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Bachelor of Science in Computing

Cyber Security

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Safe to Shop Chrome Application

Technical Report

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Executive Summary

The Safe to Shop Application is a project that focuses on making online users aware of fraudulent online webstores. It does this by gathering information about the website and presenting it to the online user in a clear and precise manner.

The Safe to Shop Application is a project that is divided into two parts. The first part of this project is the Safe to Shop API. This portion of the project involves gathering information about the selected website and structuring it so that it's compatible with the second portion of the project. The second portion of the project is the Safe to Shop Chrome Plugin. This portion of the project involves showing the end user information about the selected URL using information gathered by the Safe to Shop API.

- Within this documentation's introduction section, the reader will be able to read and understand the background, aims, technology and structure of this project.
- Within this documentation's system section, the reader will be able to read and understand requirements, design, architecture, implementation, GUI, testing, and evaluation of this project.
- Within this documentation's development section, the reader will be able to read about the potential pathways this project can take in, in the future.
- Within this documentation's appendices section, the reader can read the initial project proposal of this project and the journals detailing the progress leading up to it's completion.

1.0 Introduction

1.1. Background

Fraudsters have targeted eCommerce merchants as the global eCommerce market is worth more 5 trillion dollars. Fraudsters are selling fake goods and services to unsuspecting buyers. They often do this by replicating the website , pictures, logos etc of well known brands. Here is an example

<https://balenciagaapparel.com/> is a fake site imitating the highly value brand <https://www.balenciaga.com>. I originally came up with this project whilst discussing website safety levels with my family one evening. I researched this very topic several days later and found that it was a very common question asked on the Google review forums. According to a Juniper Research study which measured the number of losses that occur because of eCommerce fraud, there was a loss of \$17.5 billion dollars in 2020 which rose to \$20 billion dollars in 2021¹. This is an increase of 18% YoY.

The main victims of online fraud are people who enter their personal & financial information into a website to purchase a product or services only to find that they don't receive the goods or services. In addition, the user runs the risk their credit card information maybe stolen and money taken from their account.

¹ <https://www.juniperresearch.com/press/ecommerce-losses-online-payment-fraud-exceed-20bn>

1.2. Aims

The goal of this project is to create a reliable Chrome Plugin that can be downloaded from the Google App Store that will allow the user to determine the safety level of any online webstore that they visit.

1.3. Technology

The technologies that I will be using for the creation of this project are C#, Vue.js, TAMI API, JavaScript, HTML and CSS.

I will be using C#, & TAMI API to create the first portion of the project that is responsible for gathering the information about the chosen URL.

I will be using Vue.js, JavaScript, HTML and CSS to create and display the second portion of this project which is the chrome plugin that the user will interact with.

1.4. Structure

The Safe to Shop API will be focused on gathering and organising information for the Safe to Shop Chrome Plugin. The Safe to Shop API will gather its information from the TAMI API by submitting the user's chosen URL and receiving the relevant information back from it. The information that the Safe to Shop API is looking for is information about the website such as the age of the site, the employee count, and the SSL certificate. Once the Safe to Shop API has this information, it will rank the information from 1 to 5, with 1 being the worst and 5 being the best. Each piece of information is weighed equally against each other. Once each piece of information has been judged, it will be given a percentage and submitted to the Safe to Shop Chrome Plugin for display.

The Safe to Shop Chrome Plugin will be focused and displaying the relevant about the website to the user. The plugin is designed to be simple to use and will only show information about the relevant website. The Safe to Shop Chrome will take the percentage from the Safe to Shop API and inform the user that the website is either.

- Very Bad
- Bad
- Ok
- Good
- Excellent

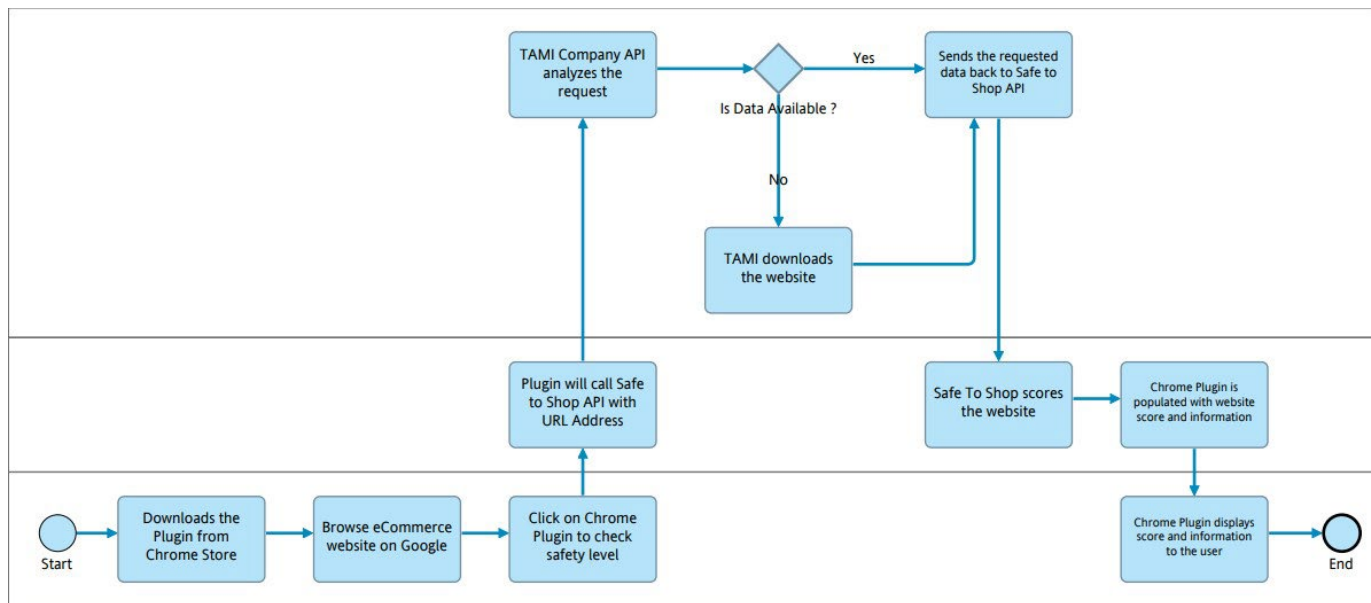
The Safe to Shop Chrome plugin will also show some of the information gathered by the Safe to Shop API to the user such as the Company Name, the Company Logo and the available deliveries.

2.0 System

2.1. Requirements

2.1.1. Functional Requirements

2.1.1.1. Use Case Diagram



2.1.2. Requirements

2.1.2.1 Safe to Shop API Requirements

- Acquire URL address from Safe to Shop Chrome Plugin
- Send URL address to TAMI API
- Receive relevant information from TAMI API
- Grade each piece of information and rate them from 1 to 5
- Give the information a score depending on the total points received
- Send information and score to Safe to Shop Chrome Plugin

2.1.2.2 Safe to Shop Chrome Plugin Requirements

- Open Safe to Shop Chrome plugin when clicked
- Send website URL address to Safe to Shop API
- Receive information and percentage from Safe to Shop API
- Rate safety level of the website by the percentage
- Display the safety level and website information to the user
- Close the Safe to Shop Chrome Plugin when user exits the webpage.

2.1.3. Description & Priority

Safe to Shop API Requirements

- The Safe to Shop API should be able to receive the URL address from the Safe to Shop Chrome Plugin. (High Priority)
- The Safe to Shop API should be able to send the URL address to the TAMI API. (High Priority)
- The Safe to Shop API should be able to receive information about the site from the TAMI API. (High Priority)
- The Safe to Shop API should be able to grade each piece of information. (Medium Priority)
- The Safe to Shop API should be able to score the website depending on the grades of each piece of information. (Medium Priority)
- The Safe to Shop API should be able to send the information and the website score to the Safe to Shop Chrome Plugin. (High Priority)

Safe to Shop Chrome Plugin Requirements

- The Safe to Shop Chrome Plugin should be able to display information to the user when it is clicked on in the Google Browser. (High Priority)
- The Safe to Shop Chrome Plugin should be able to send the websites URL address to the Safe to Shop API. (High Priority)
- The Safe to Shop Chrome Plugin should be able to receive the website score and information from the Safe to Shop API. (High Priority)
- The Safe to Shop Chrome Plugin should be able to establish a safety level for the website according to the website score. (High Priority)
- The Safe to Shop Chrome Plugin should be able to display the safety level and the website information to the user in a clear and precise manner. (High Priority)
- The Safe to Shop Chrome Plugin should be able to automatically close when the user leaves the webpage or interacts with a portion of the webpage. (Medium Priority)

2.1.4. Use Case

Scope

The scope of this use case diagram is to show the process that the project will take in order to acquire, analyse, categorises, and display the relevant website information to the user for any given site.

Description

This use case diagram demonstrates how the Safe to Shop API and Safe to Shop Chrome Plugin will function. It will show the most likely path that the project will take if the user interacts with it. This use case diagram shows that the user will download and install the Safe to Shop Plugin onto their Google browser and use it to test the safety of an eCommerce-based webpage. The URL address of the webpage will be passed to the Safe to Shop API and then the TAMI API. The TAMI API will provide the information to the Safe to Shop API, the Safe to Shop API will process the information and send it back to the Safe to Shop Chrome Plugin. The Safe to Shop Chrome plugin will then display the safety level of the site alongside some website information to the user.

Use Case Diagram

This use case diagram is called a flowchart. It is used to illustrate the most likely paths that the user can take when they are interacting with a product. The Safe to Shop Chrome Plugin is a simple application from the user's perspective but is more complicated from the back end. To successfully read the flowchart, you need to start from the start point and follow the lines and texts until you reach the end point. You also may come across a diamond within the flowchart which illustrates a choice that the user or system can.

Flow Description

Precondition

The Safe to Shop Chrome Plugin must be installed onto your Google Browser.
The Safe to Shop API must be running in the background.

Activation

The application will begin when the user has entered a web page and pressed the application button for the application within the browser. The application will run automatically when it is opened.

Main flow

- The Safe to Shop Chrome Plugin will send the URL address to the Safe to Shop API.
- The Safe to Shop API will send the URL address to the TAMI API and request information about it
- The Safe to Shop API will receive the information about the URL address
- The Safe to Shop API will score and grade the information
- The Safe to Shop API will send the website score and information to the Safe to Shop Chrome Plugin
- The Safe to Shop Chrome Plugin will display the score and information to the user
- The user will read the website score and information
- The user closes the Safe to Shop Chrome Plugin

Alternate flow

- A1 (No relevant data found)
- The Safe to Shop API sends the URL address to the TAMI API and requests information about it
- The TAMI API does not have any information about the URL address
- The TAMI API searches for relevant information
- The TAMI API updates itself with the relevant information
- The TAMI API sends the relevant information to the Safe to Shop API

Exceptional flow

E1 : (No Exceptional Flow)

Termination

The Safe to Shop Chrome plugin will terminate when the user closes the GUI. The Safe to Shop API will terminate when the user manually closes the API in the backend.

Post condition

There is no post condition available.

2.1.5. Data Requirements

- The Safe to Shop Chrome Plugin will send the URL address to the Safe to Shop API
- The Safe to Shop API will request information about the URL address from the TAM API
- The Safe to Shop API will receive information about the URL address from the TAM API
- The Safe to Shop API will score the information and send it to the Safe to Shop Chrome Plugin
- The Safe to Shop Chrome Plugin will receive the website score and the website information
- The Safe to Shop Chrome Plugin will display the website score and website information to the user

2.1.6. User Requirements

- The user will build the Safe to Shop Chrome Plugin and upload it to their Google browser.
- The user will run the Safe to Shop API in the background using Visual Studio 2019/2022.
- The user will open an eCommerce website using the Google browser.
- The user will activate the Safe to Shop Chrome plugin by clicking on it in the Google browser.
- The user will read the information about the website that they are currently on.
- The user will either leave the website or search for products to buy within the website depending on the result of the Safe to Shop Chrome Plugin.

2.1.7. Environmental Requirements

- The Safe to Shop Chrome Plugin needs to be built using Vue.js
- The Safe to Shop Chrome Plugin needs to be uploaded to the Google Browser.
- The Safe to Shop API needs to be run using Visual Studio 2019/2022.
- The Safe to Shop Chrome Plugin and Safe to Shop API both need to be active for this project to work.

2.1.8. Usability Requirements

- The user needs to be able to open the Safe to Shop Chrome Plugin from the Google browser.
- The Safe to Shop Chrome Plugin needs to display the website score and website information.
- The Safe to Shop API needs to score the information about the website.
- The Safe to Shop Chrome Plugin and Safe to Shop API need to be able to share information between each other.

2.2. Design & Architecture

This project consists of three different portions. This project makes use of the Safe to Shop Chrome Plugin, the Safe to Shop API and the TAMI API.

The Safe to Shop Chrome Plugin is responsible for interacting with the user. It displays the safety level of the current website and the website information to the user. It was created through Vue.js, html, CSS, and JavaScript.

The Safe to Shop API is responsible for processing the information about the website. It grades the information it receives from the TAMI API and sends it to the Safe to Shop Chrome Plugin. Each piece of information that it grades is weighed equally against each other, and an overall percentage is given to the information which becomes the website score.

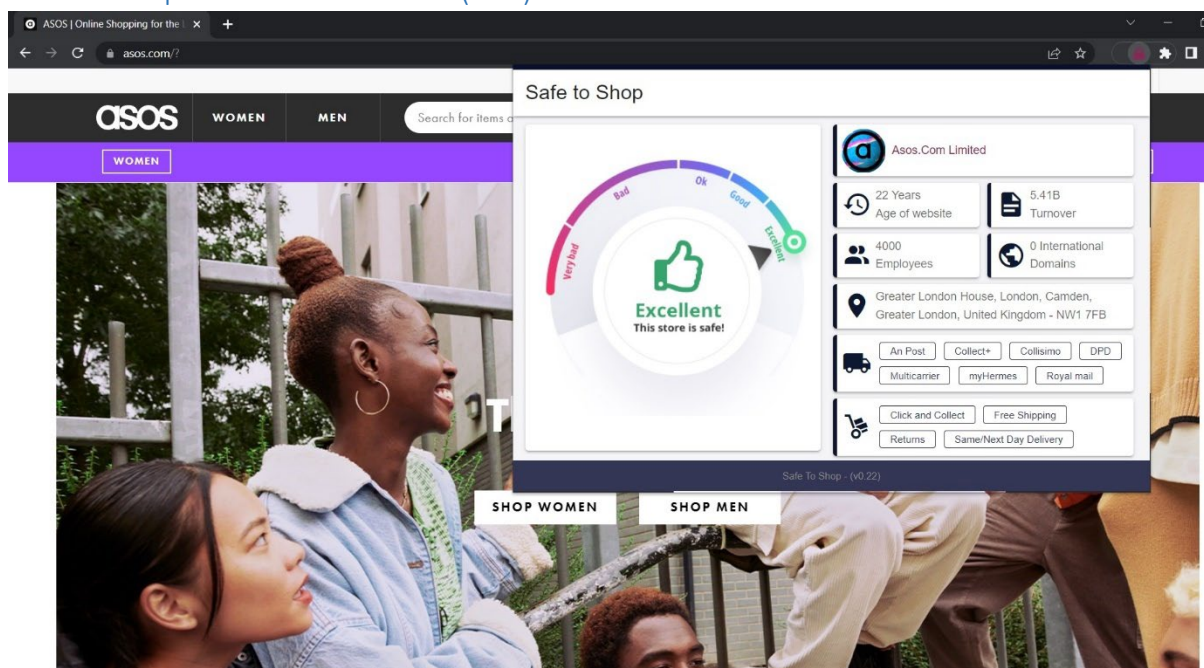
The TAMI API is an API that is used to gather the necessary information to make this project functional. TAMI is a data analytical company which contains a large amount about websites which is processed within this project. Once the TAMI API receives a URL address from the Safe to Shop API, it will search its internal database for the relevant information and send it to the Safe to Shop API.

2.3. Implementation

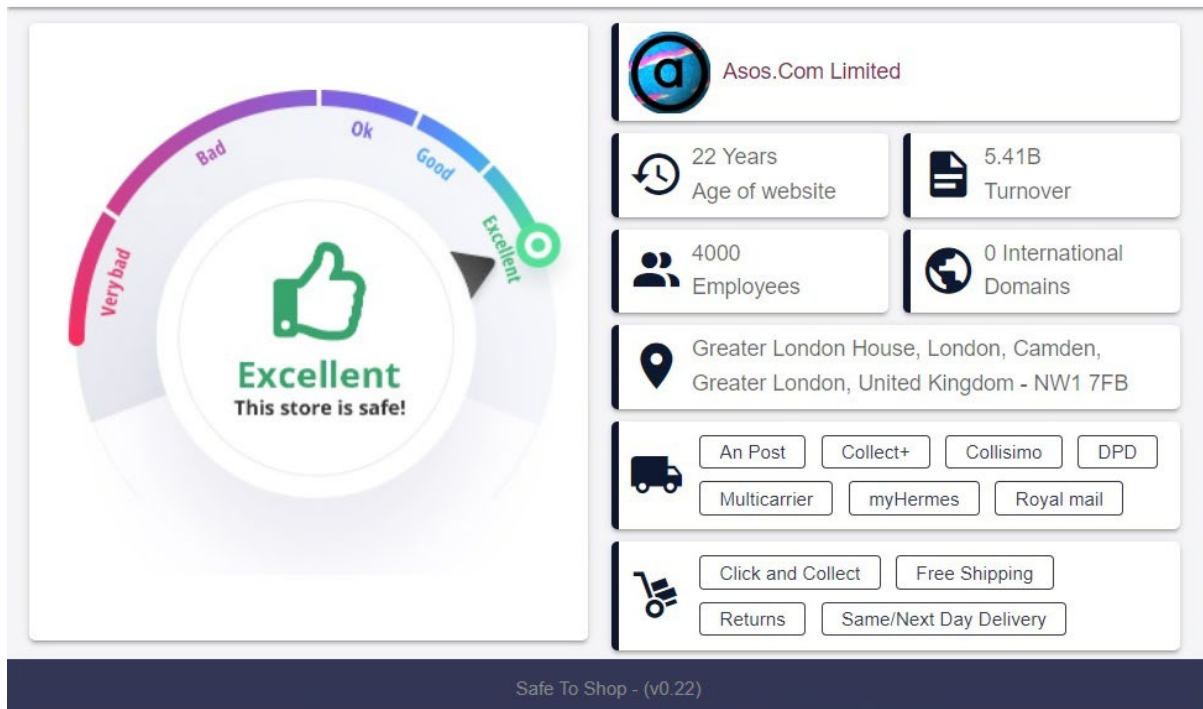
The Safe to Shop Chrome Plugin is developed using HTML, CSS and JavaScript. The Safe to Shop API functions by receiving the HTTP GET request from the plugin and sending it to the TAMI API. It will then receive the website information for that GET request and alter it so that it is compatible with the chrome plugin.

Vue.js is a very important part of this project as it's the software that is used to build the Safe to Shop Chrome Plugin and it is also used in the Safe to Shop API.

2.4. Graphical User Interface (GUI)



Safe to Shop



These screenshots are an example

These two screenshots are examples of the Safe to Shop Chrome Plugin being used on the website 'Asos'. The first screenshot shows that the user only needs to click on the Safe to Shop Chrome Plugin Icon to activate the plugin and the second screenshot shows what kind of information can be displayed to the user. With the second screenshot, the information is divided in two, the information of the left-hand side of the screenshot is the safety level of the website. It informs the user on how reliable the website is. On the right-hand side of the second screenshot, you can see various pieces of key information that will support the safety level. Some of these pieces of information are the age, the turnover, the employee count, and the number of international domains.

2.5. Testing

2.5.1. Tools

The tools that I used to test my project were the Safe to Shop Chrome Plugin and the Google Transparency Report Site Checker.

<https://transparencyreport.google.com/safe-browsing/search?hl=en>

2.5.2. Test Results

Website	Safe to Shop Result	Google Transparency Result	Website	Safe to Shop Result	Google Transparency Result	Website	Safe to Shop Result	Google Transparency Result
4x4northamerica.com	Ok	No unsafe content found	artistanon.com	Good	No unsafe content found	byuistore.com	Ok	No unsafe content found
a21.org	Good	No unsafe content found	ascendyourlimits.com	Ok	No unsafe content found	cafesunflower.com	Ok	No unsafe content found
aab-co.com	Ok	No unsafe content found	assemblyroomseidinburgh.co.uk	Ok	No unsafe content found	candlewoodmarketing.com	Ok	No unsafe content found
abbottstore.abbott	Excellent	No Data Available	assp.org	Ok	No unsafe content found	caninecompany.com	Ok	No unsafe content found
abccolandscape.com	Bad	No unsafe content found	atlantispools.co	Ok	No unsafe content found	cappodricks.com	Ok	No unsafe content found
abeofootwear.com	Good	No unsafe content found	atm.org.uk	Good	No unsafe content found	captusa.com	Ok	No unsafe content found
accuratelawnbowls.com	Ok	No unsafe content found	atsisrael.com	Very Bad	No unsafe content found	carcomputerexchange.com	Ok	No unsafe content found
aceofvase.com	Ok	No unsafe content found	avrglobaltech.com	Ok	No unsafe content found	carsbeauty.com	Ok	No unsafe content found
acq.com	Ok	No unsafe content found	babottsktmarts.com	Good	No unsafe content found	catalystcase.com	Good	No unsafe content found
adultmart.com	Ok	No unsafe content found	backontrack.com	Good	No unsafe content found	catchinglives.org	Good	No unsafe content found
advatech.co.ke	Ok	No unsafe content found	bac-mono.com	Ok	No unsafe content found	ccworldwide.org	Ok	No unsafe content found
aesoutdoors.com	Ok	No unsafe content found	bagels.tech	Good	No Data Available	centuryfiberoptics.com	Ok	No unsafe content found
agentstore.com	Ok	No unsafe content found	baits.com	Ok	No unsafe content found	chicagoreviewpress.com	Ok	No unsafe content found
airmovers.com	Ok	No unsafe content found	bakindustries.com	Good	No unsafe content found	cliden.com	Ok	No unsafe content found
alcoholtest.com	Ok	No unsafe content found	baltimorewatertaxi.com	Good	No unsafe content found	cleaningideas.com	Ok	No unsafe content found
alexandersunifirms.com	Good	No unsafe content found	bandtrinity.com	Good	No unsafe content found	cleanoffice.co.uk	Ok	No unsafe content found
alfredsung.com	Ok	No unsafe content found	bbs.co.uk	Good	No unsafe content found	coffee1652.co.uk	Ok	No unsafe content found
alidrums.com	Ok	No unsafe content found	bcicomputers.com	Ok	No unsafe content found	coffee-emporium.com	Ok	No unsafe content found
allaboutdoors.com	Good	No unsafe content found	beachbunny.com	Good	No unsafe content found	coldkeepers.com	Ok	No unsafe content found
allaboutlearningpress.com	Good	No unsafe content found	beautyfxmedspa.com	Ok	No unsafe content found	collebycounty.com	Ok	No unsafe content found
allfrom1supply.com	Ok	No unsafe content found	benchmarktrophy.com	Ok	No unsafe content found	collinschicago.com	Ok	No unsafe content found
allsafepool.com	Ok	No unsafe content found	bertin-corp.com	Good	No unsafe content found	columbia.asia	Excellent	No unsafe content found
ally.nyc	Ok	No unsafe content found	bestofgolfamerica.com	Ok	No unsafe content found	commercialzone.com	Ok	No unsafe content found
aloeveritas.com	Bad	No unsafe content found	beyondvape.com	Good	No unsafe content found	complex.com	Excellent	No unsafe content found
alphab2b.biz	Very Bad	No unsafe content found	bikes4all.co.uk	Excellent	No unsafe content found	conicellinissanparts.com	Ok	No unsafe content found
alphaooffice.co.uk	Ok	No unsafe content found	binoculars.com	Good	No unsafe content found	copenhagenliving.com	Ok	No unsafe content found
amazingwristbands.com	Good	No unsafe content found	bitd.com	Ok	No unsafe content found			
andazfashion.com	Good	No unsafe content found	bizarreguitar.com	Ok	No unsafe content found			
andersons.com	Good	No unsafe content found	blue-owl.co.uk	Ok	No unsafe content found			
anthonyssfia.com	Good	No unsafe content found	blueskyscrubs.com	Good	No unsafe content found			
aobchem.com	Ok	No unsafe content found	bmc.ac.uk	Ok	No unsafe content found			
arcadaid.com	Good	No unsafe content found	boudoirnoir.com	Good	No unsafe content found			
arcfirst.net	Ok	No unsafe content found	boygirlsclubchester.com	Ok	No unsafe content found			
aria-atl.com	Ok	No unsafe content found	brandedproducts.com	Ok	No unsafe content found			
ariaflex.com	Ok	No unsafe content found	brilliantbikes.co.uk	Good	No unsafe content found			
arleness.com	Good	No unsafe content found	britishdressage.co.uk	Good	No unsafe content found			
artisanpower.com	Ok	No unsafe content found	brownbear.com	Good	No unsafe content found			

Above is a screenshot of the testing that was done for this project. To evaluate this project, I gathered one hundred eCommerce sites and gathered the safety level of each one of them. I compared the information against the Google Transparency Report Checker.

What I discovered is that Google only checks to ensure there is no unsafe content but does not check if the website is fraudulent.

According to Google, this site is safe but it is a fraudulent site

<https://www.adidasyeeyssupply.com/>

Safe Browsing site status

Google's Safe Browsing technology examines billions of URLs per day looking for unsafe websites. Every day, we discover thousands of new unsafe sites, many of which are legitimate websites that have been compromised. When we detect unsafe sites, we show warnings on Google Search and in web browsers. You can search to see whether a website is currently dangerous to visit.

Check site status

https://www.adidasyeeyssupply.com/

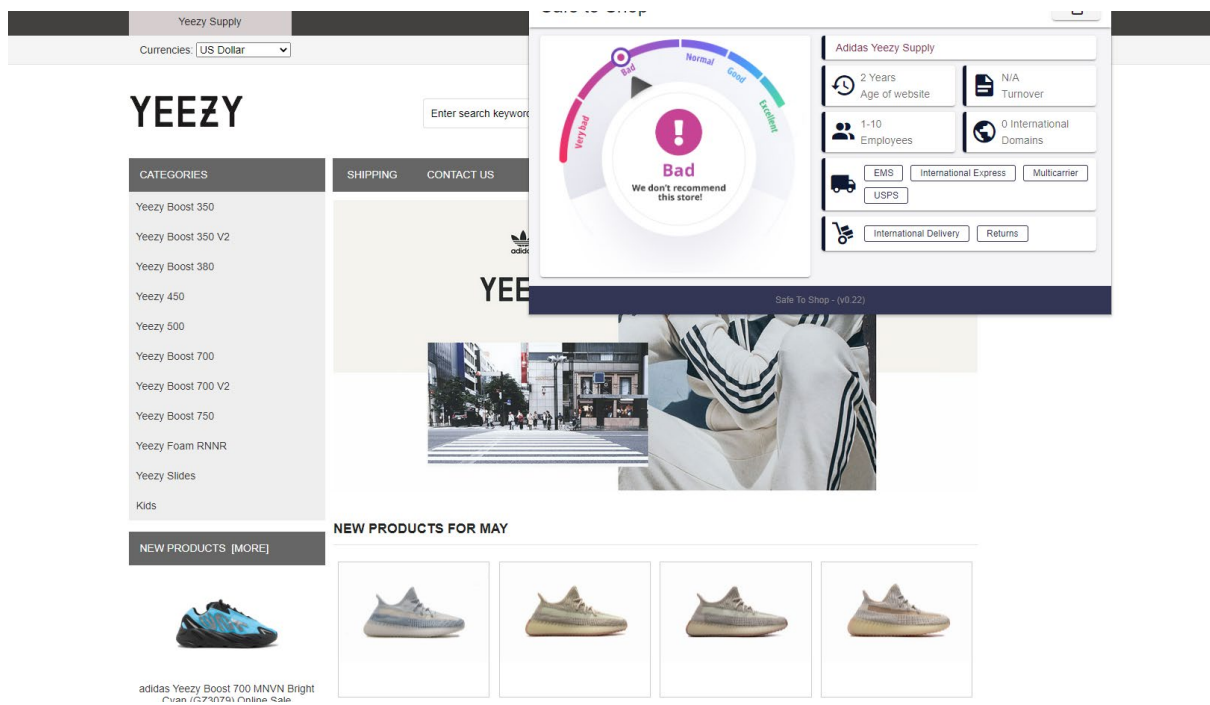
Current status

 No unsafe content found

Site info

This info was last updated on May 3, 2022.

However when you use the SafetoShop Plugin you can see the website is bad



The IP address of the fake website is located in turkey

IP Address: 167.160.30.248
ASN: 59447
City:
State/Region:
Country: Turkey
Postal Code:
ISP: Istanbuldc Veri Merkezi Ltd Sti
Time Zone: +0300
ipdata.co Results

Where as the IP address for adidas.com is located in USA

IP Address: 104.71.143.118
ASN: 20940
City: Atlanta
State/Region: Georgia
Country: United States
Postal Code: 30301
ISP: Akamai International B.V.
Time Zone: -0400
ipdata.co Results

3.0 Conclusions

Advantage

The main advantage of this project is the awareness that it brings to the user. By making users aware of these fraudulent websites, the user will not be tricked into handing over their personal & financial information.

Another advantage that this project brings to the user is the website information. The user can use the Chrome Plugin to gather information about eCommerce websites so that they can determine which eCommerce website is the best site to shop from for them.

Disadvantage

The main disadvantage of this project is that it's only focused on eCommerce websites. If a user was to use this project on a non-eCommerce website, they will gain no information.

Another disadvantage of this project is that the information being provided to the user comes directly from the TAMI API. If the TAMI API was to go offline for any reason, this project will no longer function correctly.

4.0 Further Development or Research

With additional time and resources, I could focus on expanding this project to cover the disadvantages listed above and to add new features to it. One such feature would be the ability to compare company information of different websites against each other. This would allow the user to select which website they would rather shop from.

5.0 References

<https://www.juniperresearch.com/press/ecommerce-losses-online-payment-fraud-exceed-20bn>

https://transparencyreport.google.com/safe-browsing/search?hl=en_GB

End.....

6.0 Appendices Content Table

6.1 Project Proposal

6.2 Reflective Journals

6.1. Project Proposal

1. Objectives

Creation of a google chrome plugin alerting users if the website is not safe to shop on.

I will be using TAMI's API to download the company information of a website and analyse the SSL information of a website to see if it safe to shop on. The Chrome Plugin will alert the user if the SSL/TSL certificate is fake or if the web site is suspicious.

This Chrome Plugin will only work on English language websites which are taking payments online.

2. Background

In the UK, consumers have been conned out of more than £2.3b a year by fraudsters exploiting the COVID 19 pandemic. Up to April 2021, 413,553 instances of fraud were reported in UK as published by the reviewer company 'Which?'. This represents an increase of 33% from the previous year.

Online shopping scams topped the table where people unknowingly purchase goods from fake websites only to discover the goods never arrive. This represents a 65% increase Year to year with more than 103,000 victim reports made. The total amount lost was £69m, equating to an average of £674 per reported incident.

It is very likely these figures are under presented but they do show how big the problem of online scams are. I work for a company called Tami which is a market intelligence company. My role in this company is Software Developer/Data Analysis. TAMI has identified over 7.6M eCommerce sites of which 2M are shipping products.

During my time at TAMI, I noticed a lot of fake/bad websites. I was taught about SSL/TSL certificates recently in my course and that was when I came up with my idea. I approached the CEO of TAMI and asked if I could develop a Chrome Plugin to help consumer identify if a website is safe to shop on. The CEO agreed as they have an API where I can download the SSL/TSL & website data for the Chrome Plugin. This means I can meet the objectives outlined in the first section of this document.

3. State of the Art

I checked the Google Chrome Extension store see if there are other plugins that check the SSL/TSL to see if the website is safe and I did not find one. Most of the SSL/TSL plugins identify the details of the certificate or if the certificate is expiring. The other plugins don't valid the certificate if his is fake or has been used by multiple websites.

When searching the <https://worldwide.espacenet.com/> regarding patents in this area there is no pending or granted patents for detecting if an SSL/TSL certificate is invalid. The current patents relate to the communication of data via protocol.

Why this is novel is because the system will validate the SSL/TSL certificate & related company information across millions of websites to ensure the SSL/TSL certificate in unique and has the legal details like the website.

There is a gap in the market as no one is comparing certificates across millions of websites nor are they validating if the owner of the website is the true legal entity.

Today Google will alert if a website is not secure but there are many cases where Google says a store is safe but, it is not.

The SSL/TSL certificate is supposed to be unique to the website or parent company but in many cases the SSL cert subject name or alternative subject name is the SSL provider or Cloudflare etc. Let's look at <https://www.balenciagasaleus.net/>

Google says the website is secure and the SSL certificate is valid. The websites does not offer any well-known payment methods such as WorldPay, Adyen, Alipay etc. The website is three years old. The business country of the website could not be determined as the IP address is routed to Cloudflare. This website would be flagged by the Chrome Plugin as not safe to shop on even though the DNS name is balenciagasaleus.net

Balenciaga Mens Track Sneaker In Dark Red Mesh And Nylon | US SDBPV-0158 ★★★★★
\$152 10 Colours

Balenciaga Mens Track Sneaker In Grey And White Mesh And Nylon | US OETRA-9284 ★★★★★
\$152 10 Colours

4. Technical Approach

I will interview the Marketing Manager, Sales Manager and CEO of TAMI to gather requirements which I will document into a Business Requirements Document. The BRD will have the following headings

- Overview
- In/Out of Scope
- Business Process
- Business Rules
- Requirements
- Non-Functional Requirements

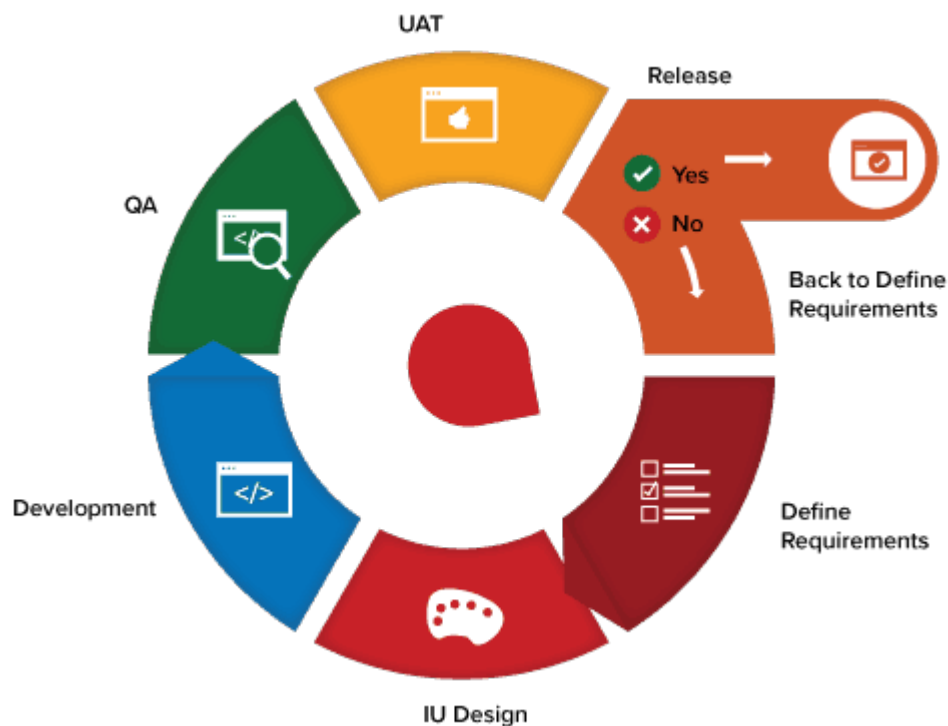
I will develop the process flow for how the Chrome Plugin will work and interact with TAMI's company API.

Once the BRD is approved by key stakeholders I will create an EPIC in Jira (Software Build System by <https://www.atlassian.com/>).

I will then break down each requirement into tickets the EPIC 'Safe to Shop Plugin'.

I will develop a test plan which I will ask Data Science Manager in TAMI to signoff

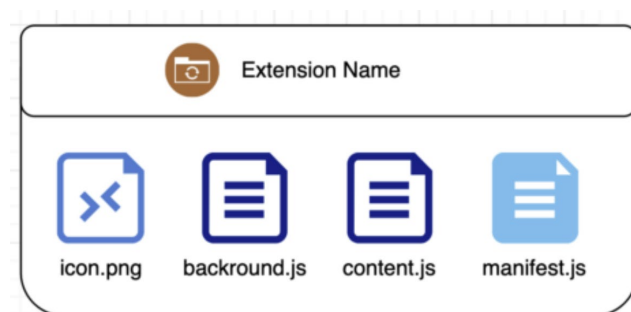
I will build the Chrome Plugin using Agile methodology



5. Technical Details

To register the Chrome Plugin on Google I will need to submit four files

- Manifest JSON which tells Chrome important information about our Safe to Shop on Chrome Plugin. This includes Name and which permissions it needs
- The content.js script which is “a JavaScript file which interacts with web pages that the browser visits.
- Image Icon file
- Background.js which registers a background script in the manifest & tells the extension which files to reference, and how that file will behave.



I will also need to create an algorithm to score the website in terms of the safety level 1 been poor and 7 been excellent.

I will create a library with the calculated result which as

"Id": "db5792efac6d5770c2e0fab4920333beda922e4bb98e589e3e8f07683c5e8973",

```
"Safety Score":0,
  "SSL IsValid": false,
  "CertificateSource": null,
  "Subject": {
    "CommonName": "testexp",
    "CountryCode": "US",
    "IncorporationCountryName": null,
    "OrganizationName": "testexample",
    "OrganizationUnit": "testexample",
    "Locality": "test",
    "StateOrProvince": "California",
    "Email": null,
    "SerialNumber": null,
    "BusinessCategory": null,
    "Street": null,
    "PostCode": null,
    "Description": null
  },
  "AlternativeNames": null,
  "IssuedBy": "CN=testexp, OU=testexample, O=testexample, L=test, S=California, C=US",
  "ExpirationDate": "2030-05-31T06:41:49",
  "ErrorMessage": null,
  "Hosts": null,
  "Archived": false
},
  "Payment Provider": {null,
  "Shipping Company": {null,
  "Business Country": {null,
  "Age of Site": {<3 years,
  },
```

6. Special Resources Required

It has been agreed with TAMI's CEO and Director of IT that I can gain access to TAMI company API. Where I can download both company and SSL certificate data. I will then use this data to score the safety of the website

7. Project Plan

Safe to Shop Project	Duration	Start	Finish	Predecessors	Resource Names
Safe to Shop Chrome Plugin	66 days?	Mon 08/11/21	Tue 08/02/22		
Business Requirements Document	66 days?	Mon 08/11/21	Tue 08/02/22		
Meeting with CEO / Marketing Manager to collect requirements	1 hr	Mon 08/11/21	Mon 08/11/21		Darragh OBrien
Initial Draft of requirements	3 days	Mon 08/11/21	Thu 11/11/21	4	Darragh OBrien
Design Chrome Plugin UI	2 hrs	Thu 11/11/21	Thu 11/11/21	5	Darragh OBrien
Design Customer Process Flow	2 hrs	Thu 11/11/21	Thu 11/11/21	6	Darragh OBrien
Submit BRD with designs to CEO for approval	1 hr	Mon 15/11/21	Mon 15/11/21		Darragh OBrien
	1 day?	Mon 08/11/21	Mon 08/11/21		
Product Design	1.13 days?	Thu 11/11/21	Fri 12/11/21		
Use Case Diagram	2 hrs	Thu 11/11/21	Thu 11/11/21	7	Darragh OBrien
Class Diagram	2 hrs	Thu 11/11/21	Fri 12/11/21	11	Darragh OBrien
Sequence Diagram	2 hrs	Fri 12/11/21	Fri 12/11/21	12	Darragh OBrien
Customer Process Flow	2 hrs	Fri 12/11/21	Fri 12/11/21	13	Darragh OBrien
Product Design Approved	1 hr	Fri 12/11/21	Fri 12/11/21	14	
Test Plan	4 hrs	Fri 19/11/21	Fri 19/11/21		Darragh OBrien
College Implementation , Documentation and Video Presentation	0 days?	Tue 21/12/21	Tue 21/12/21		Darragh OBrien
Build	30 days	Mon 22/11/21	Fri 31/12/21		Darragh OBrien
Testing	10 days	Sat 01/01/22	Thu 13/01/22		
Write Test Scripts	1 day	Mon 03/01/22	Mon 03/01/22	21	Darragh OBrien
Commence system testing	1 day	Tue 04/01/22	Tue 04/01/22	24	Darragh OBrien
Fix Bugs	3 days	Wed 05/01/22	Fri 07/01/22	25	Darragh OBrien
UAT testing	4 days	Mon 10/01/22	Thu 13/01/22	26	Darragh OBrien
Google Chrome	14.31 days	Mon 10/01/22	Fri 28/01/22		
Manifest Json	3 hrs	Mon 10/01/22	Mon 10/01/22	26	Darragh OBrien
Content.js script	4 hrs	Mon 10/01/22	Mon 10/01/22	30	Darragh OBrien
Image Icon File	0.5 hrs	Mon 10/01/22	Mon 10/01/22	31	Darragh OBrien
Background.js	6 hrs	Mon 10/01/22	Tue 11/01/22	32	Darragh OBrien
Description	1 hr	Tue 11/01/22	Tue 11/01/22	33	Darragh OBrien
Wait for Google to process and publish	2.5 wks	Tue 11/01/22	Fri 28/01/22	34	Google
College Final Implementation and Documentation	0 days	Tue 08/02/22	Tue 08/02/22		Darragh OBrien

8. Test Plan

Scope

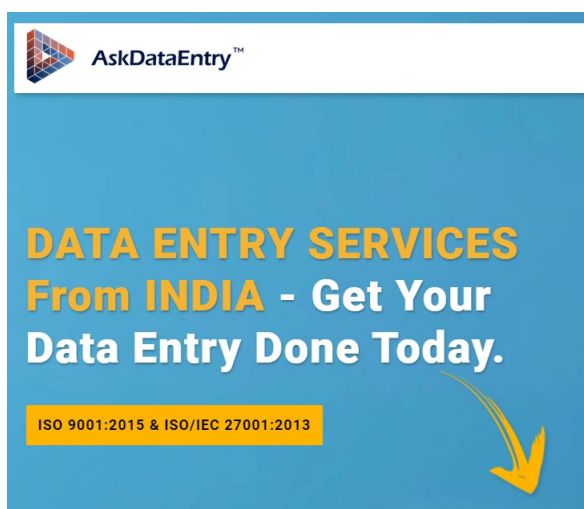
Only testing on English Speaking Sites

Only testing on Chrome Sites as the plugin is not suitable for Mac Users

Testing will be on 1000 sites

Roles

I will be the lead tester, but I will also be working with TAMI's external data vendor AskDataEntry to test the Chrome Plugin works across multiple devices IPAD, Mobile Phone, Laptop etc. They will be also doing volume tests.



Test Script format

Test Case No.	Test Scenario	Step No.	Steps to reproduce	Expected result	Actual Result	Test Result
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Data Sources: App.tami.co.uk

Download a list of 1000 websites and test if the Plugin works

Testing Phases

These are the main phases of testing

- System Testing
- UAT Testing
- Spoke Testing
- Volume Testing

6.2. Reflective Journals

October Monthly Journal

Student Name	Darragh O'Brien
Student Number	x18403114
Course	Bachelor's in science of Computing (Cyber Security)

What?

I scheduled a meeting with my boss from work to discuss any security issues that the company has been having. During the meeting, my boss mentioned the problems with TSL/SSL Certificates. Hackers were using fake certificates to validate their fake websites to scam people.

Whilst working as a data analyst in my workplace, I was able to notice that there was a decent number of fake or suspicious web sites that I was tasked with searching. Normally I avoid these websites but due to learning about TSL/SSL certificates in NCI, I decided to check if these sites were valid and too my surprise every site I checked didn't have a certificate or its certificate was suspicious in some way. I used this as a basis for my project and scheduled a meeting with the CEO of my workplace with a request to use some of the companies' data/resources to help to develop the project. After discussing what I had learnt, they agreed to help me.

After I had pitched my idea to my CEO, I researched if there were any European patents that may prevent the creation of the project, researched the companies that handed out the certificates to the applicants. and checked the google chrome plugin store to see if there was anything like my project.

Using the information that I had gained from my company and my independent research; I completed and submitted the elevator pitch for my project to Moodle for evaluation and began to work on the ethics form and proposal form.

<p>So What?</p> <p>(Successes)</p> <ul style="list-style-type: none"> - Brainstormed an idea for the project - Acquired permission to use data and assistance from the company to help create the project - Recorded and submitted my elevator pitch to Moodle - Wrote up a schedule that will allow me to keep a better track of my projects progress. <p>(Challenges)</p> <ul style="list-style-type: none"> - Write up the Ethics form and Proposal form - Learn how to create a google plugin - Research how to scan a TSL/SSL Certificate - Research the specifics behind patents 	
<p>Now What?</p> <p>What can you do to address outstanding challenges?</p> <p>I can alter my schedule to acquire time to have more time to work on my software project.</p> <p>I can look up videos or read documents from official sources to learn more about google plugins, TSL/SSL certificates, and patents.</p>	
<p>Student Signature</p>	<p>Darragh O'Brien (x18403114)</p>

November Monthly Journal

Student Name	Darragh O'Brien
Student Number	x18403114
Course	Bachelor's in science of Computing (Cyber Security)

What?

I have begun to work on the documentation for the 17th of December Submission.

I have begun to work on the presentation slides for the 17th of December Submission.

I have begun to work on the prototype for the 17th of December Submission.

So What?

(Successes)

- I have completed the first two portion of the documentation.
- I have got the connection to the companies API to work.
- I have acquired the expertise of the employees of Tami to help with this project

(Challenges)

- Not a lot of time to work on the project. (Web Application, AI, and End of Year Exams)
- Building the Google Plugin
- Learning how to scan the certificate to see if it is correct

<p>Now What?</p> <p>Schedule my workload to match of due dates.</p> <p>Research how to build a google plugin from scratch.</p> <p>Get help from the Tami employees on how to determine if a certificate is valid.</p> <p>Learn how to combine the google plugin with the verification.</p>	
<p>Student Signature</p>	<p>Darragh O'Brien (x18403114)</p>

December Monthly Journal

<p>Student Name</p>	<p>Darragh O'Brien</p>
<p>Student Number</p>	<p>x18403114</p>
<p>Course</p>	<p>Bachelor's in science of Computing</p> <p>(Cyber Security)</p>

<p>What?</p> <p>I am currently working on the algorithm for the safety level portion of the application.</p> <p>I am working on the documentation for the parts that I was not able to answer for the Mid-Point Submission.</p>
<p>So What?</p> <p>(Successes)</p> <p>I have completed most of the documentation for the application.</p> <p>I have completed the planning for the application.</p> <p>I have completed the API connection portion of the application.</p> <p>(Challenges)</p>

<p>Algorithm for the safety portion of the application.</p> <p>Rest of the documentation.</p> <p>Perform tests to verify how well the application is working.</p>	
<p>Now What?</p> <p>Gather the variables to be used for the algorithm.</p> <p>Come up with a method for the algorithm.</p> <p>Create the algorithm</p> <p>Test the application once the algorithm is complete.</p> <p>Document everything about the application when it's complete into the word documentation</p> <p>Update the Google Plugin when the application is complete.</p>	
<p>Student Signature</p>	<p>Darragh O'Brien (x18403114)</p>

January Monthly Journal

<p>Student Name</p>	<p>Darragh O'Brien</p>
<p>Student Number</p>	<p>x18403114</p>
<p>Course</p>	<p>Bachelor's in science of Computing</p> <p>(Cyber Security)</p>

<p>What?</p> <p>I am working on how to gather and measure the different variables within the website</p> <p>I am working on how to create an algorithm using those variables</p>

<p>So What?</p> <p>(Successes)</p> <p>I have made some progress with the algorithm</p> <p>(Challenges)</p> <p>Finding necessary variables</p> <p>Judging the variables</p> <p>Connecting the variables</p> <p>Rating the result of the algorithm</p>	
<p>Now What?</p> <p>Continue working on the algorithm</p> <p>Update application with new version</p> <p>Test the application using multiple different websites</p> <p>Document everything about the application</p>	
<p>Student Signature</p>	<p>Darragh O'Brien (x18403114)</p>

February Monthly Journal

Student Name	Darragh O'Brien
Student Number	x18403114
Course	Bachelor's in science of Computing (Cyber Security)

<p>What?</p> <p>I am working on the algorithm that will determine the safety level of the project.</p> <p>I am drawing up plans on how to present the project.</p>	
<p>So What?</p> <p>(Successes)</p> <p>I have made progress with the algorithm</p> <p>I have gathered the necessary variables that will be needed to create the algorithm</p> <p>(Challenges)</p> <p>Determine how to put the variables together</p> <p>Evaluating the results of the algorithm</p>	
<p>Now What?</p> <p>Continue working on the algorithm</p> <p>Update project with latest version</p> <p>Evaluate the project using multiple different websites</p> <p>Document everything about the project</p> <p>Begin working on a presentation slide for the project</p>	
<p>Student Signature</p>	<p>Darragh O'Brien (x18403114)</p>

March Monthly Journal

Student Name	Darragh O'Brien
Student Number	x18403114
Course	Bachelor's in science of Computing (Cyber Security)

<p>What?</p> <p>I am working on the documentation</p> <p>I am working on the presentation</p>	
<p>So What?</p> <p>(Successes)</p> <p>I have created the algorithm for the application</p> <p>I have integrated the algorithm into the application</p> <p>(Challenges)</p> <p>I need to improve the algorithm to make it more accurate</p> <p>I need to figure out what to put in the documentation and presentation</p>	
<p>Now What?</p> <p>Fine tune the algorithm</p> <p>Write up the documentation</p> <p>Create the slides for the presentation</p> <p>Practice speaking for the presentation</p>	
Student Signature	Darragh O'Brien (x18403114)

April Monthly Journal

Student Name	Darragh O'Brien
Student Number	x18403114
Course	Bachelor's in science of Computing (Cyber Security)

<p>What?</p> <p>I am working on the documentation</p> <p>I am working on the presentation slides</p> <p>I am working on the video recording</p> <p>I am working on making the code easier to read.</p>
<p>So What?</p> <p>(Successes)</p> <p>I have created the project showcase</p> <p>(Challenges)</p> <p>Complete the code</p> <p>Complete the documentation</p> <p>Complete the video presentation</p>
<p>Now What?</p> <p>Make the code more readable for viewers so that they can understand each section more clearly</p> <p>Create the PowerPoint slides for the video presentation</p> <p>Fill the last portion of the documentation</p>

Record myself introducing my project, showing the PowerPoints, showing the code and showing a live demonstration of how the project works.	
Student Signature	Darragh O'Brien (x18403114)