location	iearch		
Please fill out the following r	equired informat	ion to make y	you donatio	on
the date/time field refers to when the item will be available. e description of Item e username	dd/mm/yyyy:	🗇 🔹 location	submit	
the date/time held refers to when the item will be available.	dd/mm/yyyy: Donator	 Iocation Date & Time of Availability 	submit	Apply
Description of Item lavender	dd/mm/yyyy: Donator emma@gmail.com	• location Date & Time of Availability 2024-04-29T12:12	submit Location dublin	Apply Apply
Ine date/time held refers to when the item will be available.	dd/mm/yyyy: Donator emma@gmail.com emma@gmail.com	• location • location Date & Time of Availability 2024-04-29712:12 2024-03-24712:13	Location dublin dublin	Apply Apply Apply
Ine date/time held refers to when the item will be available.	dd/mm/yyyy: Donator emma@gmail.com emma@gmail.com carrollangela1234@gmail.com	e location Date & Time of Availability 2024-04-29T12:12 2024-03-24T12:13 2024-04-29T21:44	Location dublin dublin Cabra Dublin 7, Ireland	Apply Apply Apply Apply
The date/time field refers to when the item will be available.	dd/mm/yyyy: dd/mm/yyyy: emma@gmail.com emma@gmail.com carrollangela1234@gmail.com emma@gmail.com	• location • location	Location dublin dublin dublin cabra Dublin 7, treland dublin	Apply Apply Apply Apply Apply
The date/time held refers to when the item will be available.	dd/mm/yyyy: dd/mm/yyyy: emma@gmail.com emma@gmail.com emma@gmail.com emma@gmail.com	• location • alocation • alocation	submit Location dublin dublin Cabina Oublin 7, Ireland dublin dublin	Apply Apply

Figures 90 & 91: Plants web page screen

2.4.13 Trees Web Page Graphical User Interface (GUI)

The user can navigate to the "Trees" web page by clicking on the "Trees" link of the "Donated Items" drop-down menu located in the nav bar. The figures below display the "Trees" web page which has the same functionality and structure as the "Seeds" web page however this webpage is focused on displaying rows of trees available for donation rather than seeds.

Tree Second Second Seco	Add es Availk earch by description wing requi	Space	ona Searc	ntion	ıke yo	ı donat	ion
Tree Tree Please fill out the follov The date/time field refers to when the item will be avail • description of Item • usernar Description of Item Donator	earch by description	nor location	Searc ation	ntion	ake yo	u donat	ion
Please fill out the follow The date/time field refers to when the item will be avail tem of tem Description of Item Donator	earch by description	n or location	Searc ation	h n to ma	ıke yo	u donat	ion
Please fill out the follow The date/time field refers to when the item will be avail	wing requi	ired informa	atior	n to ma	ake yo	u donat	ion
description of Item output outp	iaule.						
Description of Item Donator	me	dd/mm/yyyy:		 location 		submit	
		Date & Time of Av	ailabilit	y	Location		Apply
Guave tree carrollemma8462@gn	mail.com	2024-04-29T12:47			londlon en	land	Apply
pomegranate carrollemma8462@gn	mail.com	2024-04-29T12:12			athens gre	se	Apply
Oak tree carrollemma8462@gn	mail.com	2024-04-29T12:12			cork		Apply
pine tree Brian43@gmail.com		2024-04-29T12:50			galway Irel	nd	Apply
willow tree Black6543@gmail.com	n	2024-04-29T12:49			Edinburgh,	Scotland	Apply

Figures 92 & 93: Trees web page screen

2.4.14 Tools Web Page Graphical User Interface (GUI)

The user can navigate to the "Tools" web page by clicking on the "Tools" link of the "Donated Items" drop-down menu located in the nav bar. The figures below display the "Tools" web page which has the same functionality and structure as the "Seeds" web page however this webpage is focused on displaying rows of tools available for donation rather than seeds.

	Ad	d Space	Home	Q&A Listed Land	Donated Iter
	Tools Avai	lble for Dona	ation		
	search by descript	tion or location Sear	ch		
Please fill o	ut the following req	uired informatio	n to mak	e you dona	ation
Please fill or e date/time field refers to whe • description of	ut the following requirements of the item will be available.	uired informatio	n to make	e you dona	ation
Please fill or date/time field refers to whe educiription of Description of Item	ut the following req n the item will be available. item • username Donator	uired informatio	n to make • location	e you dona subm	ation it
Please fill or e date/time field refers to whe e description of Description of Item rake	ut the following req n the item will be available. 'Item • username Donator bob@gmail.com	dd/mm/yyyy: Date & Time of Availabi 2024-02-29T12:12	n to make • location	subm Location	ation it Apply Apply
Please fill or e date/time field refers to whe e description of Description of Item rake green pot	ut the following req n the item will be available. 'Item • username Donator bob@gmail.com bob@gmail.com	uired informatio dd/mm/yyyy: Date & Time of Available 2024-02-29T12:12 2024-02-07T12:12	n to make • location	e you dona subm Location dublin wicklow	ation t Apply Apply Apply
Please fill or e date/time field refers to whe e description of Description of Item rake green pot shovel	ut the following req n the item will be available. item velocity of the item will be available. item velocity of the item velocity	dd/mm/yyyy Image: Compare the option of	n to make	subm Location dublin wicklow Dublin Ireland	tion Apply Apply Apply Apply
Please fill on e date/time field refers to whe e description of Description of Item rake green pot shovel 5 big pots	ut the following req n the item will be available. item → e username Donator bob@gmail.com \$20226314@student.nirlie emma@gmail.com	dd/mm/yyyy Image: Compare the co	n to make	e you dona subm dublin wicklow Dublin Ireland dublin	ti Apply Apply Apply Apply Apply Apply

Figures 94 & 95: Tools web page screen

2.4.15 Application Form Web Page Graphical User Interface (GUI)

The figures below display the "Application Form" web page which allows users to scroll down and input appropriate text values into all fields present on the "Application Form" web page. These text field values are then used to construct a pre-filled email by utilising the user's device's default email, once the "submit" button, located below the fields, is clicked on.

CGP		Home Q&A Listed Land Dor	ated Items -
	Add Space		
	Application Form		
Sending Form to Email Address			
bob@gmail.com			
Application to recieve the following:			
Enter Item Description			
Eull Name			
Enter your full name			
Email Enter email you wish to be contacted	from		
Phone Number			
Enter phone number you wish to be co	ontacted from		
Available Timeframe to Pickup Donat Enter timeframe you are available to v	ion vork		
Do you grant permission for donator	to contact you via email		
Type yes or no			
Do you grant permission for donator	to contact you via phone number		
Type yes or no			
	Submit		
	© NCI All rights reservered		

Figures 96 & 97 & 98: Application Form web page screen

2.4.16 Generated Application Form Email Graphical User Interface (GUI)

The figure below is a real example of an email constructed after filling out and submitting the application form available on the "Application Form" web page. This pre-filled email appears as a pop-up and the user just has to click on send to send their application to the user who was advertising a donated item on any of the "Donated Items" web pages.

Aessage	Insert F	ormat text	Draw	Option	s																
9 × 1	• ₹ [~	~ E	8 I	Ū 4	s <u>4</u> ·	- <u>A</u>	·· 松 ~	0 ~	Θ 🗸 🗋	· - 68	000	0 Ø	~	• ~	õ	\downarrow	& ~		
Send	\sim																	1	- 1	J	
То	O bob@gm	ail.com <bob< td=""><td>@gmail.cor</td><td>1> X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Bcc</td></bob<>	@gmail.cor	1> X																	Bcc
Cc																					
SCP appli	ation																				
pplying	for: rake																				
nail: en none Ni vailable ermissic ermissic	e: Emma Carı macarroll@g ımber: 085 2 Timeframe t n Granted fo n Granted fo	roll gmail.com 121221 o Work: Moi or Donator to or Donator to	nday from Contact Contact	3pm to Applica Applica	o 5pm o nt Via Ei nt Via Pl	r Thursda mail: yes hone Nu	ay 1pm to mber: ye:	o 4pm													
mail: en hone N vailable ermissic ermissic	e: Emma Carr macarroll@g imber: 085 2 Timeframe to n Granted fo n Granted fo	roll gmail.com 121221 o Work: Moi or Donator to or Donator to	nday from Contact Contact	3pm to Applica Applica	o 5pm o nt Via E nt Via P	r Thursda mail: yes hone Nu	ay 1pm to mber: ye:	o 4pm													
imail: en Phone N Wailable Iermissic	e: Emma Carr macarroll@g imber: 085 2 Timeframe t n Granted fo n Granted fo	roll gmail.com 121221 o Work: Moi or Donator to or Donator to	nday from Contact Contact	3pm to Applica Applica	o 5pm o nt Via Ei nt Via Pl	r Thursda mail: yes hone Nu	ay 1pm to mber: ye:	o 4pm s													
imail: en Phone N Available Permissic	e: Emma Carr macarroll@g imber: 085 2 Timeframe t n Granted fo n Granted fo	roll gmail.com 121221 o Work: Moi or Donator to or Donator to	nday from o Contact o Contact	3pm to Applica Applica	o 5pm o nt Via Er nt Via P	r Thursda mail: yes hone Nu	ay 1pm to	o 4pm s													

Figure 99: Application Form web page full screen of pop-up pre-filled email.

3. Testing

3.1 Functional Testing

I decided to implement functional testing a black box testing method for the web application "Common Ground Patch". This testing approach involves examining the application's inputs and outputs to evaluate its behaviour and functionality. It focuses on how the application functions from a user's perspective identifying any discrepancies between expected and actual behaviour. Blackbox testing is valuable for ensuring that all features of the web application work correctly, regardless of changes to the underlying code or system architecture (Bakharev, 2023). The figure below depicts the successfully working functions for the web application "Common Ground Patch" with the exception of the pagination function not operating as desired.

Case ID	Date	Test Title	Test Description	Test Steps	Expected Result	Actual Result	Pass /Fail
01	05/05/2024	Test the "Common Ground Patch" register web page frontend functions with the Firebase project "practise" Firebase Authentication to add a new document.	Register a new user on the Firebase Authentication by using the register web page of the "Common Ground Patch" web application.	Step 1) Navigate to the "Common Ground Patch" register web page. Step 2) Fill in all text fields with sufficient values. Step 3) click on the "register" button.	Receive an email verification to the user's email address used as a username during registration.	Received an email verification to the user's email address used as a username during registration.	Pass
02	05/05/2024	Test the "Common Ground Patch" login web page frontend	Log in as a registered user on the Firebase Authentication	Step 1) Navigate to the "Common Ground Patch" login web page.	User will be redirected to the "Common Ground	User was redirected to the "Common Ground	Pass

		functions with the Firebase project "practise" Firebase Authentication to authentify a user by their registered document.	by using the login web page of the "Common Ground Patch" web application.	Step 2) Fill in all text fields with sufficient values of a registered user. Step 3) click on the "login" button.	Patch" home web page.	Patch" home web page.	
03	05/05/2024	Test the "Common Ground Patch" Q&A web page frontend functions with the Firebase project "practise" Firestore Database "questions" collection to add a new document.	Test that a user can input a document in the Firestore Database "questions" collection by using the "Common Ground Patch" Q&A web page and have the document appear as a new row of the web page's HTML table.	Step 1) Navigate to the "Common Ground Patch" Q&A web page. Step 2) Fill in all input fields beside the "submit" button with sufficient values as described by the input field's placeholders. Step 3) click on the "submit" button.	A new document will be added to the Firebase project "practise" Firestore Database "questions" collection using the submitted input values. The web application will then retrieve this newly added document from the Firestore Database "questions" collection to create a new row on the Q&A web page HTML table.	A new document is added to the Firebase project "practise" Firestore Database "questions" collection using the submitted input values. The web application retrieved this newly added document from the Firestore Database "questions" collection and created a new row on the Q&A web page HTML table.	Pass
04	05/05/2024	Test the "Common Ground Patch" answer web page frontend functions with the Firebase project "practise" Firestore	Test that a user can input a document in the Firestore Database "answers" collection by using the "Common	Step 1) Navigate to the "Common Ground Patch" answers web page. Step 2) Fill in all input fields beside the "submit" button	A new document will be added to the Firebase project "practise" Firestore Database "answers"	A new document was added to the Firebase project "practise" Firestore Database "answers"	Pass

		Database "answers" collection to add a new document.	Ground Patch" answers web page and have the document appear as a new row of the web page's HTML table.	with sufficient values as described by the input field's placeholders. Step 3) click on the "submit" button.	collection using the submitted input values. The web application will then retrieve this newly added document from the Firestore Database "answers" collection to create a new row on the answers web page HTML table.	collection using the submitted input values. The web application retrieved the newly added document from the Firestore Database "answers" collection and created a new row on the answers web page HTML table.	
05	05/05/2024	Test the "Common Ground Patch" Land Listing web page frontend functions with the Firebase project "practise" Firestore Database "LandListing" collection to add a new document.	Test that a user can input a document in the Firestore Database "LandListing" collection by using the "Common Ground Patch" Land Listing web page and have the document appear as a new row of the web page's HTML table.	Step 1) Navigate to the "Common Ground Patch" Land Listing web page. Step 2) Fill in all input fields beside the "submit" button with sufficient values as described by the input field's placeholders. Step 3) click on the "submit" button.	A new document will be added to the Firebase project "practise" Firestore Database "LandListing" collection using the submitted input values. The web application will then retrieve this newly added document from the Firestore Database "LandListing" collection to create a new row on the Land Listing	A new document was added to the Firebase project "practise" Firestore Database "LandListing" collection using the submitted input values. The web application retrieved the newly added document from the Firestore Database "LandListing" collection and created a new row on the Land Listing	Pass

	r		1		1	1	1
					web page HTML table.	web page HTML table.	
06	05/05/2024	Test the "Common Ground Patch" Plants web page frontend functions with the Firebase project "practise" Firestore Database "plants" collection to add a new document.	Test that a user can input a document in the Firestore Database "plants" collection by using the "Common Ground Patch" Plants web page and have the document appear as a new row of the web page's HTML table.	Step 1) Navigate to the "Common Ground Patch" Plants web page. Step 2) Fill in all input fields beside the "submit" button with sufficient values as described by the input field's placeholders. Step 3) click on the "submit" button.	A new document will be added to the Firebase project "practise" Firestore Database "plants" collection using the submitted input values. The web application will then retrieve this newly added document from the Firestore Database "plants" collection to create a new row on the Plants web page HTML table.	A new document was added to the Firebase project "practise" Firestore Database "plants" collection using the submitted input values. The web application retrieved this newly added document from the Firestore Database "plants" collection and created a new row on the Plants web page HTML table.	Pass
07	05/05/2024	Test the "Common Ground Patch" Tools web page frontend functions with the Firebase project "practise" Firestore Database "tools" collection to add a new document.	Test that a user can input a document in the Firestore Database "tools" collection by using the "Common Ground Patch" Tools web page and have the document appear as a new row of the web	Step 1) Navigate to the "Common Ground Patch" Tools web page. Step 2) Fill in all input fields beside the "submit" button with sufficient values as described by the input field's placeholders.	A new document will be added to the Firebase project "practise" Firestore Database "tools" collection using the submitted input values. The web application will then	A new document was added to the Firebase project "practise" Firestore Database "tools" collection using the submitted input values. The web application retrieved this	Pass

			page's HTML table.	Step 3) click on the "submit" button.	retrieve this newly added document from the Firestore Database "tools" collection to create a new row on the Tools web page HTML table.	newly added document from the Firestore Database "tools" collection and created a new row on the Tools web page HTML table.	
08	05/05/2024	Test the "Common Ground Patch" Trees web page frontend functions with the Firebase project "practise" Firestore Database "trees" collection to add a new document.	Test that a user can input a document in the Firestore Database "trees" collection by using the "Common Ground Patch" Trees web page and have the document appear as a new row of the web page's HTML table.	Step 1) Navigate to the "Common Ground Patch" Trees web page. Step 2) Fill in all input fields beside the "submit" button with sufficient values as described by the input field's placeholders. Step 3) click on the "submit" button.	A new document will be added to the Firebase project "practise" Firestore Database "trees" collection using the submitted input values. The web application will then retrieve this newly added document from the Firestore Database "trees" collection to create a new row on the Trees web page HTML table.	A new document was added to the Firebase project "practise" Firestore Database "trees" collection using the submitted input values. The web application retrieved this newly added document from the Firestore Database "trees" collection and created a new row on the Trees web page HTML table.	Pass
09	05/05/2024	Test the "Common Ground Patch" Seeds web page frontend functions with the	Test that a user can input a document in the Firestore Database	Step 1) Navigate to the "Common Ground Patch" Seeds web page.	A new document will be added to the Firebase project	A new document was added to the Firebase project	Pass
		Firebase project	"seeds"	Step 2) Fill in all	"practise"	"practise"	
----	------------	--	--	--	--	--	------
		"practise"	collection by	input fields	Firestore	Firestore	
		Firestore	using the	beside the	Database	Database	
		Database "seeds"	"Common	"submit" button	"seeds"	"seeds"	
		collection to add a	Ground Patch"	with sufficient	collection	collection	
		new document.	Seeds web page	values as	using the	using the	
			and have the	described by the	submitted	submitted	
			document	input field's	input values.	input values.	
			appear as a new	placeholders.	The web	The web	
			row of the web		application	application	
			page's HTML	Step 3) click on	will then	retrieved this	
			table.	the "submit"	retrieve this	newly added	
				button.	newly added	document	
					document	from the	
					from the	Firestore	
					Firestore	Database	
					Database	"seeds"	
					"seeds"	collection and	
					collection to	created a new	
					create a new	row on the	
					row on the	Seeds web	
					Seeds web	page HTML	
					page HTML	table.	
					table.		
10	05/05/2024	Test the "Common Ground Patch" CV web page can function with the device's email stored in session storage.	The "Common Ground Patch" CV web page can integrate with the device's email stored in session storage to create a prefilled email that can be a specified user's email address	Step 1) Navigate to the "Common Ground Patch" Land Listing web page. Step 2) Click on the "Apply" button on any chosen row of the table. Step 3) Fill in all input fields of the CV Application form with sufficient values as described by the input field's placeholders	A prefilled pop-up email with the relative information present in the forwarding email address, Subject and body. The email can be successfully sent by clicking on the send button.	the pop-up prefilled email appeared with the relative information present in the forwarding email address, Subject and body. The email was successfully sent and appeared in the inbox of the forwarding email address.	pass

11	05/05/2024	Test the "Common Ground Patch" Application web page can function with the device's email stored in session storage.	The "Common Ground Patch" Application web page can integrate with the device's email stored in session storage to create a prefilled email that can be a specified user's email address	Step 4) click on the "submit" button. Step 1) Navigate to the "Common Ground Patch" Plants web page. Step 2) Click on the "Apply" button on any chosen row of the table. Step 3) Fill in all input fields of the Application form with sufficient values as described by the input field's placeholders. Step 4) click on the "submit" button.	A prefilled pop-up email with the relative information present in the forwarding email address, Subject and body. The email can be successfully sent by clicking on the send button.	the pop-up prefilled email appeared with the relative information present in the forwarding email address, Subject and body. The email was successfully sent and appeared in the inbox of the forwarding email address.	Pass
12	06/05/2024	Test the "Common Ground Patch" Application web page can function with the device's email stored in session storage.	The "Common Ground Patch" Application web page can integrate with the device's email stored in session storage to create a prefilled email that can be a specified user's email address	Step 1) Navigate to the "Common Ground Patch" Seeds web page. Step 2) Click on the "Apply" button on any chosen row of the table. Step 3) Fill in all input fields of the Application form with sufficient values as described by the input field's placeholders.	A prefilled pop-up email with the relative information present in the forwarding email address, Subject and body. The email can be successfully sent by clicking on the send button.	the pop-up prefilled email appeared with the relative information present in the forwarding email address, Subject and body. The email was successfully sent and appeared in the inbox of the forwarding email address.	Pass

13	06/05/2024	Test the "Common Ground Patch" Application web page can function with the device's email stored in session storage.	The "Common Ground Patch" Application web page can integrate with the device's email stored in session storage to create a prefilled email that can be a specified user's email address	Step 4) click on the "submit" button. Step 1) Navigate to the "Common Ground Patch" Trees web page. Step 2) Click on the "Apply" button on any chosen row of the table. Step 3) Fill in all input fields of the Application form with sufficient values as described by the input field's placeholders. Step 4) click on the "submit" button.	A prefilled pop-up email with the relative information present in the forwarding email address, Subject and body. The email can be successfully sent by clicking on the send button.	the pop-up prefilled email appeared with the relative information present in the forwarding email address, Subject and body. The email was successfully sent and appeared in the inbox of the forwarding email address.	Pass
14	06/05/2024	Test the "Common Ground Patch" Application web page can function with the device's email stored in session storage.	The "Common Ground Patch" Application web page can integrate with the device's email stored in session storage to create a prefilled email that can be a specified user's email address	Step 1) Navigate to the "Common Ground Patch" Tools web page. Step 2) Click on the "Apply" button on any chosen row of the table. Step 3) Fill in all input fields of the Application form with sufficient values as described by the input field's placeholders.	A prefilled pop-up email with the relative information present in the forwarding email address, Subject and body. The email can be successfully sent by clicking on the send button.	the pop-up prefilled email appeared with the relative information present in the forwarding email address, Subject and body. The email was successfully sent and appeared in the inbox of the forwarding email address.	Pass

				Step 4) click on the "submit" button.			
15	06/05/2024	Test the "Common Ground Patch" Q&A web page search function works.	Test the "Common Ground Patch" Q&A web page function that allows users to search for specific table rows by the row's description.	Step 1) Navigate to the "Common Ground Patch" Q&A web page. Step 2) input values, a description of a question, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	Only the table rows containing matching values to the search description within their description column will be visible.	Only the table rows containing matching values to the search description within their description column were visible.	Pass
16	06/05/2024	Test the "Common Ground Patch" Land Listing web page search function works	Test the "Common Ground Patch" Land Listing web page function that allows users to search for specific table rows by the row's description.	Step 1) Navigate to the "Common Ground Patch" Land Listing web page. Step 2) input values, a description of the what type of private land require voluntary labour, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	Only the table rows containing matching values to the search description within their description column will be visible.	Only the table rows containing matching values to the search description within their description column were visible.	Pass
17	06/05/2024	Test the "Common Ground Patch" Plants web page search function works	Test the "Common Ground Patch" Plants web page function that allows users to search for specific table	Step 1) Navigate to the "Common Ground Patch" Plants web page. Step 2) Input values, a description of	Only the table rows containing matching values to the search description within their	Only the table rows containing matching values to the search description within their	Pass

			rows by the row's description or location.	the donated item, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	description column will be visible.	description column were visible.	
18	06/05/2024	Test the "Common Ground Patch" Seeds web page search function works	Test the "Common Ground Patch" Seeds web page function that allows users to search for specific table rows by the row's description.	Step 1) Navigate to the "Common Ground Patch" Seeds web page. Step 2) Input values, a description of the donated item, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	Only the table rows containing matching values to the search description within their description column will be visible.	Only the table rows containing matching values to the search description within their description column were visible.	Pass
19	06/05/2024	Test the "Common Ground Patch" Trees web page search function works	Test the "Common Ground Patch" Trees web page function that allows users to search for specific table rows by the row's description.	Step 1) Navigate to the "Common Ground Patch" Trees web page. Step 2) Input values, a description of the donated item, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	Only the table rows containing matching values to the search description within their description column will be visible.	Only the table rows containing matching values to the search description within their description column were visible.	Pass
20	06/05/2024	Test the "Common Ground Patch" Tools web	Test the "Common Ground Patch" Tools web page	Step 1) Navigate to the "Common Ground Patch" Tools web page.	Only the table rows containing matching	Only the table rows containing matching	Pass

		page search function works	function that allows users to search for specific table rows by the row's description.	Step 2) Input values, a description of the donated item, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	values to the search description within their description column will be visible.	values to the search description within their description column were visible.	
21	06/05/2024	Test the "Common Ground Patch" Land Listing web page search function works	Test the "Common Ground Patch" Land Listing web page function that allows users to search for specific table rows by the row's location.	Step 1) Navigate to the "Common Ground Patch" Land Listing web page. Step 2) Input values, the location of the private land, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	Only the table rows containing matching values to the search location within their location column will be visible.	Only the table rows containing matching values to the search location within their location column were visible.	Pass
22	06/05/2024	Test the "Common Ground Patch" Plants web page search function works	Test the "Common Ground Patch" Plants web page function that allows users to search for specific table rows by the row's description or location.	Step 1) Navigate to the "Common Ground Patch" Plants web page. Step 2) Input values, the location of the donated item, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	Only the table rows containing matching values to the search location within their location column will be visible.	Only the table rows containing matching values to the search location within their location column were visible.	Pass

23	06/05/2024	Test the "Common Ground Patch" Seeds web page search function works	Test the "Common Ground Patch" Seeds web page function that allows users to search for specific table rows by the row's description.	Step 1) Navigate to the "Common Ground Patch" Seeds web page. Step 2) Input values, the location of the donated item, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	Only the table rows containing matching values to the search location within their location column will be visible.	Only the table rows containing matching values to the search location within their location column were visible.	Pass
24	06/05/2024	Test the "Common Ground Patch" Trees web page search function works	Test the "Common Ground Patch" Trees web page function that allows users to search for specific table rows by the row's description.	Step 1) Navigate to the "Common Ground Patch" Trees web page. Step 2) Input values, the location of the donated item, into the input fields to the left of the "search" button. Step 3) Click on the "search" button.	Only the table rows containing matching values to the search location within their location column will be visible.	Only the table rows containing matching values to the search location within their location column were visible.	Pass
25	06/05/2024	Test the "Common Ground Patch" Tools web page search function works	Test the "Common Ground Patch" Tools web page function that allows users to search for specific table rows by the row's description.	Step 1) Navigate to the "Common Ground Patch" Tools web page. Step 2) Input values, the location of the donated item, into the input fields to the left of the "search" button.	Only the table rows containing matching values to the search location within their location column will be visible.	Only the table rows containing matching values to the search location within their location column were visible.	Pass

				Step 3) Click on the "search" button.			
26	06/05/2024	Test the pagination works on the table rows of the "Common Ground Patch" Q&A web page	Test is the "Common Ground Patch" Q&A web page displays a maximum number of fixed rows per page and the user can visit the next or previous pages by clicking on buttons.	Step 1) Navigate to the "Common Ground Patch" Q&A web page. Step 2) Scroll down to under the table rows present. Click on the next row to visit the next page. Step 3) Repeat the process until the last page. Step 4) Click on the previous button to visit the previous page. Step 5) Repeat the process until the user reaches the first page again.	The web page will open with only a fixed number of rows visible on the table. The user will be able to visit the next or previous pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is disabled and the first page where the previous button is disabled. Each page has the same maximum number of table rows per page.	The web page will open with all of the rows visible on the table. It was only after clicking on the next button did all the pages displayed a fixed maximum number of rows per page. The user was able to visit the next or previous pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is disabled and the first page where the previous button is disabled.	Fail
27	06/05/2024	Test the pagination works on the table rows of the "Common Ground Patch" Land Listing web page	Test is the "Common Ground Patch" Land Listing web page displays a maximum number of fixed	Step 1) Navigate to the "Common Ground Patch" Land Listing web page. Step 2) Scroll down to under	The web page will open with only a fixed number of rows visible on the table. The user will be able to visit	The web page will open with all of the rows visible on the table. It was only after clicking on the next button	Fail

			rows per page and the user can visit the next or previous pages by clicking on buttons.	the table rows present. Click on the next row to visit the next page. Step 3) Repeat the process until the last page. Step 4) Click on the previous button to visit the previous page. Step 5) Repeat the process until the user reaches the first page again.	the next or previous pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is disabled and the first page where the previous button is disabled. Each page has the same maximum number of table rows per page.	did all the pages displayed a fixed maximum number of rows per page. The user was able to visit the next or previous pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is disabled and the first page where the previous button is disabled.	
28	06/05/2024	Test the pagination works on the table rows of the "Common Ground Patch" Plants web page	Test is the "Common Ground Patch" Plants web page displays a maximum number of fixed rows per page and the user can visit the next or previous pages by clicking on buttons.	Step 1) Navigate to the "Common Ground Patch" Plants web page. Step 2) Scroll down to under the table rows present. Click on the next row to visit the next page. Step 3) Repeat the process until the last page. Step 4) Click on the previous button to visit	The web page will open with only a fixed number of rows visible on the table. The user will be able to visit the next or previous pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is	The web page will open with all of the rows visible on the table. It was only after clicking on the next button did all the pages displayed a fixed maximum number of rows per page. The user was able to visit the next or previous	Fail

				the previous page. Step 5) Repeat the process until the user reaches the first page again.	disabled and the first page where the previous button is disabled. Each page has the same maximum number of table rows per page.	pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is disabled and the first page where the previous button is disabled.	
29	06/05/2024	Test the pagination works on the table rows of the "Common Ground Patch" Seeds web page	Test is the "Common Ground Patch" Seeds web page displays a maximum number of fixed rows per page and the user can visit the next or previous pages by clicking on buttons.	Step 1) Navigate to the "Common Ground Patch" Seeds web page. Step 2) Scroll down to under the table rows present. Click on the next row to visit the next page. Step 3) Repeat the process until the last page. Step 4) Click on the previous button to visit the previous page. Step 5) Repeat the process until the user reaches the first page again.	The web page will open with only a fixed number of rows visible on the table. The user will be able to visit the next or previous pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is disabled and the first page where the previous button is disabled. Each page has the same maximum number of	The web page will open with all of the rows visible on the table. It was only after clicking on the next button did all the pages displayed a fixed maximum number of rows per page. The user was able to visit the next or previous pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is disabled and the first page	Fail

					table rows per page.	where the previous button is disabled.	
30	06/05/2024	Test the pagination works on the table rows of the "Common Ground Patch" Trees web page	Test is the "Common Ground Patch" Trees web page displays a maximum number of fixed rows per page and the user can visit the next or previous pages by clicking on buttons.	Step 1) Navigate to the "Common Ground Patch" Trees web page. Step 2) Scroll down to under the table rows present. Click on the next row to visit the next page. Step 3) Repeat the process until the last page. Step 4) Click on the previous button to visit the previous page. Step 5) Repeat the process until the user reaches the first page again.	The web page will open with only a fixed number of rows visible on the table. The user will be able to visit the next or previous pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is disabled and the first page where the previous button is disabled. Each page has the same maximum number of table rows per page.	The web page will open with all of the rows visible on the table. It was only after clicking on the next button did all the pages displayed a fixed maximum number of rows per page. The user was able to visit the next or previous pages by clicking on the "next" or "previous" buttons, with the exception of the last page where the next button is disabled and the first page where the previous button is disabled.	Fail
31	06/05/2024	Test the pagination works on the table rows of the "Common Ground Patch" Tools web page	Test is the "Common Ground Patch" Tools web page displays a maximum number of fixed	Step 1) Navigate to the "Common Ground Patch" Tools web page. Step 2) Scroll down to under	The web page will open with only a fixed number of rows visible on the table. The user will	The web page will open with all of the rows visible on the table. It was only after clicking on the	Fail

			[-	·
	rows per page	the table rows	be able to visit	next button	
	and the user	present. Click on	the next or	did all the	
	can visit the	the next row to	previous	pages	
	next or previous	visit the next	pages by	displayed a	
	pages by	page.	clicking on the	fixed	
	clicking on		"next" or	maximum	
	buttons.	Step 3) Repeat	"previous"	number of	
		the process until	buttons, with	rows per	
		the last page.	the exception	page. The	
		Stop 1) Click on	of the last	user was able	
		the provious	page where	to visit the	
		button to visit	the next	next or	
		the provious	button is	previous	
		nago	disabled and	pages by	
		page.	the first page	clicking on the	
		Step 5) Repeat	where the	"next" or	
		the process until	previous	"previous"	
		the user reaches	button is	buttons, with	
		the first page	disabled. Each	the exception	
		again.	page has the	of the last	
		0	same	page where	
			maximum	the next	
			number of	button is	
			table rows per	disabled and	
			page.	the first page	
				where the	
				previous	
				button is	
				disabled.	

Figure 99: Functional Testing Results

3.2 Browser Testing

Browser testing examines how the web application "Common Ground Patch" renders and functions in various browsers. This testing ensures that the web application delivers a consistent user experience across different browser environments. This approach can identify any compatibility issues or discrepancies in how the application displays and functions across different browsers. This helps ensure that users have a seamless experience regardless of the browser used to access the application (BrowserStack, 2024). The figure below depicts the easy access and user-friendly experience of interacting with the web application "Common Ground Patch" on the browsers, Google Firefox, Microsoft Edge and Google Chrome.

Case ID	Date	Test description	Browser	Result	Pass/fail
BT01	06/05/2024	Test the web application "Common Ground Patch" is	Google Firefox	the web application "Common Ground Patch" is was	Pass

		accessible on a specific browser.		accessible on the browser Google Chrome.	
BT02	06/05/2024	Test the web application "Common Ground Patch" is functional and user- friendly on a specific browser.	Google Firefox	the web application "Common Ground Patch" is functions on the browser Google Chrome. The web application is easy to navigate and interact with.	Pass
BT03	06/05/2024	Test the web application "Common Ground Patch" is accessible on a specific browser.	Microsoft Edge	the web application "Common Ground Patch" was accessible on the browser Microsoft Edge	Pass
BTO4	06/05/2024	Test the web application is functional and user- friendly on a specific browser.	Microsoft Edge	the web application "Common Ground Patch" is functions on the browser Microsoft Edge. The web application is easy to navigate and interact with.	Pass
BT05	07/05/2024	Test the web application "Common Ground Patch" is accessible on a specific browser.	Google Chrome	the web application "Common Ground Patch" was accessible on the browser Google Chrome.	Pass
BT06	07/05/2024	Test the web application is functional and user- friendly on a specific browser.	Google Chrome	the web application "Common Ground Patch" is functions on the browser Google Chrome. The web application is easy to navigate and interact with.	Pass

Figure 100: Browser Testing Results

3.3 Performance Testing

Performance testing involves evaluating the speed and efficiency of a web application under various conditions. Google Chrome Lighthouse analyses are a tool used for this purpose. Lighthouse can be utilised to implement metrics to measure the overall performance of the web application when accessed through the Google Chrome browser. The performance measure metric for all of the web pages of the web application "Common Ground Patch" is 89% and above with the majority being 100%. This indicates that the web application "Common Ground Patch" delivers a fast and seamless user experience.

3.3.1 index Web Page Performance Testing

99	
Performance	
Values are estimated and may vary. The <u>performance score</u> is calculated directly from these metrics. <u>See calculator</u>	
▲ 0-49 ■ 50-89 ● 90-100	
METRICS	Expand view
First Contentful Paint	Largest Contentful Paint
0.7 s	0.7 s
Total Blocking Time	Cumulative Layout Shift
0 ms	0
Speed Index	

Figures 101 & 102: Google Chrome performance analysis of index webpage.

3.3.2 Login Web Page Performance Testing

CGP		
LOG	gin	
© NCI All righ	hts reservered	
ER In Elements Console Sources Network Performance Memory Application Security	ighthouse Performance insights 丛	■3 🛞 i >
432/34 PM - 127.00.15300 * 432/34 PM - 127.00 *		:
Performance Values are estimated and may vary. The <u>performance score</u> is calculated directly from these metrics. <u>See calculator</u> . • 0-49 50-89 • 90-100	Loga In Internet	
METRICS	Expand view	
First Contentful Paint 0.5 s	Largest Contentful Paint 0.5 s	
• Total Blocking Time 0 ms	Cumulative Layout Shift	
• Speed Index 0.5 s		

Figures 103 & 104: Google Chrome performance analysis of Login webpage.

3.3.3 Register Web Page Performance Testing

89 Performance	
Values are estimated and may your. The performan	
is calculated directly from these metrics. See cal-	Ince avore Iculator,
▲ 0-49 50-89 90	D-100
METRICS	Expand view
METRICS	Expand view
First Contentful Paint	Largest Contentful Paint
1.0 s	1.0 s
Total Blocking Time	Cumulative Layout Shift
0 ms	0
▲ Speed Index	

Figures 105 & 106: Google Chrome performance analysis of Register webpage.

93	
Performance	
Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator,	
▲ 0-49 ■ 50-89 ● 90-100	
METRICS	Expand view
 First Contentful Paint 	Largest Contentful Paint
0.4 s	1.8 s
Total Blocking Time	 Cumulative Layout Shift
0 ms	0
Speed Index	
0.4 s	

3.3.4 Home Web Page Performance Testing

Figures 107 & 108: Google Chrome performance analysis of Home webpage.

3.3.5 Q&A Web Page Performance Testing



Figures 109 & 110: Google Chrome performance analysis of Q&A webpage.



100	
Performance	
Values are estimated and may vary. The <u>performance score</u> is calculated directly from these metrics. <u>See calculator.</u>	
▲ 0-49 ■ 50-89 ● 90-100	
METRICS	Expand view
First Contentful Paint	Largest Contentful Paint
0.5 s	0.6 s
Total Blocking Time	Cumulative Layout Shift
0 ms	0
Speed Index	
0.5 s	

Figures 111 & 112: Google Chrome performance analysis of answer webpage.

3.3.7 Land Listing Web Page Performance Testing



Figures 113 & 114: Google Chrome performance analysis of Land Listing webpage.

3.3.8 CV Web Page Performance Testing

100	
Performance	
Values are estimated and may vary. The <u>performance score</u> is calculated directly from these metrics. <u>See calculator.</u>	
▲ 0-49 ■ 50-89 ● 90-100	
METRICS	Expand view
First Contentful Paint	Largest Contentful Paint
0.5 s	0.6 s
Total Blocking Time	Cumulative Layout Shift
0 ms	0
Speed Index	
0.5 s	

Figures 115 & 116: Google Chrome performance analysis of CV webpage.

3.3.9 Seeds Web Page Performance Testing

Derformance Values are estimated and may vary. The <u>performance score</u> scalculated directly from these metrics. See calculator. 0-49 50-89 90-100		
METRICS	Expand view	
First Contentful Paint	Largest Contentful Paint	
0.6 s	0.7 s	
 Total Blocking Time 	 Cumulative Layout Shift 	
0 ms	0	
Speed Index		
0.6 s		



3.3.10 Plants Web Page Performance Testing 100 • Performance Values are estimated and may vary. The <u>performance score</u> is calculated directly from these metrics. <u>See calculator</u>. 50-89 90-100 ▲ 0-49 METRICS Expand view First Contentful Paint Largest Contentful Paint 0.6 s 0.6 s Total Blocking Time Cumulative Layout Shift 0 ms 0 Speed Index 0.6 s

Figures 119 & 120: Google Chrome performance analysis of Plants webpage.

3.3.11 Trees Web Page Performance Testing

100	
Performance	
Values are estimated and may vary. The <u>performance score</u> is calculated directly from these metrics. See calculator,	
▲ 0-49 ■ 50-89 ● 90-100	
METRICS	Expand view
First Contentful Paint	 Largest Contentful Paint
0.6 s	0.7 s
Total Blocking Time	Cumulative Layout Shift
0 ms	0
Speed Index	
0.6 s	

Figures 121 & 122: Google Chrome performance analysis of Trees webpage.



100	
Performance	
Values are estimated and may vary. The <u>performance score</u> <u>is calculated</u> directly from these metrics. <u>See calculator</u> ,	
▲ 0-49 ■ 50-89 ● 90-100	
METRICS	Expand view
First Contentful Paint	 Largest Contentful Paint
0.6 s	0.7 s
Total Blocking Time	Cumulative Layout Shift
0 ms	0
 Speed Index 	
0.6 s	

Figures 123 & 124: Google Chrome performance analysis of Tools webpage.

3.3.13 Application Form Web Page Performance Testing



Figures 125 & 126: Google Chrome performance analysis of Application Form webpage.

1. Evaluation

The web application's accessibility and functionality were assessed across various browsers, including Google Chrome, Microsoft Edge and Google Firefox, revealing satisfactory performance. However, the pagination function exhibited partial functionality across multiple web pages, necessitating further optimisation.

Performance evaluations conducted through automated testing, depicted in figures 101 to 126, showcased excellent system performance. Each web page of the "Common Ground Patch" web application underwent automated testing, with none scoring below an 89% success rate, indicating reliability.

2. Conclusions

2.1 Advantages / Strengths

Community engagement: the "Common Ground Patch" web application fosters an online community for gardening enthusiasts to share knowledge and resources.

Environmental Impact: the "Common Ground Patch" web application's aims align with Sustainable Development Goals such as waste reduction and encouraging eco-friendly practices.

Niche services: the "Common Ground Patch" web application provides a single platform that allows users globally to advertise donated gardening items, apply for donated gardening items, request manual labour for gardening on private land and apply for manual labour for gardening on private land, all of which is free.

User-friendly: the "Common Ground Patch" web application is an easy-to-use interface for the target audience, who may not be tech-savvy.

2.2 Disadvantages/Limitations

Competition: There are similar web applications centred around curating an online community for gardening enthusiasts already available.

Global issues: While the project aims for global connectivity, its reach may be limited by factors such as language barriers and internet accessibility.

Functionality Issues: the pagination function is not operating as fully intended, therefore the function requires optimisation to ensure seamless performance of the "Common Ground Patch" web application.

Limited Scope: Currently the "Common Ground Patch" web application backend is running on the free version of Firebase which has a limited scope and functionality.

3. Further Development or Research

The "Common Ground Patch" web application can be improved by resolving the bug currently preventing the pagination from operating as designed.

The "Common Ground Patch" web application framework can be used as a foundation for creating new web applications that cater to different DIY hobbies. This process would include repurposing the platform's architecture, user interface and functionalities so developers can streamline the process of creating new DIY-focused web applications.

Investing in a paid Firebase subscription for the "Common Ground Patch" web application would boost its scalability and functionality. While the free version of Firebase, which is currently being used for the backend of "Common Ground Patch" web application, offers basic services like a real-time database and authentication, upgrading offers services for managing growth more effectively. The upgrade removes user and data limits ensuring seamless scalability. Additionally, the upgrade offers advanced security controls and priority support reliability. The upgraded version of the Firebase subscription offers analytics tools provide deeper insights for user engagement (Firebase, n.d.).

Implementing image upload capabilities for the "Common Ground Patch" web application webpages that feature requests for labour and advertising donated items would further develop the web application. This would improve the platform's functionality and improve user engagement by making the "Common Ground Patch" web application visually appealing and user-friendly.

To further develop the "Common Ground Patch" web application integrate mapping functionality using a Map API like Google Maps API (SerpApi, n.d.), Mapbox or Leaflet to add valuable location-based features to the platform. Users could leverage interactive maps to search for nearby gardening opportunities. Mapping integration would enhance the platform's usability and facilitate more efficient communication and collaboration among users.

4. References

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SerpApi, n.d. SerpApi: Google Search API. [Online] Available at: <u>https://serpapi.com/?gad_source=1&gclid=CjwKCAjw0YGyBhByEiwAQmBEWiW-zYYb-UOoNctGz19STWpfniD2nju54gc6cbZ8MOVGrnE2sUOwZRoCDM8QAvD_BwE</u> [Accessed 12 May 2024].

5. Appendices

5.1 Al Disclaimer

Al Disclaimer

I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.

<u>ALL</u> internet material must be referenced in the references section. Students are encouraged to use the Harvard Referencing Standard supplied by the Library. To use other author's written or electronic work is illegal (plagiarism) and may result in disciplinary action. Students may be required to undergo a viva (oral examination) if there is suspicion about the validity of their submitted work.

Signature:	Emma	Carrol

Date: 12/05/2024.....

PLEASE READ THE FOLLOWING INSTRUCTIONS:

- 1. Please attach a completed copy of this sheet to each project (including multiple copies).
- 2. Projects should be submitted to your Programme Coordinator.
- 3. **You must ensure that you retain a HARD COPY of ALL projects**, both for your own reference and in case a project is lost or mislaid. It is not sufficient to keep a copy on computer. Please do not bind projects or place in covers unless specifically requested.
- 4. You must ensure that all projects are submitted to your Programme Coordinator on or before the required submission date. Late submissions will incur penalties.
- 5. All projects must be submitted and passed in order to successfully complete the year. **Any project/assignment not submitted will be marked as a fail.**

Office Use Only	
Signature:	
Date:	
Penalty Applied (if applicable):	

AI Acknowledgement Supplement

Computer Project Technical report]

Your Name/Student Number	Course	Date
Emma Carroll/20226314	BSHCDBT	13/03/2024

This section is a supplement to the main assignment, to be used if AI was used in any capacity in the creation of your assignment; if you have queries about how to do this, please contact your lecturer. For an example of how to fill these sections out, please click <u>here</u>.

AI Acknowledgment

This section acknowledges the AI tools that were utilized in the process of completing this assignment.

Tool Name	Brief Description	Link to tool
Microsoft	AI service that checks	https://support.microsoft.com/en-au/office/
Spelling and grammar	for grammar and spelling mistakes in	check-spelling-and-grammar-in-office-5cdeced7-
check	text and offers	d81d-47de-9096-efd0ee909227#:~:text=On%20the%
	recommendations to resolve these	20Word%20menu%2C%20click,box%20to%20save%
	mistakes.	20your%20changes.
Grammarly	AI service that checks	https://www.grammarly.com/desktop/windows?_gl=1*
For Word for spelling, gramma punctuation, clarity,		1cgxz5m*_gcl_au*OTE2MTI0ODIwLjE3MDEzNjgwODI.
	engagement and	
	delivery mistakes in	
	text and offers	
	resolve these	
	mistakes.	

Description of AI Usage

This section provides a more detailed description of how the AI tools were used in the assignment. It includes information about the prompts given to the AI tool, the responses received, and how these responses were utilized or modified in the assignment. **One table should be used for each tool used**.

Microsoft Spelling and grammar check			
I am dyslexic so I used it to check the spelling and grammar of my work in the report, which except quotes from referenced sources.			
I would type out a sentence that may contain spelling mistakes or grammatical errors.	Microsoft Spelling and Grammar Check would underline the misspelt word in a red squiggly line and suggest spelling suggestions to resolve this mistake if I hover my		

cursor over it. The suggested word I
right-click will then take the place
of the misspelt word. Grammar
mistakes are underlined in
grey/blue dotted lines and
suggestions to resolve the issue
appear when I right-click the line.
The image on the left shows the
lines created by Microsoft Spelling
& grammar check.

Grammarly for Word

I am dyslexic so I used it to check the spelling, grammar and cohesion of my work in the report, which except quotes from referenced sources.

I would type out a sentence that may	Grammarly would underline parts of the
contain spelling mistakes or	text it wants to correct in a straight red line
grammatical errors.	and underline parts of the text it wants to
	make more clear in blue. By clicking on the
	Grammarly icon on the bottom left it gave
	a numbered list of colour-coded issues it
	found in the entire text and I could either
	accept the recommended change or
	dismiss the issue. Evidence in the next
	section.

Evidence of AI Usage

This section includes evidence of significant prompts and responses used or generated through the AI tool. It should provide a clear understanding of the extent to which the AI tool was used in the assignment. Evidence may be attached via screenshots or text.

This is evidence of Spelling and grammar checks in Microsoft documents used as I typed my report.

The "Common Ground Patch" website aligns with the objectives of Sustainable Development Goal, SDG 13, by promoting environmentally friendly gardening practices. It supports resource sharing, reduces wastt, and increases access to gardening materials, This is evidence of the correctness and clearness recommended by Grammarly as I typed my report.

AutoSave 💓 🖫 🎐 ✓ 🖓 🤿	x20226314Technical Report + Saved ~ Search	© ×		
File Home Insert Design Lay	Yout References Mailings Review View Help Image: State of the st	Review suggestions (285) Show less X		
Proofing Speech	Accessibility Language Comments Tracking	Correctness Clarity Engagement Delivery		
	Furthermore, the platform's scope is <u>both</u> local and international, connecting the "Common Ground Patch" web <u>application's</u> worldwide users. This broadens their networ and understanding of different plants and gardening techniques through the Q&A platfo Such a global reach brings diversity to the gardening community as <u>the web application</u> not limited by governmental or geometrical boundaries (Gardens, 2023).	Capitalize word request Correct your spelling form		
	The website also serves as a valuable platform for businesses to promote their prod or services to an engaged gardening audience, via digital advertisements on the web application's webpages. This has the potential to increase the business's visibility and influence within the gardening community. This is a potential source of revenue for the "Common Ground Patch" web application.	Correctness · Correct the verb ① application of receiving gardening Accept Dismiss ···		
	 1.2. Aims Create a free-to-use website that caters to gardening enthusiasts in order to genera online gardening community. 	Correct your spelling frontend		
	 In the pursuit of increasing the rate of global greenhouse gas emissions reduction al the "Common Ground Patch" website with the objectives of Sustainable Developme Goal, SDG 13. 	Correct your spelling frontend		
	 Develop a user registration system to allow users to create an account in the web application system in order to access the web application functions by logging in. 	Correctness · Change the spelling authorization		
	 Enable a platform for users to post questions and answer posted questions which co gardening-related topics. 	>> Check for plagiarism		
Page 95 of 119 23055 words DP English (Irela	Enable a platform for the donation and application of <u>receiving</u> gardening items such and) Scatssibility: Investigate	a5 (D), Focus (III) (D), Focus (IIII) (D), Focus		
E $\mathcal P$ Type here to search	川 🧟 🗒 🛤 🕸 🧟 刘 🧆 🔤 👪 👘 🖉 🧶 4	🥵 🌙 12°C ∧ 🌷 🗈 🌈 Φ) ENG 23:34 12/05/2024 💀		

5.2 Project Proposal



National College of Ireland

Project Proposal Common Ground Patch 29/10/2023

Bachelor of Science in Computing

Business Digital Transformation

2023/2024

Emma Carroll

X20226314

X20226314@ncirl.ie

1.0 Objectives

This project aims to achieve the following objectives:

- Create a free-to-use website that serves gardening enthusiasts to create an online community that share labour, resources and knowledge on gardening.
- Align "Common ground patch" website with the objectives of Sustainable Development Goal, SDG 13, to accelerate the reduction of global greenhouse gas emissions.
- Develop a user registration system that allows users to create accounts for users to access the website by logging in.
- Implement a Q&A section for users to post gardening-related questions and answers.
- Enable a platform for the donation and exchange of plants, seeds, and gardening items.
- Introduce a unique feature allowing users to showcase private land suitable for gardening.
- Facilitate the submission of CV forms by users interested in helping with gardening on the showcased private land.
- Allow users to view CVs submitted to them.
- Generate revenue through the sale of advertising space to companies on a bi-weekly basis.

2.0 Background

The project's initiation arises from recognizing the pressing needs within the gardening community. Many enthusiasts encounter financial, resource, or physical constraints, obstructing their full engagement in gardening. The project's objective is to address these challenges through a comprehensive platform.

"Common ground patch" website could contribute to the objectives of SDG 13 by encouraging eco-conscious gardening practices. It facilitates resource sharing, minimizes waste, and provides accessibility to plants and gardening materials, aligning with sustainability principles. Encouraging the donation of plants, seeds, and tools decreases the need for new purchases, fostering more sustainable gardening approaches. This approach not only reduces greenhouse gas emissions by minimizing unnecessary resource consumption but also enhances environmental awareness among gardening enthusiasts, vital for addressing the adverse impacts of climate change.

The website offers a unique feature enabling users to post both requests for manual assistance on private land and applications to garden on such land. This would benefit users seeking an opportunity to work in desired gardening spaces and supports landowners who

require assistance to maintain their land due to time or physical constraints. This innovative system ensures a dependable means of finding labour, unlike the less reliable traditional approach of seeking help from neighbours.

Moreover, the platform's reach extends both locally and globally, enabling users to connect with fellow gardeners from diverse regions, enriching their networks and knowledge about various plant varieties and gardening techniques through the Q&A section. This global perspective enhances diversity within the gardening community.

This website offers opportunities for gardening companies to advertise their products or services to an audience genuinely interested in gardening, potentially enhancing their visibility and reach within the community.

3.0 State of the Art

Other platforms

"Common Ground patch" website is similar to previous existing website such as PlantsSwap.org. PlantSwap.org is a web-based platform meticulously crafted to serve as a hub for gardening enthusiasts, allowing them to connect, exchange plants and gardening materials, and share their collective knowledge. This platform permits users to list surplus plants, seeds, or gardening items for potential trades or as offerings to other users without any exchange. Furthermore, PlantSwap.org facilitates online discussions where users actively participate, generously sharing gardening insights, experiences, and establishing connections with fellow gardening enthusiasts. (PlantSwap.org, 2023)

What truly sets "Common Ground patch" website apart from others, like PlantSwap.org, is its remarkable ability to enable users to feature private land that is ideal for gardening. This innovative functionality accommodates individuals who, due to age, health issues, or physical limitations, are unable to manage their land themselves. Users who possess the physical capability and a willingness to assist can submit a comprehensive CV form, encompassing personal information, references, and their availability. This feature opens opportunities for those seeking access to spaces they may not own or have the financial means to acquire, such as lofts for gardening. Original landowners advertising their land can subsequently contact potential applicants through the provided contact information in order to agree to their help. (PlantSwap.org, 2023)

Local Allotments

Local allotments allow an individual or group to work on a specified land area for the purpose of gardening. This service acquires payment to the allotment owner.

The "Common Ground patch" website may offer a similar opportunity for individuals to garden on a specified land area owned by another registered user however this service does not cost any money to either the user who owns the land or the user who will work on the land.

Landscaping services

Landscaping services will offer professional gardening services to work on private land in exchange for money from the owner(s) of the private land.

The "Common Ground patch" website offers the ability for registered users to request help from other registered users to garden on their private land for free.

Government Schemes

There are government schemes in place such as "Community Garden Ireland" to allow a group of citizens to volunteer their work for free to garden in specified land areas across the north and Republic of Ireland.

However, these schemes have boundaries of where they can operate, such as only in Ireland. The "Common Ground patch" website is an online platform that allows any registered users across the globe to avail of the website's services. (Gardens, 2023)

4.0 Technical Approach

In approaching the development of this project, I'll implement Agile methodology. I will use this approach due to my prior experience of using agile in my work placement and the training course I underwent. During my work placement at SAP, I had the opportunity to gain practical experience with Agile sprints. This exposure to Agile methodologies allowed me to witness their effectiveness in managing and delivering projects efficiently. Furthermore, I completed a course titled "Active SAP Agile Approach to Project Management," which provided me with a structured understanding of Agile principles and practices. This training equipped me with the knowledge needed to effectively implement Agile methods in project management.

In addition, I completed a "project Management" module as part of my 3rd year Bachelor of Science in Computing at NCI. Comparing the different methodology, I studied I opted for an Agile approach as it allow for adaptability and flexibility as the project progresses. This means regularly reviewing project requirements and priorities to create a responsive project environment. This iterative approach supports ongoing enhancements and improvements throughout the project's lifespan.

The process of identifying the requirements for this computer project to meet its objectives involved breaking them down into specific tasks within different phases of the project lifecycle. These phases include Pre-Development Planning, Software Development, Testing, Mid-Point, Final, and Project Showcase. Each task within these phases is assigned a timeframe based on its complexity, dependencies, and priority for completion. When tasks associated with a specific project function are successfully finished and rigorously tested, they mark the achievement of a project milestone. The project will conclude upon the completion of all project milestones.

7.0 Technical Details

Based on my strong familiarity with JavaScript, I plan to use Node.js for the backend implementation as it provides a seamless integration with the frontend, ensuring a smooth development process. I've opted for Express.js, a widely used framework for Node.js, to streamline backend development, simplifying tasks like routing, middleware management, and API development. Leveraging my expertise in SQL, I've chosen relational databases like MySQL or PostgreSQL to securely store user data, donation records, and other essential information.

For the frontend implementation, I plan to use HTML, CSS, and JavaScript for the foundational structure, styling, and interactive elements. I'm also considering the inclusion of JavaScript libraries or frameworks such as React or Angular to create a dynamic and responsive user interface. To expedite frontend development and achieve a polished appearance, I'm looking into UI frameworks like Bootstrap, Materialize, or Bulma.

For mapping integration, I'll employ a Map API like Google Maps API, Mapbox, or Leaflet, which offers extensive documentation and tools to facilitate the incorporation of maps and location-based features within my website.

6.0 Special Resources Required

For the success of this project, access to an Online Map API is crucial. This resource supports the essential feature of displaying private gardening spaces. It plays a vital role in various aspects of the platform. Users offering donated items can use this resource to pinpoint the location of their offerings, making it easier for recipients to locate and collect the items. Moreover, it enables convenient meeting points and directions for the exchange of donated goods. Access to an online Map API is fundamental for providing an efficient and user-friendly experience for the gardening community. It enhances the platform's usability, offering location-based services for land-sharing and item donation, promoting a seamless and resourceful gardening community. It's worth noting that only Bing Maps API has officially purchased maps for certain counties, such as South Korea, for use in their online maps. Google Maps API, on the other hand, uses satellite images to create maps, which may not always be accurate.

1. Project Plan

Task ID	Task	Start Date	end Date	Duration (in days)
1	Pre-Development Planning			
1.1	Define project scope	02/10/2023	08/10/2023	7
111	Submit a video pitch	08/10/2023	08/10/2023	1
1.2	Define project goals	09/10/2023	14/10/2023	6
13	Outline detailed requirements for website functionality	16/10/2023	21/10/2023	6
1.4	Document the registrat Property	23/10/2023	29/10/2023	7
	submit the project Proposal	20/10/2023	29/10/2023	1
15	submit the project Proposal	29/10/2023	04/11/2023	6
1.6	Plan the design and architecture of the website	30/10/2023	04 24 2025	
2	Software Development		08/11/2022	
21	Front- end Development of the Index webpage	06/11/2023	06/11/2013	3
2.2	Front- end Development of the Registration webpage	09/11/2023	11/11/2023	3
2.3	Front- end Development of the Login webpage	12/11/2023	14/11/2023	3
2.4	Front- end Development of the Home webpage	15/11/2023	17/11/2023	
2.5	Front- end Development of the Q&A webpage	18/11/2023	20/11/2023	3
2.6	Front- end Development of the Answer webpage	21/11/2023	23/11/2023	3
2.7	Front- end Development of the Land Listed webpage	22/11/2023	26/11/2023	3
2.8	Front- end Development of the Application CV webpage	27/11/2023	29/11/2023	3
2.9	Front- end Development of the Plants Donated Items webpage	30/11/2023	02/12/2023	3
2.1	Front- end Development of the Trees Donated Items webpage	02/12/2023	05/12/2023	3
2.11	Front- end Development of the Tools Donated Items webpage	06/12/2023	08/12/2023	1
2.12	Front- end Development of the Seeds Donated Items webpage	09/12/2023	11/12/2023	3
2.13	Front- end Development of the Application form webpage	12/12/2023	14/12/2023	3
2.14	Front- end Development of the Applications For Items webpage	15/12/2023	17/12/2023	3
2 15	Front- end Development of the Application to work on land webpape	18/12/2023	20/12/2023	3
2 16	Back- end Development of the Registration webpape	13/01/2024	17/01/2024	5
2 17	Back, and Development of the Login webcase	18/01/2024	22/01/2024	5
2.18	Back, and Development of the O&A webcase	23/01/2024	27/01/2024	5
2.10	Each and Development of the Assure webpage	20/01/2024	01/02/2024	5
2.15	Back, and Development of the Lond Listed unbrane	20/01/2024	06/02/2024	
2.20.	Back end Development of the Land Linted Wedpage	02/02/2024	11/02/2024	5
2.21	Back- end Development of the Application CV webpage	07/02/2024	16/03/2024	
1.11	Back- end Development of the Plants Donated Items webpage	12/02/2024	35/02/2024	2
2.23	Back- end Development of the Trees Donated Items webpage	17/02/2024	21/02/2024	-
2.24	Back- end Development of the Tools Donated Items webpage	22/02/2024	26/02/2024	5
2.25	Back- end Development of the Seeds Donated Items webpage	27/02/2024	01/03/2024	3
2.26	Back- end Development of the Application form webpage	02/03/2024	06/03/2024	5
2.27	Back- end Development of the Applications For Items webpage	07/03/2024	11/03/2024	5
2.28	Back- end Development of the Application to work on land webpage	12/03/2024	16/03/2024	5
2.29	Configure connectivity between front-end and back-end	17/03/2024	31/03/2024	14
3	Testing			
3.1	Complete ethics form	25/03/2024	29/03/2024	5
3.1.1	submit ethics form	29/03/2024	29/03/2024	1
3.2	Integration testing	01/04/2024	06/04/2024	6
3.3	Unit testing	08/04/2024	13/04/2024	6
3.4	User testing	15/04/2024	27/04/2024	13
4	Mid-point			
4.1	Complete Mid-point documentation	04/12/2023	22/12/2023	18
4.7	Create slide deck for Mid-point Presentation	22/12/2023	22/12/2023	1
43	Becord video of Mid-point Presentation	22/12/2023	22/12/2023	1
4.4	Submit Mid-opint deliverables	22/12/2023	22/12/2023	1
5	Final	A REAL PROPERTY AND A REAL	and the second se	
5.1	Complete Final documentation	29/04/2024	12/05/2024	17
5.2	Create slide deck for Final Presentation	29/04/2024	10/05/2024	6
5.3	Record video of Final Presentation	11/05/2024	12/05/2024	3
5.4	Submit Final deliverables	12/05/2024	12/05/2024	1
6	Project Showcase		million	
6.1	Plan the design of the stand	13/05/2024	18/05/2024	6
6.2	Gather required materials	20/05/2024	23/05/2024	4
5.3	Construct a stand	24/05/2024	28/05/2024	3
6.4	Participate in project showcase	29/05/2024	29/05/2024	1

Gantt Chart



2. Testing

Implementation Testing will be done to verify that different parts of the application work together correctly. Performing implementation Testing For the gardening website it will ensures that the front-end and the back-end connect seamlessly. This will be done after every website page front-end and the back-end are built during the software development stage of the project plan. Implementation Testing will also take place in the testing stage of the project plan a After the whole website is built.

Unit Testing involves examining individual components or functions of a software application to validate that they work as intended. For the gardening website, it would test small parts like specific functions handling a user's login, validating form entries, or posting a question. This will be done after every website page front-end and the back-end are built during the software development stage of the project plan. Testing will also take place in the testing stage of the project plan after the whole website is built.

User Testing will take place during the testing phase after the software development had been completed. As user testing involves real users assessing the application an ethics form will be submitted before it will begin. Users will be required to evaluate the websites userfriendliness, features, and functionality by performing test designed to identify if the website meets their needs and expectations. Users will test if they can:

- Register and login to the website.
- Easily navigate the website.
- post gardening questions.
- answer posted gardening questions.
- post garden listings.
- applying to receive donated gardening items.
- post private land listings.
- applying to work on a listed private land.

8. References

PlantSwap.org, "PlantSwap.org Donate, Swap, adopt & discuss Plants!," PlantSwap.org, 07 August 2023. [Online]. Available: https://plantswap.org/. [Accessed 28 October 2023].

C. G. Ireland, "Community Gardens in Ireland," Community Gardens Ireland, 26 August 2023. [Online]. Available: https://cgireland.org/. [Accessed 28 October 2023].

6.2 Project Analysis & Planning

Project Analysis

Other platforms

There are several websites based on gardening already available such as PlantSwap.org. PlantSwap.org, is a web-based platform meticulously crafted to serve as a hub for gardening enthusiasts, allowing them to connect, organize and Host a Plant Swap, donate gardening materials, advertise plant-related events and share their collective knowledge via online articles and blogs.

However similar to the "Common Ground patch", the PlantSwap.org platform permits users to register and login to their accounts. Registered users can list surplus plants, seeds, or trees as donations to other users without any exchange. This is the case for both platforms however "Common Ground Patch" facilitates the donation and application to receive gardening tools. Both PlantSwap.org and "Common Ground Patch", facilitate online discussions where users actively participate, generously sharing gardening insights, experiences, and establishing connections with fellow gardening enthusiasts. (PlantSwap.org, 2023)

However, the "Common Ground patch" website's impactful difference from PlantSwap.org, is how it facilitates registered users' ability to advertise their own private land they wish to ask for physical help gardening from other registered users. This innovative functionality assists gardening enthusiast, who due to physical inability or time constraints, can no longer maintain their private land to receive free labour gardening their private land. This allows other registered users, without the space or fanatical means, to garden on the land. Registered users who wish to assist can submit a comprehensive CV form, encompassing personal information, references, and their availability, to the private landowner. Original landowners advertising their land can subsequently contact potential applicants through the provided contact information in order to agree to their help. (PlantSwap.org, 2023)

Local Allotments

Local allotments allow an individual or group to work on a specified land area for the purpose of gardening. This service acquires payment to the allotment owner.

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The "Common Ground patch" website offers the ability for registered users to request help from other registered users to garden on their private land for free.

Government Schemes

There are government schemes in place such as "Community Garden Ireland" to allow a group of citizens to volunteer their work for free to garden in specified land areas across the north and Republic of Ireland.

However, these schemes have boundaries of where they can operate, such as only in Ireland. The "Common Ground patch" website is an online platform that allows any registered users across the globe to avail of the website's services. (Gardens, 2023)

Technology

For the frontend implementation, I used HTML, CSS, and JavaScript within Visual Studio for the foundational structure, styling, and interactive elements. I included the UI framework Bootstrap to improve the appearance of the website's front-end.

Firebase will be implemented for the web application's back-end, including the multirelational databases and user authorization.

I plan to use mapping integration, I'll employ a Map API like Google Maps API, Mapbox, or Leaflet to incorporate maps and location-based features within the web application "Common Ground Patch".

Project Planning

In approaching the development of this project, I'll implement Agile methodology. I will use this approach due to my prior experience of using agile in my work placement and the project management module I took during my Bachelor of Science in Computer course with a specialisation in Digital Business Transformation.
Gantt Chart

Task ID	Task	Start Date	end Date	Duration (in days)	Task o
1	Pre-Development Planning				
1.1	Define project scope	02/10/2023	08/10/2023	7	
111	Submit a video pitch	08/10/2023	08/10/2023	1	
1.2	Define project goals	09/10/2023	14/10/2023	6	
1.3	Outline detailed requirements for website functionality	16/10/2023	21/50/2023	6	
1.4	Document the project Proposal	23/10/2023	29/10/2023	7	
1.5	submit the project Proposal	29/10/2023	29/10/2023	1	
1.6	Plan the design and architecture of the website	30/10/2023	04/11/2023	6	
2	Software Development				
2.1	Front- end Development of the Index webpage	06/11/2023	08/11/2023	3	
2.2	Front- end Development of the Registration webpage	09/11/2023	11/11/2023	3	
2.3	Front- end Development of the Login webpage	12/11/2023	14/11/2023	3	
2.4	Front- end Development of the Rome webpage	15/11/2023	17/11/2023	3	
23	Front- and Development of the data webpage	18/11/2023	20/11/2023		
2.0	Front- end Development of the Land Listed websage	21/11/2023	23/11/2023		
2.0	Front, and Development of the Londration CV webpage	22/11/2023	26/11/2023	3	
2.0	Front- and Development of the Baats Devated Rems webcase	27/11/2023	02/12/2023	2	
21	Front, and Development of the Trace Donated Items websage	02/12/2023	05/13/2023		
2.11	Front- and Development of the Tools Donated items weboare	05/12/2023	08/12/2021		
2.12	Front- and Development of the Seeds Donated Items webpage	09/12/2023	11/12/2023		
2.18	Front, and Development of the Application form webpage	12/12/2023	14/12/2023	3	
2.14	Front- end Development of the Apolications For Items webpage	15/12/2023	17/12/2023	3	
2.15	Front- end Development of the Application to work on land webpage	18/12/2023	20/12/2023	1	
2.16	Back- end Development of the Registration webpage	13/01/2024	17/01/2024	5	
2.17	Back- end Development of the Login webpage	18/01/2024	22/01/2024	5	
2.18	Back- end Development of the Q&A webpage	23/01/2024	27/01/2024	5	
2.19	Back- end Development of the Answer webpage	28/01/2024	01/02/2024	5	
2.20.	Back- end Development of the Land Listed webpage	02/02/2024	06/02/2024	5	
2.21	Back- end Development of the Application CV webpage	07/02/2024	11/02/2024	5	
2.22	Back- end Development of the Plants Donated Items webpage	12/02/2024	16/02/2024	5	
2.23	Back- end Development of the Trees Donated Items webpage	17/02/2024	21/02/2024	5	
2.24	Back- end Development of the Tools Donated Items webpage	22/02/2024	26/02/2024	5	
2.25	Back- end Development of the Seeds Donated Items webpage	27/02/2024	01/03/2024	5	
2.26	Back- end Development of the Application form webpage	02/03/2024	06/03/2024	5	
2.27	Back- end Development of the Applications For Items webpage	07/03/2024	11/03/2024	5	
2.28	Back- end Development of the Application to work on land webpage	12/03/2024	16/03/2024	5	
2.29	Configure connectivity between front-end and back-end	17/03/2024	31/03/2024	14	
3	Testing		1000		
3.1	Complete ethics form	25/03/2024	29/03/2024	5	
411	submit ethics form	29/03/2024	29/03/2024	1	
3.2	Integration testing	01/04/2024	06/04/2024	6	
2.4	Unit testing	15/04/2024	13/04/2024	6	
	Mid salet	13/04/1014	27/04/2024	13	
4.1	Complete Mid-point documentation	04/12/2023	22/12/2022		
4.7	Create cide deck for Mid. noist Precentation	22/12/2023	21/12/2013	18	
4.2	Record video of Mid-point Presentation	22/12/2023	22/12/2023	÷	
4.4	Submit Mid-point deliverables	22/12/2023	22/12/2023		
			22/12/2023		
5	Final	an incident	12/05/2024	17	
5.1	complete Hinal documentation	29/04/2024	10/05/2024		
5.2	Create slide deck for Final Presentation	29/04/2024	12/05/2024		
3.3	Record video or Final Presentation	11/05/2024	13/05/2024		
3.4	submit Final deliverables	12/05/2024	12/05/2024	4	
6	Project Showcase	an inclusion	18/05/2024	6	
0.1	Plan the design or the stand	13/05/2024	33/05/2024		
6.2	Gather required materials	20/05/2024	28/05/2024		
5.5	Exticipate in accient chowrase	29/05/2024	29/05/2024	1	
0.4	ran on particular of project showcase	231-231-2024	2.4 0.4 2024		



01/10/2023 20/11/2023 09/01/2024 28/02/2024 18/04/2024

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6.1 Reflective Journals

6.1.1 October Reflective Journal

Supervision & Reflection Template

Student Name	Emma Carroll
Student Number	X20226314
Course	Bachelor of Science in Computing
Supervisor	Digital Business Transformation

Month:

What?

- Brainstormed ideas on what to do for my 4th year computer project and how would I approach executing the project.
- Created and submitted a project pitch to Moodle.
- Contacted Anu Sahni to request her participation as my project supervisor.
- Notified Frances Sheridan of Anu Sahni's agreement to supervise the project.
- Acquired feedback from my supervisor via both in-person discussions and Moodle communications concerning my project pitch.
- Finished and delivered the project proposal for review.

So What?

- As the project pitch was accepted with amendments my proposal, which include these amendments, is likely to be accepted.
- I now have a project supervisor that has agreed to meet up with me regularly to discuss my progress.
- My project objectives are clearly defined and relevant to my expertise.
- I have an initial outline of the technical strategy to execute this project.
- The Gantt chart included in the proposal outlines the project's timeframe.
- My biggest concern is how I will successfully complete the software development phase.

Now What?

- I need to get started on software development phase of the project.
- I need to set up a definite timeframe for meeting with Anu.

Student Signature	Emma Carrol

6.1.2 November Reflective Journals

Supervision & Reflection Template

Student Name	Emma Carroll
Student Number	X20226314
Course	BSHCDBT
Supervisor	Anu Sahni

Month:

What?

- Completed the front end of the project's the index.html and index.css.
- Completed the front end of the project's the home.html and home.css.
- Completed the front end of the project's the login.html.
- Completed the front end of the project's the register.html.
- Set up firebase to be used as a backend.
- I created a logo for my Website.
- I set up a definite timeframe for meeting with Anu.
- Started the computer Project Analysis & Planning document by researching what services are already available in the same industry field of my computer Project.
- Started documenting the use cases for the Requirements Engineering

So What?

- I built the html code for a significant portion of the computer project's frontend webpages.
- I coded the CSS for some of these websites.
- I added the logo to the front end of my website.
- I have regular meetings with my supervisor.
- I have a portion of the following documents, the Requirements Engineering and Project Analysis & Planning. Required for the Mid-Point Examination.

Now What?

- I need to develop the front-end webpages of all my computer project to serve as a prototype.
- Need to complete the Requirements Engineering and Project Analysis & Planning document.
- I need to create a slide deck and video my presentation of my prototype.

6.1.3 December Reflective Journals

Supervision & Reflection Template

Student Name	Emma Carroll
Student Number	X20226314
Course	BSHCDBT

Supervisor	Anu Sahni

Month:

What?

- I attended two meetings with Anu.
- Created a prototype of my computer project consisting of all the front-end webpages built using the programming languages HTML, CSS and JavaScript in Visual Studio
- Completed the computer Project Analysis and planning research.
- Completed the technical report documentation sections required for the midpoint evaluation.
- Created a slide deck for my midpoint presentation.
- Created a video of my midpoint presentation including a demonstration of my working prototype.

So What?

- I submitted all required deliverables for the graded Midpoint evaluation to a high standard due to the feedback on my work from my supervisor Anu Sahni.
- I have built the front-end of my computer project.

Now What?

• I need to develop the back-end of my project and connect it to my front-end. I plan to use Firebase for a back-end.

Student	Signature
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6.1.4 January Reflective Journals

Supervision & Reflection Template

Student Name	Emma Carroll
Student Number	X20226314
Course	BSHCDBT
Supervisor	Anu Sahni

Month:

What?

• I did more research about Firebase which I plan to use as the back-end of my project.

So What?

• I am more equipped to develop the back-end of my project.

Now What?

- I need to develop the back-end of my project and connect it to my front-end. I plan to use Firebase for a back-end.
- I need to set up meetings with anu Sahni for this college semester.

Student	Signature
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Emma Carroll

6.1.5 February Reflective Journals

Supervision & Reflection Template

Student Name	Emma Carroll
Student Number	X20226314
Course	BSHCDBT
Supervisor	Anu Sahni

Month:

What?

- I set up login, registration and sign-out features for my project system using the Firebase Realtime database.
- I set up tables for my Q&A, land listed and donated items webpages using the Firebase Firestore database.
- I Attended online meetings with my supervisor to discuss my progress.

So What?

- My project system has a means of authenticating users.
- My project system can now save records of submitted questions, land listings and donated items.
- My supervisor is aware of my projects progress.

Now What?

- I need to develop rest of the back-end of my project that will allow users responses to be recorded.
- I am to attend a meeting in person with my supervisor to showcase what I have done so far.

Student Signature	Enna Carroll

6.1.6 March Reflective Journals

Supervision & Reflection Template				
Student Name	Emma Carroll			
Student Number	X20226314			
Course	BSHCDBT			
Supervisor	Anu Sahni			

Month: March

What?

- I troubleshoot issues with the tables I set up for the Q&A, land listed and donated items webpages using the Firebase Firestore database.
- I completed the build for the code allowing users to answer individual questions with the answer.html for the Q&A.html
- I have attended meetings with my supervisor to discuss my progress in person.

So What?

- The project system can now successfully save records of submitted questions, land listings and donated items.
- The project system can now successfully save answers submitted by users for individual records of submitted questions.
- My supervisor is aware of my project's progress.

Now What?

- I need to implement a means for users to apply to work on advertising private land on the LandListings webpage.
- I need to implement a means for users to apply to receive donated items from the various donated item webpages.
- I will continue to attend meetings, both in person and online, with my supervisor to showcase what I have done so far.

Student Signature



6.1.7 April Reflective Journals

Supervision & Reflection Template

Student Name	Emma Carroll
Student Number	X20226314
Course	BSHCDBT
Supervisor	Anu Sahni

Month: April

What?

- I implemented a means for users to apply to work on advertising private land on the LandListings webpage.
- I implemented a means for users to apply to receive donated items from the various donated item webpages.
- I continue to work on my technical report

So What?

- The project system can now allow users to apply to work on advertising private land on the LandListings webpage.
- The project system can now allow users to apply to receive donated items from the various donated item webpages.
- My have progressed in my technical report

Now What?

- I need to complete testing my project.
- I need to complete my technical report.
- I need to design my computer project poster.
- I need to video and share video link of my computer project poster presentation.
- I will attend meetings with my supervisor to showcase what I have done so far.

Student Signature	Emma Carroll

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Signature_	Emma	Carrol	