StudentLife IEEE Requirements Specification Document

Name: Christopher Murphy

Student Number: 13326556

Course: BSc (Hons) in Technology Management–Business Analysis

Project: StudentLife App

Project Supervisor: Mr. Pat Delaney

Declaration Cover Sheet for BSHTM4 Project Submission

SECTION 1

Final Project – StudentLife App

Author(s)	Christopher Murphy
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Version	Final Version
Supervisor(s)	Mr Pat Delaney

SECTION 2 Confirmation of Authorship

The acceptance of your work is subject to your signature on the following declaration:

I confirm that I have read the College statement on plagiarism (summarized overleaf and printed in full in the Student Handbook) and that the work I have submitted for this assessment is entirely my own work.

SIGNATURE: Christopher Murphy

DATE: 13th May 2018.

NB. If it is suspected that your assignment contains the work of others falsely represented as your own, it will be referred to the College's Disciplinary Committee. Should the Committee be satisfied that plagiarism has occurred this is likely to lead to you failing the module and possibly to you being suspended or expelled from college.

Christopher Murphy
X13326556

What constitutes plagiarism or cheating?

The following is extracted from the college's formal statement on plagiarism as quoted in the Student Handbooks. References to "assignments" should be taken to include any piece of work submitted for assessment.

Paraphrasing refers to taking the ideas, words or work of another, putting it into your own words and then crediting the source. This is an acceptable academic practice provided you ensure that credit is given to the author. Plagiarism refers to copying the ideas and work of another and misrepresenting it as your own. This is completely unacceptable and is prohibited in all academic institutions. It is a serious offence and may result in a fail grade and/or disciplinary action. All sources that you use in your writing must be acknowledged and included in the reference or bibliography section. If a particular piece of writing proves difficult to paraphrase, or you want to include it in its original form, it must be enclosed in quotation marks and credit given to the author.

When referring to the work of another author within the text of your project you must give the author's surname and the date the work was published. Full details for each source must then be given in the bibliography at the end of the project.

Penalties for Plagiarism

If it is suspected that your assignment contains the work of others falsely represented as your own, it will be referred to the college's Disciplinary Committee. Where the Disciplinary Committee makes a finding that there has been plagiarism, the Disciplinary Committee may recommend:

- That a student's marks shall be reduced.

- That the student be deemed not to have passed the assignment.

- That other form of assessment undertaken in that academic year by the same student is declared void.

- That other examinations sat by the same student at the same sitting be declared void.

Further penalties are also possible including:

- Suspending a student from college for a specified time.

- Expelling a student from college.

- Prohibiting a student from sitting any examination or assessment.

- The imposition of a fine.

- The requirement that a student to attend additional or other lectures or courses or undertake additional academic work

Christopher Murphy
X13326556

Table of Contents

Contents

Christopher Murphy
X13326556

Christopher Murphy
X13326556

1. Executive Summary

The concept of this project was chosen because I felt there was a real life business need for this type of application. I had noticed a gap in the market for students where they could maximise the use out of being an actual student and the benefits they could be availing of through their student cards. I had been thinking of this type of discount saving app for students for a couple of months and then as part of our final year project in college we were tasked with coming up with an app idea that used technology. So the idea met the criteria for me to create a business analysis type project.

During this project there were a number of various elicitation and analysis techniques that were involved from the business analysis body of knowledge that helped to formulate a highly detailed requirements specification document for the StudentLife application. These included techniques such as a brainstorming session, survey, three interviews, a prototype, requirements workshop and an interface analysis. A list of all the stakeholders that would be involved in the project was also comprised at the start of the project. The next step after creating the stakeholder list was to create power/ influence matrix to define each stakeholder's importance based on their influence on the project. Once the main project stakeholders had been identified, the next phase of how the requirements were going to be gathered and analysed commenced.

After the planning phase was completed, relevant stakeholders had to be contacted and times arranged for the various elicitation meetings to take place, each of the techniques were implemented with different stakeholders. Each of the stakeholders have an association with the app and any relevant requirements that were elicited as a result of the elicitation sessions were documented and analysed for future reference using various analysis tools. A detailed IEEE Requirements Specification Document was created as a result of the requirements elicitation meetings for the StudentLife app. The IEEE Requirements Specification Document discusses the main functional and non-functional requirements of the StudentLife app in detail and is used by the development team along with other requirements that have been gathered to formulate the StudentLife app.

2. Requirements Elicitation & Analysis Planning

2.1. Introduction

Before I begin the Requirement Elicitation stage of this project to develop the app, it will be important for me to firstly create a plan on how I will elicit all the necessary requirements that will aid me throughout the project. The plan will help me to understand what tasks I need to complete during the elicitation process. It will help me to decide which elicitation techniques will be appropriate for my application and help me to identify any other resources I may need. The requirements I gather will be for the application I plan on developing.

The application I plan on developing is called '**StudentLife'** which will enable students to be able to avail of discounts and deals that different stores are offering whether it be a food & drink, retail stores or amenities. The app will use the user's location to search for promotions that are in close proximity to the student at any given time. Student's will be able to login to their account and browse through the various deals and discounts that are being advertised on the app.

Students can select a promotion that interests them which will then direct them to that specific stores information page on the StudentLife app. The information page will provide a brief description of the store along with the discount they are offering, from this the user can view the location of the store through a map that will be provided via Google maps. The map will then provide the user with a number of highlighted locations were that deal can be availed of.

The StudentLife App will be developed primarily to benefit both the Business Owners and students who are the main stakeholders associated with the app. There are similar apps available currently on the app market that allow users to avail of discounts and promotions that are in their proximity but none that I am aware of are student specific.

2.2. Business Need

I am of the opinion that there is a business need for this type of application within the app market which is growing year on year with new apps being introduced on a daily basis. We are always looking for the most up to date apps to help us in every part of modern day life and to have everything instantly accessible at the touch of a button whilst on the go.

People want the convenience of browsing the net or an app before they make a decision on where to shop or eat or if a recommendation is made for example by word of mouth. This is where I feel this particular app can help.

The student life can be a very expensive one through personal experience, with college fees, book fees, rent and everything else to look after. Some students may be only working part-time or may not have a job at all so income can be limited so making savings wherever possible is a must.

Based on personal experience during lunch time or when I was in town I would usually go to the same place to eat lunch and it would cost me 5 or 6 euro each time until recently through a friend I found a coffee shop offering a bagel & a coffee for 4.50 euro. I know this may not sound like a huge

Christopher Murphy
X13326556

saving to the average professional but as a student every euro counts when it comes to paying bills etc.

On another occasion I went to a reputable barber that was situated within walking distance of the college. At the point of sale, I was asked if I was a student as I could receive a 12 euro discount. Basically before noon a haircut costs 9 euro compared to after lunch time the price increases to 22 euro. This was not advertised anywhere.

The other rationale that I used when developing the concept behind the app was based on my experience at the commencement of each semester when the Student Union distributed a student discount card which advertised business and service providers on the card. I thought this was a good idea for students and service providers but I thought I would bring the concept into the digital age.

The application which is my own idea will have some basic requirements that I want to be available on the app. These include:

- Easy to operate user friendly interface.
- Security (Student email address and password login).
- Ability for user to locate stores via Google Maps.
- Search function for users to conduct a more specific search for an item or service.

In order to fully grasp the business need in more detail I will have to conduct a requirements elicitation so I can understand what requirements the stakeholders will look for from this application. Upon completion of my requirements elicitation. I think it will add further evidence to my belief that there is a need for such an app in the current market.

Christopher Murphy
X13326556

2.3. Business Case

This project is an idea that has been discussed and created between myself and the Business Owner and consequently we developed a necessary business partnership. The Business Owner believes in the idea and can see the potential of the app. He is willing to fund the development of the application and believes the app can be used across various web-based platforms. We have both agreed to hold meetings to discuss the terms of the funding.

We have both agreed to continue with the requirements elicitation to elicit important feedback and suggestions on the idea of the app and by identifying specific tasks that can be performed to make further improvements to the concept. It will be essential that regular progress reports are produced and presented to the sponsor during the monthly meetings. The sponsor and myself will have the final say, so all requirements should be clearly set out and agreed upon.

It will of vital importance that the security of the information contained on the app is clearly established. A Disclaimer statement will need to be included in the app, which the user must accept prior to being able to use the app. A login details section will be needed on the app to grant students access to login, using their student email address and password to use the apps features.

2.4. Stakeholders List

Please find the list of the identified stakeholders and a supporting Power/Influence Matrix.

1. Students
2. Store Owners
3. Developer
4. Colleges
5. Business Analyst
6. Business Owner

2.5. Power Influence/Matrix

Colleges	Business Owner Business Analyst Developer
Keep Satisfied	**Manage Closely**
Monitor	Students Store Owners
	Keep Informed

Low	**Influence**	**High**

Power/Influence Matrix Explanation:

The power/influence matrix consists of four quadrants. Each of the stakeholders are subsequently located in one of the quadrants depending on their influence or importance to the project. The stakeholders who have a high importance and are highly influential are situated in the upper right quadrant of the matrix. The business analyst will have an important role in gathering and documenting the requirements for the app. The developer is also important in the creation of the app because the final IEEE Requirements document will be given to them to develop the app and both will need to be managed closely to ensure the project is a success. Other stakeholders include the end users such as students and the store owners you will be highly important for gathering requirements and feedback from but other than that they will not be involved in tasks or activities related to the physical development of the app.

Christopher Murphy
X13326556

3. Requirements Elicitation Techniques
3.1. Brainstorming

Brief Overview:

The aim of the brainstorming session will be to gather various opinions and viewpoints from several of the stakeholders. It will give me an opportunity to listen to stakeholder's ideas and how they feel about the application. It will allow me to identify what features and functions should or should not be included in the application.

Objectives of the Brainstorming Session:

During the brainstorming session a number of students will outline their ideas for the new StudentLife application. A list of different possible application features should be obtained during the brainstorming session. The meeting will take place in a classroom and I will use a whiteboard with my idea in the centre. I will have one person documenting all the ideas into a Microsoft word document. All additional comments made by participants will also be recorded within the document. The comments and the ideas that I gather can then be analysed after all the requirements have been gathered. This will give me an idea of what potential features could be implemented into the application.

Participants:

4 students

Location:

National College of Ireland - The Liffey Suite

Date of Session:

Friday 10th November 2017

Time of Session:

12.30 – 1.00 pm

The following guidance was issued for the brainstorming session. These were developed by myself to ensure that the brainstorming session functioned smoothly.

- Please show up 15 minutes before the session begins.
- Do not discuss ideas before the session.
- Please switch off mobile phones before the session.
- Each person will be allocated a ten-minute slot to put forward ideas.
- Please remain silent while participants put forward ideas.
- There will be a 10-minute recap at the end of the session to further discuss ideas presented.
- Behaviour deemed unacceptable by the moderator will lead to participants being ejected from the session by the moderator.

Christopher Murphy
X13326556

3.2. Survey

Survey Participants:

Students

Distribution Method:

To ensure as wide a distribution of the survey as possible, it was posted online via my own Facebook page and emailed to students around my own college and class.

Survey Objectives:

The objective of the survey was to gather requirements and understand the demographic of the stakeholders that would be associated with the App. The survey is a technique that helps understand what the stakeholders would prefer to see from a student discount-related app. It will provide an understanding of student's interaction with apps and the reason for it. The survey will also provide an insight into potential user's attitude of student discount apps.

Survey Questions:

All survey questions are available to view at the link below:

https://tinyurl.com/ya87jzu7

1. **Please indicate your gender:**
   - Male
   - Female
   - Prefer not to say
   - Other

2. **What age are you?**
   - Under 18
   - 18-24
   - 25-34
   - 35-44
   - 45-54
   - 55+

3. **What is your current status?**
   - Full-time student
   - Part-time student

4. **What mobile operating system does your phone offer?**
   - iOS
   - Android
   - Blackberry OS
   - Windows

- I do not own a smartphone

5. Have you downloaded apps for your devices?
- Yes – Always free
- Yes – Always paid
- Yes – Free & paid
- No

6. Which of these discount apps have you downloaded?
- Groupon
- Unidays
- Wish
- The Coupons App

7. Why do use these apps?
- Easy to use
- Good deals
- Content
- Features
- Other

8. What shops do you visit regularly?
- Spar
- Boojum
- Topshop/Topman
- Starbucks
- Other

9. I often use my student card to avail of discounts where possible.
- Strongly agree
- Agree
- Undecided
- Disagree
- Strongly disagree

10. If an app was available for you to view student discounts in your area, I would use it?
- Strongly agree
- Agree
- Undecided
- Disagree

Christopher Murphy
X13326556

- Strongly disagree

11. I would recommend a student discount app to other students.
- Strongly agree
- Agree
- Undecided
- Disagree
- Strongly disagree

12. I often lose/forget a loyalty card.
- Strongly agree
- Agree
- Undecided
- Disagree
- Strongly disagree

13. I often use scanning devices to pay for items.
- Strongly agree
- Agree
- Undecided
- Disagree
- Strongly disagree.

14. I would use a scan on my phone to receive loyalty points in a store?
- Strongly agree
- Agree
- Undecided
- Disagree
- Strongly disagree

3.3. Interview One

Participant:

Store Owner

Location:

Topaz Garage, Clonshaugh, Co. Dublin

Date & Time:

March 23rd, 2018 4.00pm

Overview & Objectives:

The aim of interviewing a Store Owner will be to understand how they would like their business to be advertised within the app and help them realise the benefits an app like this app could bring to their business. The objective of the interview will be to gather requirements that the Business Owner will recommend and help me to identify any problems or issues that I may be overlooking during the requirements elicitation process. It is important that the application is beneficial to the Business Owner. The interview will also provide myself with an insight from the Business Owner's perspective. I will firstly give an explanation of the application and how it will function.

Interview Questions

Q1. What is your opinion of the App?
Q2. What benefits would an App like this bring to you as a business owner?
Q3. Could you see the benefits for students?
Q4. Would this type of App encourage you to create additional student deals?
Q5. If developed would you recommend this app to students/ other business owners?
Q6. If a number of businesses/ students were using this App would it encourage you to also use it?
Q7. If a loyalty card feature for students to use was setup on the App, would you consider setting up a loyalty card system for it?
Q8. Do you have any other comments or feedback?

3.4. Interview Two

Participant

Developer

Location

Costa Coffee Shop, Coolock, Co. Dublin

Date & Time

Monday March 26th, 2018 2.00 pm

Overview & Objectives

The start of the interview will consist of discussing the concept of the app and the possible features it will contain. The aim of the interview will be to gain an understanding of what may be required to develop this type of app from the point of view of a developer. The interview will also aid in highlighting any problems that may arise during the development process. The developer who comes from a more technical approach may be able to assist in identifying additional technical requirements which may have been missed.

Interview Questions

Q1. Do you think it will be relatively easy to develop this type of application or can you see any issues that may arise with creating it?
Q2. Have you any experience developing an app like this? Are there any features you would recommend for this application?
Q3. In your opinion where should this app be hosted and would you have a rough estimate to how much it would cost to develop?
Q4. How long would an app like this app take to develop? Is there any information I could provide that would help with the development process?
Q5. Do you see any issues with the Data Protection Bill being introduced this month? How would you incorporate this new legislation to the app?
Q6. The app may contain a built in loyalty card system? Would this be possible?
Q7. What language would you use for this application?

3.5. Prototyping

Objectives of the Prototype:

The objective of the prototype will firstly be to provide an initial visual image of the StudentLife app. It will be provided at the requirements workshop for participants so they can provide their feedback and will be important as it will be an indication that progress is being made in the development of the app. The prototype will be a representation and my interpretation of the results gathered from the brainstorming session, the interviews and the survey. It will be important that the stakeholders present at the workshop critique the prototype and highlight certain aspects of the app that may not satisfy their needs. This could relate to the design of the app or adding additional features they think would improve the app. There will be two stages of the prototype and a second will be created at a later date in development after further requirements have been gathered from elicitation sessions.

Resources Required:

1. Asus laptop with Balsamiq account.
2. Balsamiq will be used to create the prototype.
3. The first prototype of the StudentLife application will developed through the requirements elicited from the brainstorming session, the three interviews and the survey.

Participants:

1. Students
2. Store Owners
3. Business analyst

3.6. Requirements Workshop

Objectives of the Requirements Workshop:

The aim of the requirements workshop will be to discuss the possible layout design elements that could be in the StudentLife app by understanding the needs of key stakeholders. This will be accomplished by providing the participants with a look of the first prototype and by evaluating other competitor's apps offering a similar service. This could be particularly important as features that are present in competitor's apps could be identified by participants and implemented into the StudentLife app. The workshop will help to discuss the functional requirements and some non-functional requirements of the application as well as how the app should look. Another objective of the workshop will be to assist in identifying any features of the app that may have been overlooked in previous requirements elicitation meetings and improve the requirements of the initial prototype.

Participants:

4 students.

Workshop Location:

Liffey Suite, National College of Ireland, Co. Dublin.

Date of Workshop:

Monday, April 2nd 2018

Time of Workshop:

10:00am – 11:30am.

Resources Required:

- A vacant room for the Requirement Workshop.
- Asus laptop.
- Multiple computers.
- Internet connection.
- Microsoft word so a record can be made of comments made during the workshop.
- Microsoft PowerPoint to be able to display the initial prototype of the application.
- Tables and chairs.

Workshop Rules:

1) All participants should arrive at least 15 minutes before the workshop begins to conduct additional research on competitor websites.
2) Participants are entitled to express their ideas at any point during the workshop, but all comments should relate to the topic being discussed.
3) Mobile phones are permitted during the workshop, but they should only be used to conduct research relating to topics outlined in the agenda.
4) The facilitator will control all aspects associated with the workshop itself.
5) This workshop must remain professional and all participants should stay focused on the topics which are outlined in the workshop's agenda.
6) All participants should carefully listen to the instructions being distributed.

7) This requirements workshop is all about collaborating with your peers. Any disruptive behaviour could result in the workshop being postponed, or any participants being disruptive could be told to permanently leave the room.

3.7. MosCow Analysis

The MosCow analysis technique will be used to help in the task of prioritising the requirements. This is done so a common acceptance understanding can be reached by each of the stakeholders. This technique was put forward to the stakeholders to be used and has been agreed upon. MoSCow will prioritise the requirements according to **Must Have, Should Have, Could Have** and **Would Have.** Sometimes MosCow analysis can lead to conflict between stakeholders as each of the stakeholders will have their different viewpoints and perspectives. It will be important that the requirements are properly handled and prioritised. So working closely with the stakeholders regularly to ensure they are satisfied will be crucial to ensure this and prevent the potential of any scope creep.

3.8. Interface Analysis

An Interface analysis will demonstrate how the students will interact with the App and will be achieved by developing a UML use case diagram. This detailed diagram will illustrate the various interface types that are associated with the app. Each of the stakeholders will have access to different aspects of the app. For example, student will have access to the discounts that are displayed on the home page when they log in. The use case diagram will highlight the interactions that will take place between the student and the features within the StudentLife app. There is no existing system out there that is identical to how this particular system will function so the Use Case Diagrams will be the requirements that will be used in the creation of this App. How the student will interact with the system will be defined by these requirements. It will be important that these requirements are identified and defined early on in development, as it will highlight any potential problems that may arise to the stakeholders or during development. For example, a student should not have access to any other student's account on the website other than their own. This will be realised by using a Use Case Diagram and Wireframes.

Resources Required:

1. Asus laptop.
2. The UML use case diagram will be created by using Creately.

UML Use Case Diagram Name:

StudentLife Application

UML Use Case Diagram Actors:

1. Registered student
2. Unregistered student

Christopher Murphy
X13326556

3.9. Risks

In every project there are a number of risks involved. That is why it is crucial for the development and success of the App that any potential risks and issues are identified in the early stages of development. Appropriate action has to take place to either eradicate or handle the problems. Below are the risks identified for this project.

- There could be issues around the requirements elicitation process. It may be difficult to acquire stakeholders that will be available to meet at specific times for brainstorming sessions, interviews etc. This will have to be managed correctly by deadlines and targets.
- The funds that are available may not be adequate enough to fully cover the cost of the requirements that are necessary for the development of the App.
- As the project progresses and the App develops there could be a risk that scope creep could take place. As time goes by the expectations of the stakeholder's could increase and they may look for more features too be added from that of which was defined in the scope of the project.

It will be important for the development and potential success of the application that these risks are managed and controlled stringently.

4. Requirements Elicitation Techniques Results

Summary

The following are the results that were gathered throughout the duration of this project by utilising various requirements elicitation techniques. These will then be used to define the requirements for the development of the application. The techniques included a brainstorming session, a survey, two interviews, various prototypes, a requirements workshop and an interface analysis.

4.1. Brainstorming

At the beginning of the brainstorming session I started off by explaining what the concept of the app was and how it would function to give participants an idea of what the app was about. All of the participant's ideas and comments were recorded and documented as they were mentioned. The brainstorming session began by discussing possible name suggestions for the app. Students suggested names like StudentLife, iStudent and MyStudent. The majority of participants decided to go with the name StudentLife.

Students firstly mentioned the app should have a registrations page, that would allow students to sign up and become a user via their student email and password. This would allow users to become registered once they clicked on the verification email that will be sent to their student email. Students said that this would be a good way of verifying if someone who was trying to register was in fact an actual student. Participants also highlighted that a login page for previously registered

users will need to be provided so they can login using their already verified details without having to register each time they wanted to access the app. An option to able to save your login details was also mentioned by the participants so they would not have to enter their necessary credentials each time they opened up the app.

One participant stated that the ability for a user to have a personal account would be beneficial on the app so they could manage their account to their preference but I wanted to make the app a simple way for students to find student specific promotions so I thought a profile would not be the best option for the app at this moment but it could be implemented at a later stage.

We then decided to discuss possible features that could be implemented within the app. A participant mentioned that the app should have a home page for a mixture of deals that are the most popular that particular day and close to the user based on the user's location so they can browse through and select a promotion that interests them. This would then bring the user to that stores information page that would provide a brief detail of the deal that is being promoted, here you can access the map to locate the store.

Participants then discussed the benefits of having a search function as an option on the app so users could conduct a more specific product or service search quickly. This feature would enable users to browse for a particular product, service or event that they had in mind, making it more user friendly for the student who might not be interested in the promotions that are advertised on the home page.

Suggestions were made for a student loyalty card system that could be built into the app so students could receive loyalty points onto their profile every time they shopped in the stores. This would allow students to simply avail of loyalty points through the app without having to carry loyalty cards around with them all the time, which can often times be forgotten or lost from personal experience. This led onto a possible payment option through the website where users could purchase promotions via the app with their credit/debit card.

A payment option through app was highlighted so users could purchase specific promotions that they found. If they found a deals that interested them they could then have the opportunity to buy that discount through that stores information page. I decided against having a payment option implemented in the app because I felt it would cost too much right now but could be something to look at down the line because credit card information would need to be collected and stored in a very secure database for this to work. I felt if this option was made available there could be an element of scope creep occurring.

Other features included a store locator for the app that would be connected to Google maps. This would allow users to locate particular stores in their vicinity that are offering good deals or promotions that are of interest to them. Participants also suggested that the app could display events that were happening that day/night around them that they could attend. This would be particularly beneficial to student looking for a night out during the week but maybe unsure about where to go or students from abroad might be in Dublin for the weekend and are wondering where are the best places to go that could have a student night or entertainment.

A suggestion was made for the app to send push to the user notifications, if the user allowed it regarding different promotions that may be on special offer that particular day or if they were in close proximity to that store, this would mean the user would need to allow the app access to their location. This brought up questions regarding security for the app and its importance. A Disclaimer should be on the app to let the user know that the app will need to access to their information so it

can provide them with the features of the app. This will encourage the user to log off when leaving the app if they do not want their information being obtained.
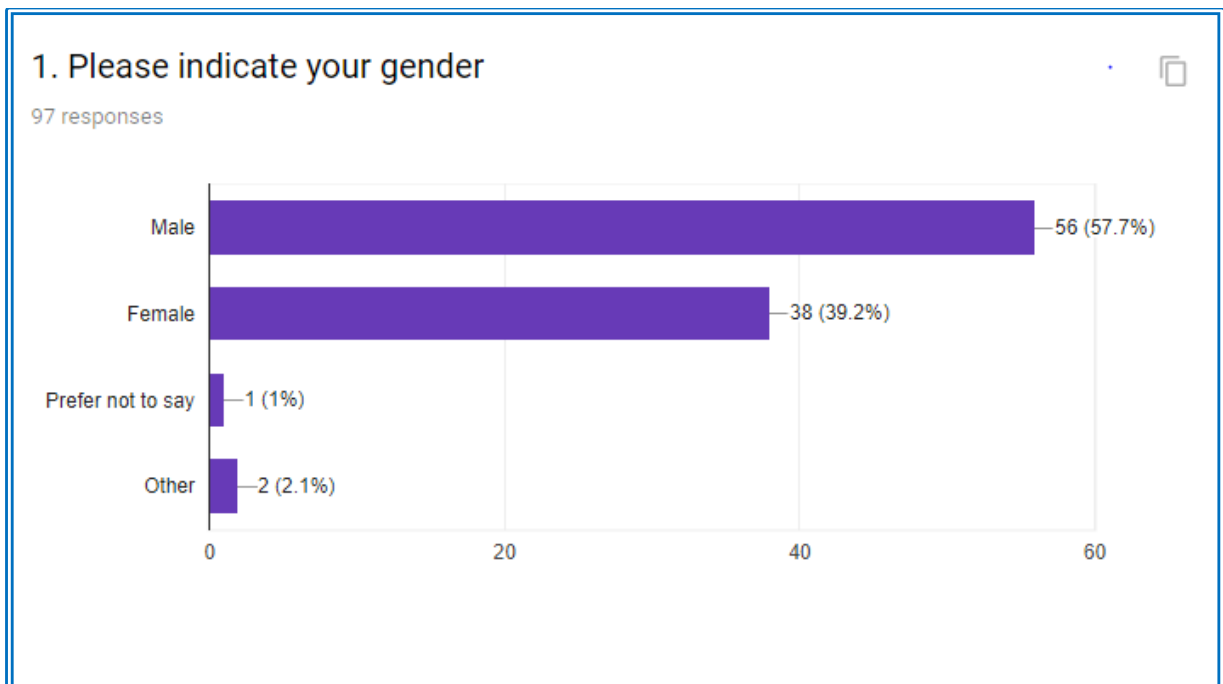
A link to a support page via Facebook and Twitter was mentioned as a way for users who may be having some difficulty navigating through the app maybe they can't access certain features or if they have any other general inquiries or questions. This would provide users with the necessary support they need to make the app more user friendly.

Participants mentioned a way for the user to be given the option to save their login details on the app this would enable them to quickly open up the application on their phone without having to enter their login details each time they wished to use the app. I thought this was a good idea because it would save the user time.

A possible messaging feature between students was mentioned by one participant but this will not be a feature of the app because the application is for searching and availing of discounts and not a social media platform.

Christopher Murphy
X13326556

4.2. Survey

The survey that was conducted was able to bring about a high number of returns through the use of a variety of social media platforms within a relatively short period of time. The survey in total had 97 respondents, which was a great benefit to myself for the purposes of the project and provided very interesting feedback. The overall objective of the survey was to elicit requirements from a group of potential users of the app and compare them to requirements that have already been gathered from previous elicitation processes. Survey participants were given the option of "other" that allowed them to enter a potential requirement and provide new requirements that had not been gathered yet. The feedback and suggestions that were collected were recorded and will be used in the MoSCoW analysis.

1. Please indicate your gender
97 responses

Male	56 (57.7%)
Female	38 (39.2%)
Prefer not to say	1 (1%)
Other	2 (2.1%)

The survey returned a relatively close number of responses in terms of gender but more males participated in the survey accounting for 56.2 % of the respondents. Females accounted for 39.2 % of respondents with the remainder made up of the preference not to say at 1% and other making up 2.1%. I chose to ask this type of question to help me understand the demographic I was trying to target and whether both male and females would be interested in an app of this type. This also helped me to decide on creating an app that will satisfy both genders and provide a variety of different promotions and deals to suit each gender group and prevent only offering deals that could be seen as bias toward one specific group. The aim of the app is to reach as wide of user base as possible.

2. What age are you?

97 responses
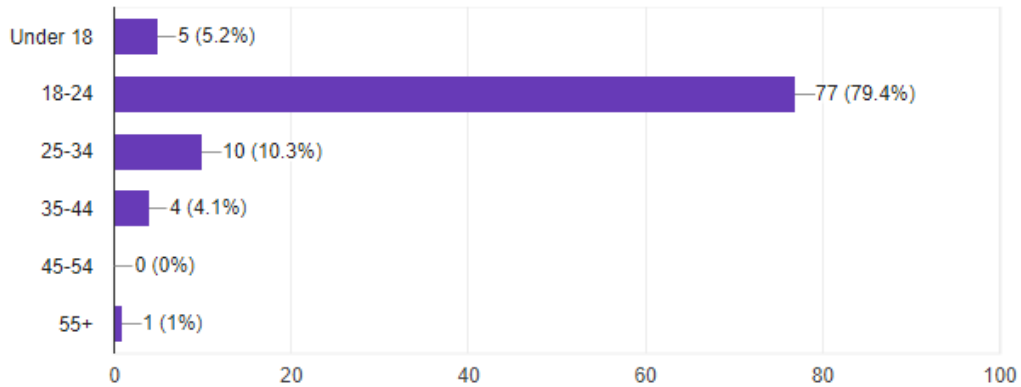
Another demographic related question followed with the majority of participants being in the age bracket of between the ages of 18-24, which accounted for a large 79.4% of the respondents. This result was to be expected with the average age of students falling into this age bracket and is the age bracket that will be mainly targeted by the StudentLife app. The responses from this question provided an insight into the type of promotions and discounts that should be advertised on the app. The deals promoted on the app should be aimed at the late teens to younger adult age bracket.

3. What is your current status?

97 responses
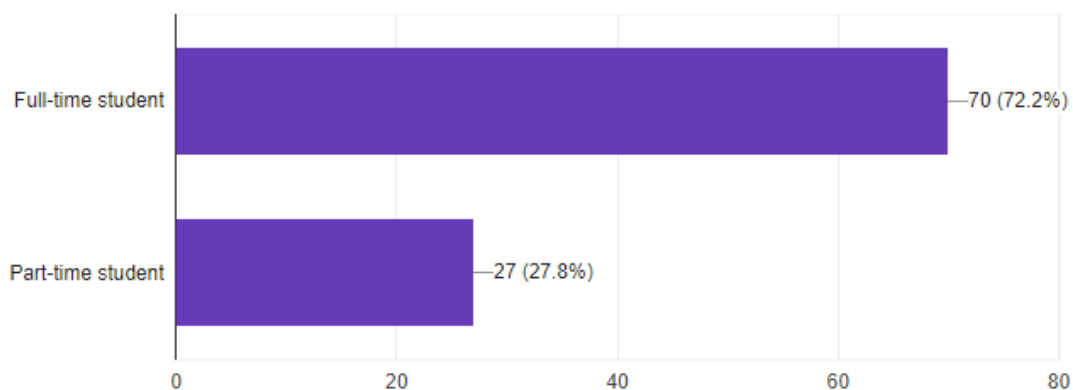
A question regarding whether participants were full-time or part-time students was asked next to gauge what their current status was, 72.2% said they were in full-time education which was also
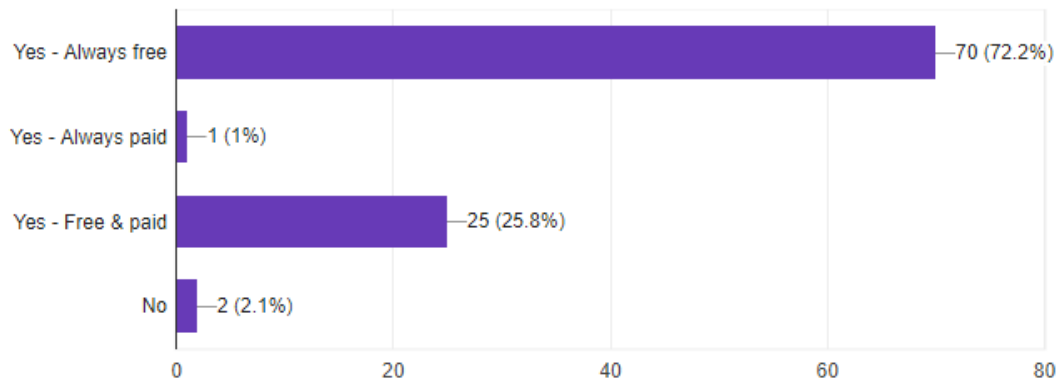
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expected and the remaining 27.8% were part-time students. The purpose of this question was to determine the possible income limits of potential users. Full-time students tend to be younger and therefore in most cases may have a part-time job or receive a grant and might not have the luxury of spending on items they could be saving on. Whereas part-time students tend to be older and work full-time, therefore having a higher income to spend on everyday items and might not have a weekly budget that full-time students are often forced to have. The responses to this particular question will help determine that the app should target a lower income student but also satisfying the needs of part-time students.
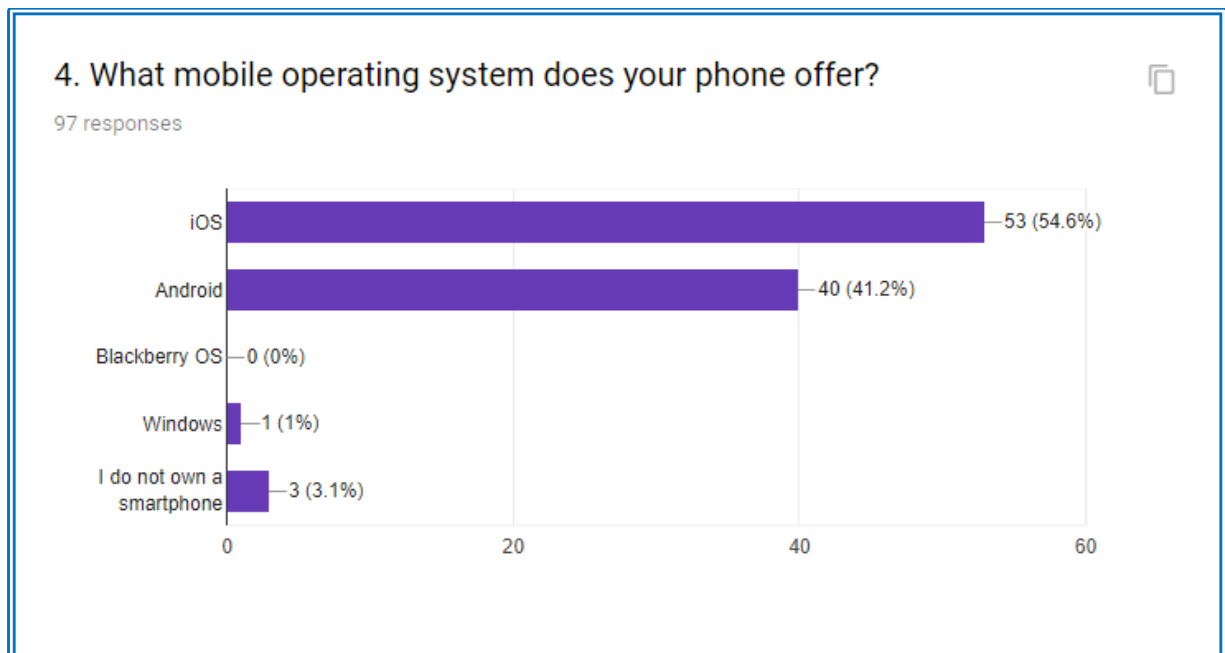
After an overview of the demographic of participants was identified by the first three questions. Questions relating to what particular devices the majority of potential users predominately use. The reason for asking this question was to identify what operating systems were more popular among students and to determine if the application should be made available across all devices. The responses highlighted that app should be made accessible across each device to be able to acquire the largest amount of users as possible and not rule out a whole potential user base by only offering the application to Android for example which would certainly decrease the value of the app and potential business opportunities.

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5. Have you downloaded apps for your devices?

97 responses

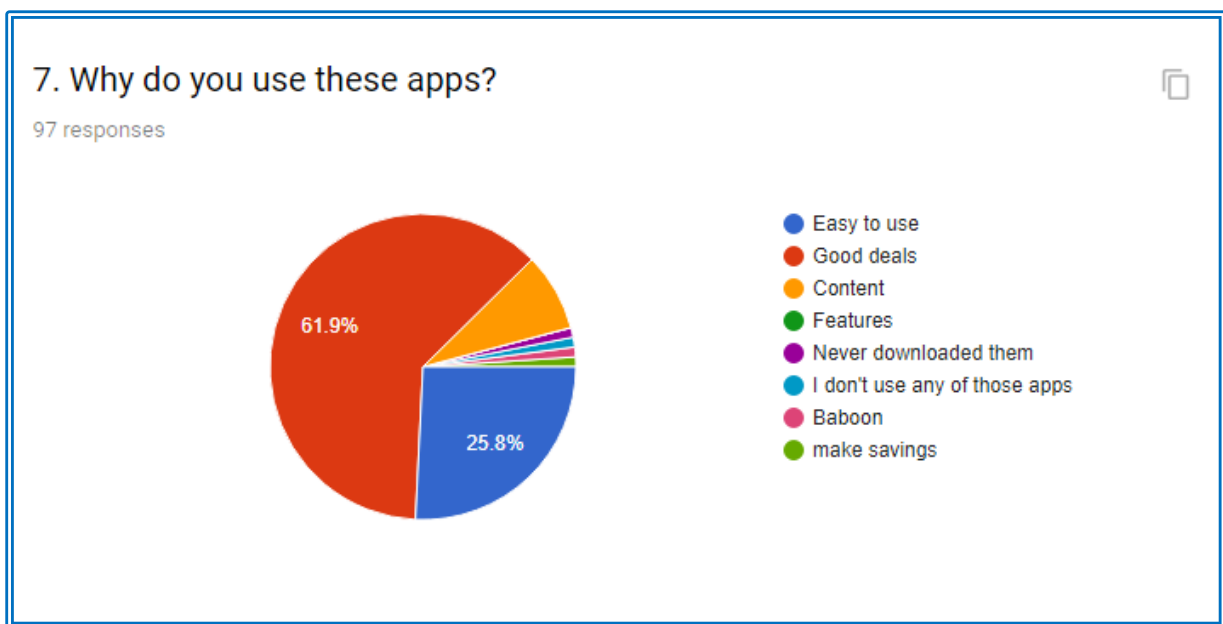|	
Yes - Always free	70 (72.2%)
Yes - Always paid	1 (1%)
Yes - Free & paid	25 (25.8%)
No	2 (2.1%)

A number of questions relating to apps and other various discount app usage were asked of the participants. The reason for this was to gather potential requirements to do with the StudentLife app and the availability it would have. 72.2% of people said they only download free apps and 25.8% said they downloaded a mix of free and paid apps. This highlighted the fact that the app should be a free service. Enabling students to download and use the app for free. This was a very expected result because the application was aiding potential users find promotions and products at a discounted rate so the application needed to be free. The app would almost contradict itself by becoming a paid app.

6. Which of these discount apps have you downloaded?

97 responses

- Groupon 44.3%
- Unidays 35.1%
- Wish 19.6%
- The Coupons App
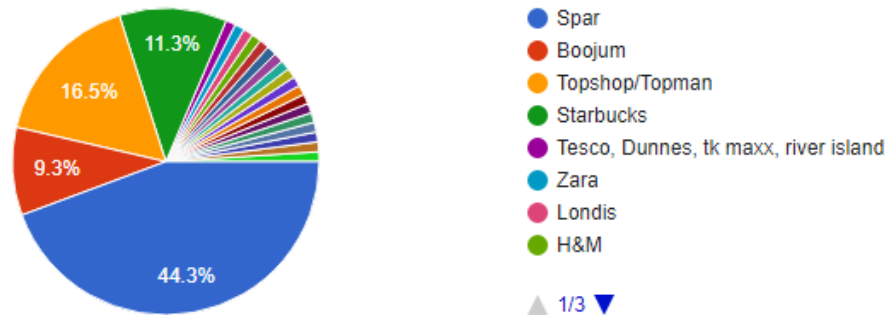
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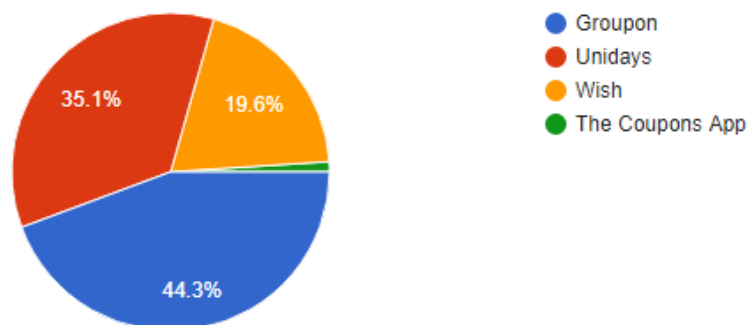
Given that this is a student discount app it was important to see participant's tendency to download similar apps of this type i.e. Groupon, Unidays, Wish and The Coupons App. Groupon (44.3%) was the most downloaded by participants followed closely by Unidays (35.1%). This was also an expected result as these applications are popular among people who seek a good deal or discount, especially among students from personal experience, with the majority of students, I know from my own college and other colleges using one of these apps before. This provided a strong indication that students would most likely be interested in the StudentLife app if they have previously downloaded and used a similar type of discount app.

7. Why do you use these apps?
97 responses

- Easy to use
- Good deals
- Content
- Features
- Never downloaded them
- I don't use any of those apps
- Baboon
- make savings

61.9%

25.8%

The top two reasons why participants' downloaded and used discount related apps was primarily related to the good deals these apps provided (61.9%) and their ease of use (25.8%). This response highlighted the requirement that the StudentLife app should focus on offering users good promotions and discounts, while also being user friendly and easy to use.

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X13326556

8. What shops do you visit regularly?

97 responses

- Spar
- Boojum
- Topshop/Topman
- Starbucks
- Tesco, Dunnes, tk maxx, river island
- Zara
- Londis
- H&M

1/3

44.3% — Spar
16.5% — Topshop/Topman
11.3% — Starbucks
9.3% — Boojum
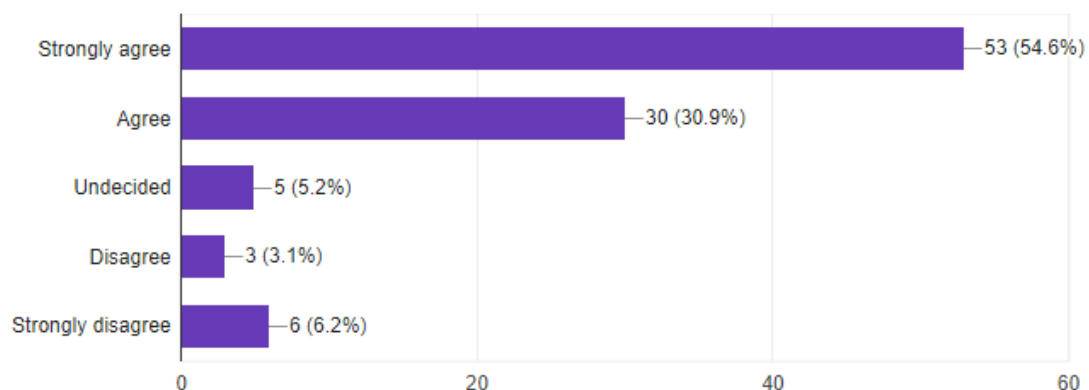
This question was asked to determine the retail preferences of potential users and their shopping tendencies. The aim of the questions was to determine which shops they tend to visit on a regular basis and to help decide what type of stores should be targeted, to be included on the StudentLife app. This response yielded a strong preference towards users tending to shop for food & drink items, in clothing stores as well as a variety of other retail outlets.

9. I often use my student card to avail of discounts where possible.

97 responses

Response	Count
Strongly agree	53 (54.6%)
Agree	30 (30.9%)
Undecided	5 (5.2%)
Disagree	3 (3.1%)
Strongly disagree	6 (6.2%)

To help understand if students are inclined to take full advantage of the discounts that are available to them through their student status a question was asked regarding how often they would use their student card to seek discounts where possible. Over 85% agreed they would use it regularly. This

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X13326556

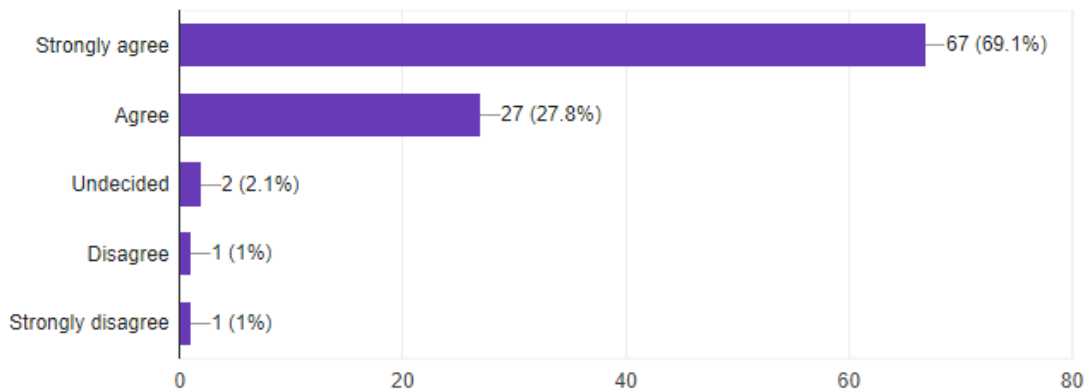was an encouraging response because it shows that students do try and avail of student discounts where it is possible. If students often take advantage of the benefit of their student status with regards to discounts, then they may be interested in the possibility of using an app that will help them locate student specific promotions they may know about.

10. If an app was available for me to view student discounts in my area, I would use it.

97 responses
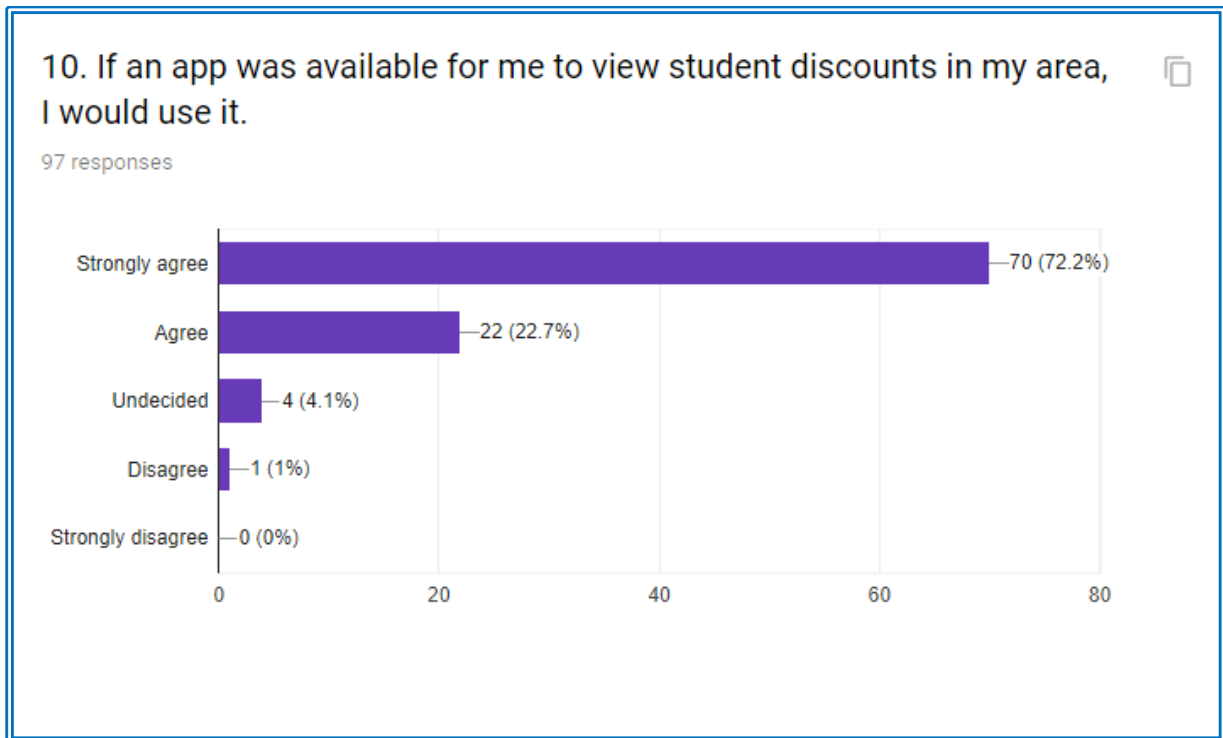
A question about a possible feature that could be implemented into the StudentLife app and that was raised during the brainstorming session was asked next. This was related to one of the potential features of the app being able to locate particular stores or promotions that were in close proximity to the user. 94.9% agreed they would use an app that offered this feature of locating stores. (Strongly agreed 72.2%, Agree 22.7%) This response further highlighted the need for a feature to search for stores that were offering a student discount in a user's local area, as a key requirement for the app.

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X13326556

11. I would recommend a student discount app to other students.

97 responses

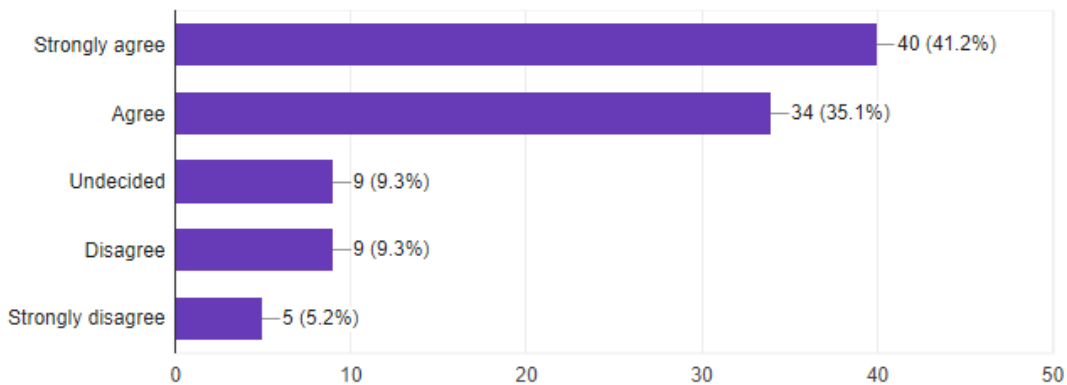| Response	Count
Strongly agree	67 (69.1%)
Agree	27 (27.8%)
Undecided	2 (2.1%)
Disagree	1 (1%)
Strongly disagree	1 (1%)

Nearly 97% of students said they would recommend a student discount app to other students. The purpose of this question was to find if a student who was using the StudentLife app, had a good or bad first impression would they be inclined to tell their friends about their experience. From personal experience people discuss more of the bad experiences they encountered. This is why it will be vitally important that the user has a good and continued experience while using the app by insuring the app maintains its performance all the necessary features.

12. I often lose/forget a loyalty card.

97 responses

Response	Count
Strongly agree	40 (41.2%)
Agree	34 (35.1%)
Undecided	9 (9.3%)
Disagree	9 (9.3%)
Strongly disagree	5 (5.2%)

This question was asked in the survey because it was mentioned in the brainstorming session and I wanted to see if there was any further interest in this type of possible requirement being implemented into the final development of the app from a larger group of participants. To help identify if a potential loyalty card feature would be of interest to students that could then be part of

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X13326556

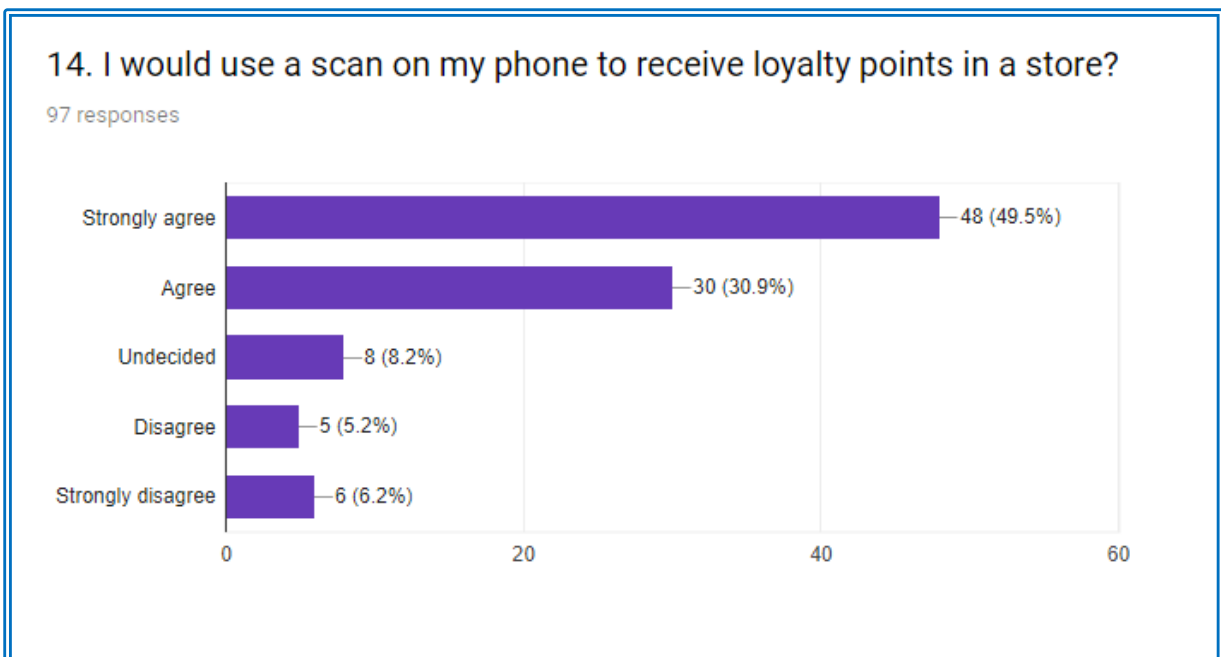the app. A number of questions were asked about participant's tendency to lose or forget a loyalty card for various stores. This question provided helpful information and highlighted that a feature like this could be of interest to students with 76.3% agreeing that they often lose or forget a loyalty card.

13. I often use scanning devices to pay for items.

97 responses

Response	Count (%)
Strongly agree	29 (29.9%)
Agree	36 (37.1%)
Undecided	14 (14.4%)
Disagree	14 (14.4%)
Strongly disagree	4 (4.1%)
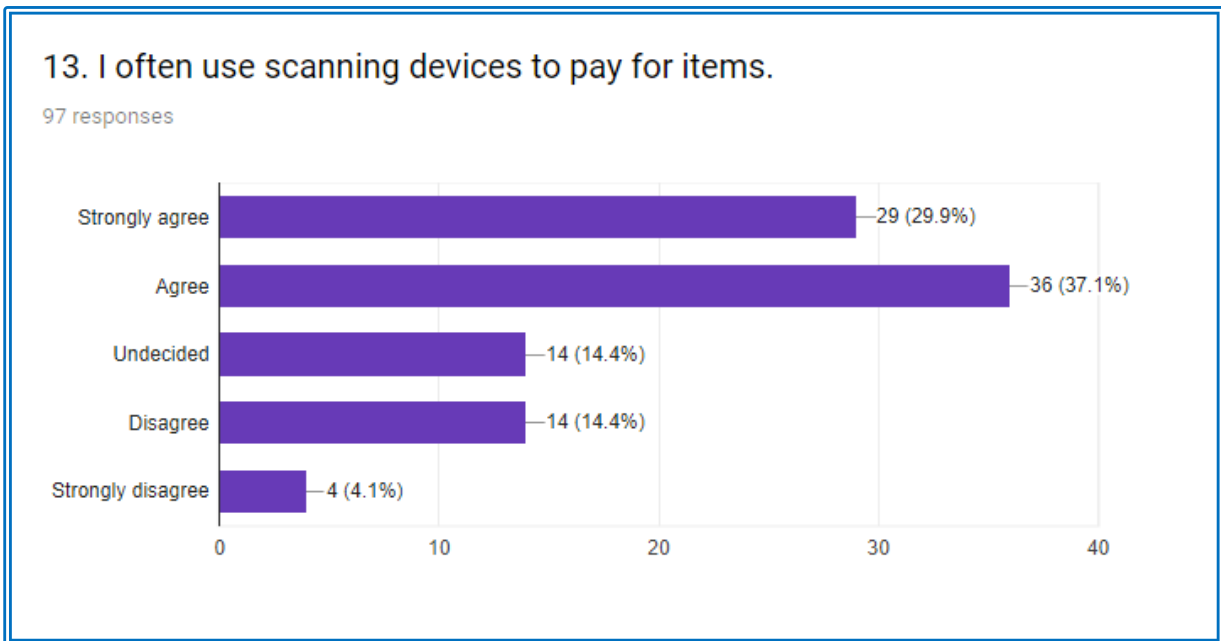
The sample were asked this specific question because I wanted to gauge whether users were inclined to use their mobile devices in the process of purchasing items in a store. 67% agreed that they often use scanning devices when purchase items. This is good indication that users may be interested in the app being able to perform this possible feature.

14. I would use a scan on my phone to receive loyalty points in a store?

97 responses

Response	Count (%)
Strongly agree	48 (49.5%)
Agree	30 (30.9%)
Undecided	8 (8.2%)
Disagree	5 (5.2%)
Strongly disagree	6 (6.2%)

Over 80% agree a possible loyalty feature would interest them (Strongly agree 49.5%, Agree 30.9%). This could enable users to purchase items and to gain loyalty points all form the use of their phone eliminating the need to carry multiple loyalty cards and cash.

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X13326556

There has been an overall positive response from the survey and has provided an understanding what students might look for from a student discount app and how to satisfying those needs. These responses will be documented and used to decide potential requirements that could be implemented during the development of the app.

4.3. Interview One – Store Owner

1. What is your opinion of the App?

The store owner thought the app was a good idea and a great incentive to users and businesses and I would like to see it benefit both parties. He said he was not really aware of any app that is currently out there on the market that is predominantly student specific and thinks students and businesses could both get the benefits. He likes the way the application promotes stores that are offering discounts in the students' immediate area and providing directions to the various stores making it easier for students to find the stores and avail of deals relatively hassle free.

2. What benefits would an App like this bring to you as a business owner?

As a business owner he believed the App would be of great benefit in bringing in a new customer base and also it would help in brand awareness as it markets itself without the company having to market for the promotion. He also mentioned that with good deals being promoted on the app and supplying a quality service to students that students would talk to their other student friends to encourage them to eat at his restaurant.

3. Could you see the benefits for students?

Students would certainly benefit from it as they are getting good discounts along with a potential free product with the loyalty card part of the App. It allows the students to become more aware of the discounts that are surrounding them that before they might not have previously known of. It is encouraging for the students because they know they are receiving a discounted meal for example plus they are gaining loyalty points every time they shop.

4. Would this type of App encourage you to create additional student deals?

He said would have to see how the current App is working and if it is bringing in the new customer base that it should and if it is beneficial to the overall store to make further deals. If the app was a success and students starting shopping in his fast food chain more often he said, he would be certainly open to the idea of offering further student friendly deals in the future just once he was able to see the value of it and could see a potential return on any investment he made.

5. If developed would you recommend this app to students/ other business owners?

Again, the owner would need to see how well it is working before making recommendations to other business owners but to students I would certainly recommend it as they are getting a good deal regardless if the company is. He said that if the app was implemented in his store and was a success that we would be willing to advertise the app in his store to encourage students who may not be aware of the app to download it and avail of the discounts. As the owner of a franchised store and in regular contact with a number of people who run and own their own businesses if he was realising

Christopher Murphy
X13326556

the benefits that the app was bringing to his store he would be encouraged to recommend to other business owners.

6. If a number of businesses/ students were using this App would it encourage you to also use it?

The business owner responded by saying if the app had good recommendations from other business owners, was proficient in its functions and noticeable increases in business then that would encourage him to be advertise his store. The owner also mentioned that he wouldn't necessarily only be interested in running promotions due to other companies running them it would have to be right for him and the store, what might work in one specific store may not be applicable in another store.

7. If a loyalty card feature for students to use was setup on the App, would you consider setting up a loyalty card system for it?

The store owner said he would certainly be interested in introducing a loyalty card option for the students as it would encourage customers/students to keep returning to the business on a regular basis and purchase more products. He stated that there are loyalty cards available for customers for the coffee and sandwiches section of his business but notices that not a lot of people are interested in this promotion. Perhaps the effort of carrying on extra card in people's wallets is and have to remember your loyalty card is off-putting for some customers so an electronic way of providing a loyalty system to people might be more encouraging and beneficial. He feels that it would also improve customer relations and good rapport with the students which also encourages repeat business. Once it was easy to setup and was not a sizeable expense for his store or staff he would be more than welcoming of introducing a loyalty card system at point of sale.

8. Do you have any other comments or feedback?

The store owner finished up the interview by highlighting that the only feedback he would provide is, while it is great offering good discounts and deals to students as they may be financially struggling or dependant, it is also important to remember that business is all about returning a profit and no business is going to offer their products or services at a loss to the company so the prices, while certainly at a discounted rate must still be able to turn over a profit to the business and be able to offer them value as well as the students. He also mentioned that on the stores information page there could be a brief section about the store, providing the user with some information about the what products or service the store provides.

Christopher Murphy
X13326556

4.4. Interview Two - Developer

1. **Do you think it will be relatively easy to develop this type of application or can you see any issues that may arise with creating it?**

Every app has its challenges, but in the case of developing of this type of app we could use the Application Programming Interface (API) already established by similar apps like Groupon and Unidays. We would then need to modify the User Interface to be in line with the requirements that have been previously elicited. You could find some way to store deals with the businesses name and details by coordinates and then a map interface to find by location possibly. He also mentioned that you would need buy-in from a bunch of shops. He mentioned that the payment option could be too much of a project in itself with this type of app right now with cost, time and security that is involved with storing credit card information.

2. **Have you any experience developing an app like this? Are there any features you would recommend for this application?**

I was previously involved in the development of an application that would take the user's current location and provided a map which located the best route for the user to find parking in Dublin. We created this app for iOS and Android using MySQL database, Java and PHP. Google Maps API was used and a script was developed to highlight a route on the map. I think the same process would work with this app and could be implemented to help the user locate a particular store.

3. **In your opinion where should this app be hosted and would you have a rough estimate to how much it would cost to develop?**

There are a few options he stated. To get it up and running fast I'd probably look at hosting whatever back-end resources needed in the cloud so something like Microsoft Azure or Amazon Web Services. They scale up as needed if the usage goes up. Not really sure about the cost of doing that though.

4. **How long would an app like this app take to develop? Is there any information I could provide that would help with the development process?**

He said it's probably not the biggest project in the world, so it might take around 4-6 months as for development process. He highlighted that it all depends on how well the requirements gathering process is handled. I should try to get feedback as early as possible in the process even if I was to create a mock-up app just to get feedback about interface. This would help to see if I was thinking along the right line when it comes to look and feel and functionality.

5. **Do you see any issues with the Data Protection Bill being introduced this month? How would you incorporate this new legislation to the app?**

He mentioned that GDPR will be a major issue from now on, he has looked at it quite a lot in the last couple of months. Not really any issues that can't be overcome but there are a few things you would probably have to consider. You would have to get users consent to use and store their data when they sign up for the app or you can't really use their data for anything. You would also probably have to implement some sort of data retention plan for when a user has been inactive for a certain period of time because I don't think you can store people's data forever anymore. You also have to be able to provide data extracts because people now have a right to see all data that a company has on them in whatever systems they have.

Christopher Murphy
X13326556

6. **The app may contain a built in loyalty card system? Would this be possible?**

He said it would be possible but might not be easy, if it's a loyalty system that's across all deals for example spend money across all shops and get something for free. Again you would need buy-in from all shops, cafes and so on. If it's one loyalty program per shop you have to keep track of individual loyalty programs. He mentioned the costs might be high for this type of feature because you would need the shops to buy in to install the loyalty system which could be expensive for smaller businesses and they may not want to deal with the hassle of installations etc.

7. **What language would you use for this application?**

Whatever language the developers are experienced in. He said he would try to make it as agnostic to whatever devices you want to run it on as possible though. So build whatever back-end functionality in whatever language and make sure there's a standard way of communicating with those services. Something like web services. For him it would be a c++ back end and then maybe create a responsive web site using html5 + JavaScript and wrap that in an app. He was not sure if that's the best approach but that's probably how he would approach it and would just use whatever he was comfortable with.

<div align="center">

Interview Conclusion

</div>

Both interviews were very beneficial and informative for me. A few requirements were gathered but I was able to receive vital feedback from different viewpoints regarding the app and how it would function. This was important because it allowed me to look at the app from a Business Owners perspective and how they might like to be perceived on the app. Even though the app is mainly for student use the businesses that run the promotions need to be satisfied also and it has to make sense from a business point of view for them to invest in a project like this.

The developer interview was really beneficial to me and a real eye opener. Some of the key features and requirements that I had elicited from the previous requirements sessions that I thought would be easy to implement and be main features within the app had to change. One of the main features that I had planned to place in the app was the payment option but after the interview with the developer he raised some interesting points about data storage regarding credit card information and security. This setback ruled out the option of offering a loyalty and rewards system to the user because there would be no need for these features without the payment option. The feedback I received required me to make a change to how the overall app would operate with no payment option giving the ability to purchase a promotion they were interested in, the app would just advertise the deals through the home page, daily deals page and the stores information page. The interview helped me clarify a lot of things because I was wondering how could the payment option be implemented effectively so it could be synced with the rewards feature and loyalty system. These features could be something to look at in the future if the budget allowed for it.

4.5. Prototype

Prototype Version 1

Welcome page

Registration Page

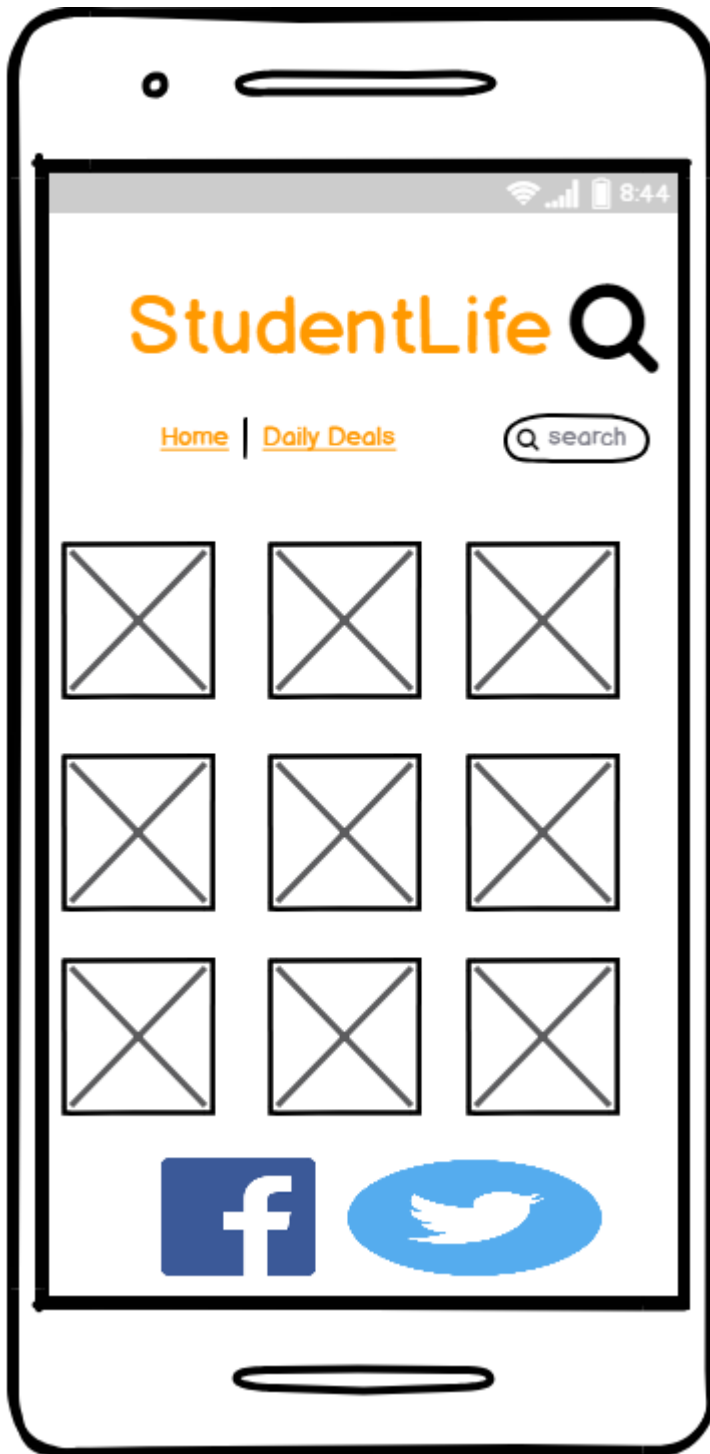Christopher Murphy
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Login Page

StudentLife

Login

Email address

Password

GO

Home Page

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Daily Deals Page

Store Page

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Prototype Version 2

Favourites Page

Search Filter Page

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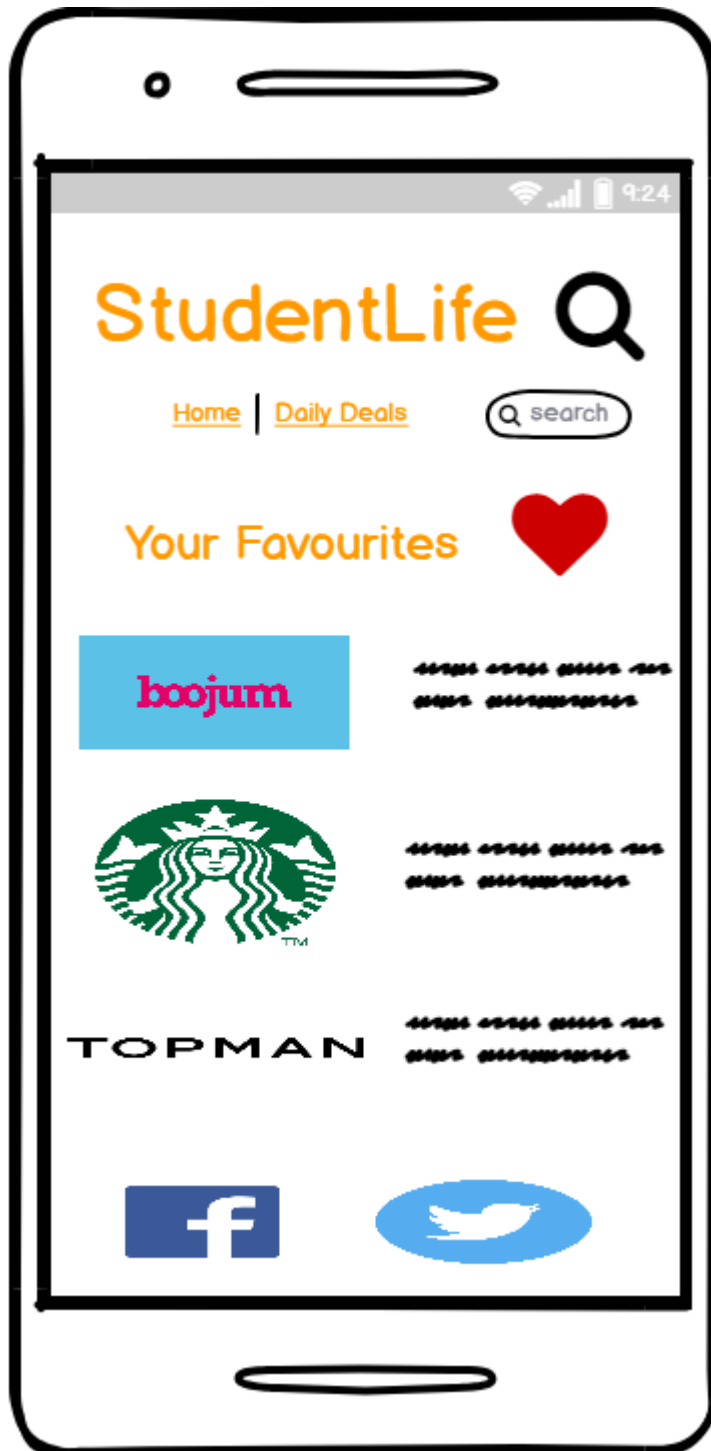
Prototype Conclusion

The prototype developed above was achieved by using three different elicitation techniques. They included techniques such a brainstorming session, a survey and two interviews, which took place by using various stakeholders related to the project. I firstly analysed the results of all the requirements and results I had gathered from the variety of techniques to create an initial layout of the application based on the preferences of the stakeholders. The brainstorming session helped me acquire the most requirements and allowed to work closely alongside relevant stakeholders to gather important details needed to develop the prototype. The interviews allowed me to gain a different viewpoint regarding the app and the features I was planning to implement and helped me clarify features that are out of reach at this time. Once I had gathered all the results and feedback I created the first version of the prototype. I was then able to present this first version to stakeholders and receive further feedback to any changes that needed to me made. Stakeholders mentioned that it would be beneficial if the user was able to add a store they liked and visited often to a favourites page so they could easily go to that favourites page and not have to search for the store every time. Another stakeholder mentioned the ability for the user to perform a more tailored search option so they could find specific promotions to their needs. Once all these changes were documented I then updated the prototype and added the suggested features to the StudentLife application.

4.6. Requirements Workshop

The requirements workshop took place with a number of students in the National College of Ireland. The first version of the prototype for the StudentLife app was created from requirements that were gathered from the brainstorm, survey and two interviews and was shown at the requirements workshop to the students. It allowed the stakeholders to make comments and provide further feedback on the prototype. The feedback gathered from the requirements workshop will be implemented into the second version of the prototype.

The students at the workshop liked the design and layout of the initial prototype, they thought it had a very clean, simplistic, user-friendly look to it. They highlighted a number of different features that they feel could be introduced into the second version of the StudentLife prototype.

One person stated that the search function should also provide the user with the option of filtering a search if they preferred if they wanted to search by cost, distance, product etc. This would enable the user to perform a more tailored search to their interests.

One of the participants mentioned that a rewards feature would be a great benefit to the app. That rewarded students for continuously using the app when they shopped and also reward them if they invited their friends to use the app. Students could be rewarded with an extra 5% or 10% discount on a top of what they would usually receive if their activity on the app had been high throughout a particular week or month. If students invited their friends to join StudentLife they would be rewarded with a voucher for one of the stores on the app or they could be credited with 5 euro into their personal account when their friend makes their first purchase.

An option on the stores information to save that particular store to a favourites page was also mentioned which everybody agreed with. The favourites page would then create a list of all the

users favourite stores, this way they could access them quickly without having to search for the store each time. People also highlighted the home page should have vibrant colours and clean easy navigable user interface.

Moscow Analysis

Below is the MosCow analysis I formulated. The MosCow analysis was prepared to help prioritise the requirements that had been gathered by previous elicitation sessions such as the brainstorm, survey, interviews and the requirements workshop.

Requirement	Action	Raised by	Priority
1	Register page	Brainstorming	Must
2	Access the homepage	Brainstorming	Must
3	Access the login page	Brainstorming	Must
4	Access Store info	Brainstorming	Must
5	Access store locator	Brainstorming	Must
6	Access daily deals page	Brainstorming	Must
7	Access favourites page	Brainstorming	Must
8	Save login details	Brainstorming	Could
9	Have profile page	Brainstorming	Could
10	Add store to favourites	Brainstorming	Must
11	Use search function	Brainstorming	Must

Christopher Murphy
X13326556

12	Perform filtered search	Requirements workshop	Must
13	Help & support link	Brainstorming	Must
14	Have a payment option	Brainstorming	Could
15	Access map	Brainstorming	Must
16	Push Notification option	Brainstorming	Could
17	Loyalty card system	Brainstorming	Could
18	Access the App on all devices	Survey	Should
19	Rewards feature	Requirements workshop	Must
20	Have student email	Brainstorming	Must
21	Have a password	Brainstorming	Must
22	Messaging feature	Brainstorming	Wont
23	Stay logged in	Brainstorming	Should
24	Have a password	Brainstorming	Must
25	Provide a Disclaimer	Developer	Must
26	Free access to app	Survey	Should

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4.7. Interface Analysis

UML Use Case Diagram
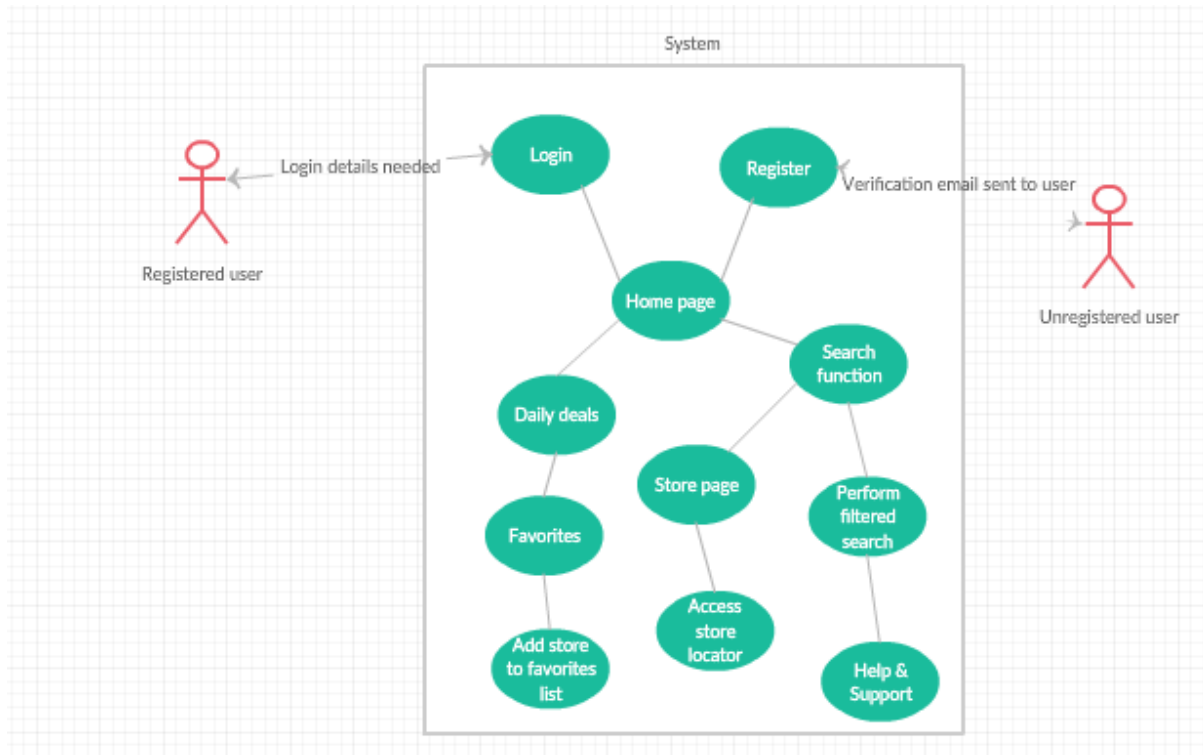
UML Use Case Diagram Conclusion:

The UML use case diagram above is a visual representation of how the StudentLife app will operate and describes the interaction that will occur between the users and the system associated with the StudentLife app. The users are located on the outside of the UML use case diagram and the various features and functions of the system are situated inside the use case diagram. Each of the users will have a relationship with at least one of the features within the system of the use case diagram. For example, an unregistered student is only able to access the registration page of the app and is prevented from gaining access to the other features of the system because they have not fully registered yet. The only way they can access the full use of the app is if they supply a valid student email address and password, this will then have to be verified by the student who will receive a verification email to their student email address with a link they will have to open. A previously registered student will be able to access the full use of the app and its features once they enter their already validated login details on the login page.

Christopher Murphy
X13326556

5. IEEE App Requirements Specification

5.1. Purpose

This IEEE requirements specification document is being formulated for the creation of the StudentLife discount application and will identify the key functional and non-functional requirements related with the app. This requirements specification document must be approved by the client before it is delivered to the developer. Any proposed alterations that may be requested by project stakeholders must be implemented before the StudentLife application is developed.

5.2. Scope

This application is being developed for a variety of different stakeholders. StudentLife is designed for students to avail of student discounts and promotions on various items that could potentially be in their locality that they may not have been aware. I feel there is gap in the market for an app of this type to be a success, with more and more students attending college each year and the cost of being a student also rising. Students are always looking for ways to save money because college, rent and travel can be very costly for the majority of students who may only work part-time or receive a grant. This is where StudentLife can be of benefit to a student, it will allow them to browse through the app and look for deals and promotions that may interest them, if they find a promotion they wish to avail of they can simply go to that store to receive the discount or they can on click the promotion on the home page which will then bring them to that specific stores information page and use map to locate the store via Google Maps. The student will also have the ability to save favourite stores they like similar to a bookmark and access a daily deals page.

6.3. Definitions, Acronyms & Abbreviations

User: A stakeholder who will interact with the StudentLife app. They are a general user of the app who will be able to register, login and use the features of the app.

Stakeholder: A person who will be able to interact with the StudentLife app but they cannot be the developer of the app.

References
IEEE Software Engineering Standards Committee, "IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications", October 20, 1998.

7. Functional Requirements

6.1. User Class One – User

Functional Requirement 1.1
Identification Code: FR1

Title:
StudentLife registration page link

Description:
The registration page link must allow the student to input their details that will enable them to become a registered user and access the features of the StudentLife app. The required fields will need credentials such as the students name, student email address, password. All the fields must be completed to full register the student.

Location:
StudentLife registration page

Reasoning:
This will allow the user to register to the StudentLife application so they can access the features within the app. The rationale behind obtaining the students education based email address and the institution they are attending is to verify that the student is a registered student.

Priority:
Must have – High priority

Functional Requirement 1.2
Identification Code: FR2

Title:
StudentLife login page link

Description:
The login page link must display the necessary login credentials needed by a previously registered student to input their details that will enable them to access the features of the StudentLife app. The required fields will need credentials such as the student's valid email address and password. All the fields must be completed to allow the student access to the home page after they have hit the login button.

Location:
StudentLife login page

Reasoning:
This will enable an already registered user to access their account on the StudentLife application quickly by entering their student email address and password that has been previously validated at the registration process.

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Priority:
Must have – High priority

Functional Requirement 1.3
Identification Code: FR3

Title:
StudentLife Home page link

Description:
The home page link will be present on the top of all the pages throughout the app on the tab across the top of any page to give users the option of returning to the Home page when needed. This link will display the home page of the StudentLife app and allow the student to view and access all the features of the app.

Location:
Link will be available on all pages throughout the StudentLife application

Reasoning:
This link will allow the student to swiftly return to the home page of the StudentLife application with ease. This requirement was highlighted and requested by users so they could access the home page simply if they needed to return to it.

Priority:
Must have – High priority

Functional Requirement 1.4
Identification Code: FR4

Title:
Stores information page link

Description:
This link will be present on the home page of the application and can be accessed when a student selects the stores logo on the home page. This link can also be accessed through the search bar when a user searches for a specific store.

Location:
Stores information page

Reasoning:
This will allow the student to access the stores information page from the home page or buy using the search bar and will provide details about the store, the discount they are providing, location and other general information.

Priority:
Must have – High priority

Functional Requirement 1.5

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X13326556

Identification Code: FR5

Title:
Favourites page link

Description:
The favourites link will be present on the top of all the pages throughout the app as a love heart symbol to give users the option of quickly accessing stores they previously favoured.

Location:
Every page on StudentLife application

Reasoning:
This link is designed to allow the user to revisit their favourite stores with ease without having to use the search criteria every time they are looking for a promotion. This feature was highly suggested by several of the users who were present at the brainstorming session.

Priority:
Must have – High priority

Functional Requirement 1.6
Identification Code: FR6

Title:
Search function

Description:
The search function will be located in the top right corner of the home page denoted by a magnifying glass symbol. This will enable the user the option of performing a more specific search for an item or service they are interested in.

Location:
Top right corner on each page of the StudentLife application.

Reasoning:
The main reason behind this feature is to allow the user to search for stores and items they are interested in. This feature will provide the user with a more tailored search for a particular service. This feature was also highly recommended by participants involved in the brainstorming group.

Priority:
Must have – High priority

Functional Requirement 1.7
Identification Code: FR7

Title:
Store locator

Description:

Christopher Murphy
X13326556

The store locator will enable the student to find the location of a store when they select the stores information page from the home page or when they search for that particular store using the search function. This will then allow the student to view the closest store to them via Google maps.

Location:
Each stores information page.

Reasoning:
This feature will give the user a quick view of where that particular store they are interested in is exactly located allowing them to visit that store if they want with relative ease.

Priority:
Must have – High priority

Functional Requirement 1.8
Identification Code: FR8

Title:
Help & Support Link

Description:
This link will direct the user to a help & support page with contact information such as a number to contact including Facebook and Twitter information available to them if they have any inquiries about the app.

Location:
Home page

Reasoning:
The aim of this feature is to aid the user with any queries or questions they may have regarding the use of the app. This feature was highlighted and discussed during the brainstorm meeting.

Priority:
Must have – High priority

Functional Requirement 1.9
Identification Code: FR9

Title:
Daily Deals link

Description:
This link will be present on top of the application represented by a star icon. It will enable the user to access the page that is offering special deals and offers on that particular day and avail of them.

Location:
Daily deal page

Christopher Murphy
X13326556

Reasoning:
This feature will allow students to view daily special offers on a specific day during the week. The promotions on this page will change day to day, giving the user some variety each day. This feature was discussed at the brainstorming session as a key aspect of the app by numerous participants.

Priority:
Must have – High priority

Functional Requirement 1.10
Identification Code: FR10

Title:
Filtered search function link

Description:
The filtered search function link will be located on the search function page on the left hand side of the page and will be represented by a filter icon.

Location:
Within the search function page

Reasoning:
This function will allow users to perform a more in-depth search for a particular product or service they are interested in. It will allow the user to filter by store, product or cost.

Priority:
Must have – High priority

Functional Requirement 1.12
Identification Code: FR12

Title:
Save login details

Description:
This feature if implemented at a later stage of the app development could provide the user with the option of saving their login details on the app.

Location:
This feature could be located on the log in page, as an option under the email address and password boxes, when users are logging into their accounts.

Reasoning:
This will allow the user to save their specific details such as their student email address and password to the StudentLife app so they won't have to keep entering their details each time they wish to use the app. This option was highlighted at the brainstorming session but I chose to leave it out for now for security reasons.

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X13326556

Priority:
Should have – Medium priority

Functional Requirement 1.13
Identification Code: FR13

Title:
Adding stores to favourites page

Description:
This feature will give the user the option of adding a favourite store to their personal favourite stores lists by selecting the plus symbol that will be present on the top of each stores information page.

Location:
On the stores information page.

Reasoning:
This will allow the user to add stores they like to their favourites page and create a selection of stores easily that they shop in most often. This feature was also highly requested by one of the users who participated in the requirements workshop.

Priority:
Must have – High priority

Functional Requirement 1.14
Identification Code: FR14

Title:
Push notification option

Description:
This feature if implemented in the later development of the application could provide the user with push notifications sent to their phone.

Location:
This option could be a pop up that the user can either accept or reject after the they have registered for the app.

Reasoning:
This could allow the user to receive push notifications on special offers that may be in their vicinity or could be related to promotions that the stores they have previously favorited are offering.

Priority:
Could have – Medium priority

Functional Requirement 1.15

Identification Code: FR15

Title:
Built-in loyalty card system

Description:
The built-in loyalty card system could be implemented at a later stage in the development process. The feature could allow the user to receive loyalty points via the app by shopping in certain stores that offer a loyalty system.

Location:
This feature could be located at the bottom of the app as another tab that users can access.

Reasoning:
The loyalty feature could allow to receive loyalty points to their accounts for specific stores without the hassle of carrying a loyalty card in their wallets. This could free up space in their wallets and students would not have to keep checking their wallets to see if they still have their loyalty card that people often times lose. This highlighted in the brainstorming session but after some thought it was decided not to implement this type of feature right now.

Priority:
Could have – Medium priority

Functional Requirement 1.16
Identification Code: FR16

Title:
Provide payment option through app

Description:
This payment option feature could allow the user to purchase promotions through the app by selecting purchase deal on a stores information page.

Location:
This feature could be located on each individual stores information page as payment option button.

Reasoning:
This feature could make it easier to purchase student promotions that are on offer and then receive their discounted product/ service in the store. The payment option feature was requested by some of the users who participated in the brainstorming session but it will not be a feature of the app at present.

Priority:
Could have – Medium priority

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Functional Requirement 1.17
Identification Code: FR17

Title:
Reward feature link

Description:
This feature could allow the user to receive reward points every time they invite their friends to the StudentLife app. They could receive a reward in the form of points or get €5 to spend as a voucher in one of the stores that is advertised on the app.

Location:
This could be located in the user's personal profile so they can check and manage their rewards balance.

Reasoning:
A participant mentioned this as a possible feature during the requirements workshop but it is not being developed because it would tie in with the payment option which is also not being implemented at this stage but it could be an option in the future.

Priority:
Could have – Medium priority

Functional Requirement 1.18
Identification Code: FR18

Title:
Student Profile link

Description:
The student profile link could bring the user to their personal profile on the app.

Location:
Student profile page

Reasoning:
This could allow the user to access their rewards, loyalty cards, favourite stores and manage their details.

Priority:
Could have – Medium priority

Functional Requirement 1.19
Identification Code: FR19

Title:
Access app on all devices

Description:

Christopher Murphy
X13326556

The StudentLife application should be available across all devices.

Reasoning:
This ability for the app to be available to download and accessible across all devices was highly requested during the survey from the results that were received.

Priority:
Should have – High priority

Functional Requirement 1.20
Identification Code: FR20

Title:
Student email address

Description:
A student email address will be required in order for the student to access the features of the app.

Location:
Registration page and login page

Reasoning:
In order for the user to access the features of the app they will need to provide their student email for verification reasons.

Priority:
Must have – High priority

Functional Requirement 1.21
Identification Code: FR21

Title:
Student password

Description:
The student will also be required to input a student password along with their student email to obtain access to the app.

Location:
Registration page and login page

Reasoning:
In order for the user to access the features of the app they will need to provide their student password also for verification reasons.

Priority:
Must have – High priority

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X13326556

Title:
Messaging feature

Description:
The student will also be required to input a student password along with their student email to obtain access to the app.

Location:
Registration page and login page

Reasoning:
In order for the user to access the features of the app they will need to provide their student password also for verification reasons.

Priority:
Won't have – Low priority

7. Non-Functional Requirements

7.1. Security:

Non-Functional Requirement 1.22
Identification Code: NF22

Title:
Password has to be eighth characters in length

Rationale:
This requirement will need the user to enter a password that is eight characters long with one capital letter and one numeral to strengthen security. Having a longer length password will ensure security for the user and their details. It will also reduce the risk of hackers gaining access to their accounts.

Non-Functional Requirement 1.22
Identification Code: NF22

Title:
Student email address verification

Rationale:
The students email address must be valid and verified through the verification link that will be sent to the student email address, prior to setting up an account. This will ensure the user is a valid student.

Christopher Murphy
X13326556

Non-Functional Requirement 1.23
Identification Code: NF23

Title:
User accessibility

Rationale:
This requirement of the application will ensure that users can only have access to their own account.

Non-Functional Requirement 1.23
Identification Code: NF23

Title:
Provide Disclaimer to user/ GDPR

Rationale:
This requirement of the application will ensure that users are aware that the app is using their information to help locate stores in their area and store their email address. User will have to accept the terms & conditions if they want the app to access their current location. This was highlighted by the developer during the interview as an important feature because of the new GDPR regulations which are due to come into effect on 25/05/2018.

7.2. Performance:

Non-Functional Requirement 1.24
Identification Code: NF24

Title:
Incorrect login wait time

Rationale:
If the user enters an invalid password that does not link to their account an error message should appear no longer than 5 seconds after the event.

Non-Functional Requirement 1.25
Identification Code: NF25

Title:
User friendly

Rationale:

The application should be as user friendly as possible. Users should able to easily access and navigate the various pages and features on the app without any difficulty.

Non-Functional Requirement 1.26
Identification Code: NF26

Title:
Page load time

Rationale:
When the user selects a page within the app it should take no longer than a few seconds for the page to fully load enabling users to navigate through the app quickly without any buffering or loading issues.

7.3. Availability:

Non-Functional Requirement 1.27
Identification Code: NF27

Title:
Application availability

Rationale:
The application must be highly reliable and available for the user. This means the app should be available 24/7 365 days a year without any downtime. Buffers may be implemented to ensure the app does not suffer from an overload of information or activity.

Non-Functional Requirement 1.28
Identification Code: NF28

Title:
Free to use

Rationale:
The application must be a free service for users to download and use. This was gathered from the survey results.

Christopher Murphy
X13326556

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9. Appendices

Project proposal

Project objectives

The main objective of my final year project is to create a highly detailed requirements specification document for a student discount app that will allow students to view and avail of discounts, special offers on products and services based on their locality along with the technologies being used and how they will be used. This will be achieved by using viewpoints from various stakeholders who will be associated with the app.

The first important objective will be to identify who the main stakeholders will be. The stakeholders will include the project sponsor, the developer, business analyist, local businesses and students. Once I have recognised who the stakeholders are I can begin gathering the requirements using some elicitation techniques such as surveys, brainstorming, interviews and other techniques that will be documented in the requirements specification document. Meeting the stakeholders will be a good way to discuss the benefits the app will have and how it can be specifically beneficially to them. I will demonstrate that there is a need for my application and how it can help students save on everyday items.

I will outline the I.T infrastructure that will be necessary to support this application. I must also identify the business requirements along with the function and non-functional requirements for the app. When I have finished gathering all the requirements the next step will be to analyse the information using various data analysis tools. Then I will meet with the stakeholders to ensure that the requirements have been fully met. An important objective will be to ensure that I meet security and legal requirements to the appropriate standard particularly with the forthcoming Data Protection amendments (25.05.2018)

The objective of the app will be to provide students with a way of viewing various types of discounts and special offers on items such as food, drink, nights out, electronics, books and other items that students would interested in that are in their immediate area or whatever town/city they may be in at the time that they could potentially avail of. This will inform students of potential deals that surround them that they might not have been aware of. It also saves students from walking around searching for example if they are looking for some lunch at a reasonable price but they are unfamiliar with the area, the app will enable them to see food places in that area along with directions and deals that may be on offer.

Along with all of this I also have to perform a number of other tasks such as the project proposal, project analysis and design, the midpoint presentation, uploading the final document and conducting the final presentation and then showcasing the finished project app and poster at the showcasing event at the end of May 2018. I will also need to manage my time well throughout the year because I have other modules and projects that need to be completed. As the project progresses I will need to keep to the schedule as I have set out in the project plan. I plan to have all my deliverables completed in a timely manner and to a high standard so I am not rushing my work that could potentially hinder my grades. I will also be meeting with my supervisor twice a month where I will show him how the project is developing and to set tasks for the next meeting.
Background

Christopher Murphy
X13326556

As part of my final year I was tasked with creating an I.T. based application. Our ideas were encouraged to try be as innovative and creative as possible. I had a few different ideas but decided to do my project on a student discount app where students could avail of various special offers on a number of different products all in one place because I felt there was a gap in the market for this type of service. I had seen similar apps like Unidays and Groupon that offer a similar sort of service but Unidays offers discounts on clothes, jewellery etc. and Groupon offers everything from lawnmowers to language courses but I haven't seen an app that is just student specific and offers discounts on products that students will be interested in in terms of food, drink, electronics, gigs and events that could help them with everyday living.

Technical Approach

Once the concept of my final year project was completed I began researching different tools I could use to create a prototype of my app and other requirements I needed to do to complete the project. We were encouraged to use WordPress to create the project website after receiving a few classes on how to develop the website effectively. Wordpress was relatively easy to use and allowed me to add features that were relevant and specific to the StudentLife project.

Special resources required

I have no prior knowledge or experience creating a website using Wordpress, but with the help I receive from the classes that are being run by Sam Cogan on how to use Wordpress effectively I aim to create an appealing website. I will also use tutorials I find online through like YouTube to help me with any issues I may encounter. I have some previous experience with using Balsamiq to create a prototype but I will need further information so I will also use YouTube videos to aid me with this task.

Additional resources needed

1) Asus laptop.
2) MyPassport Ultra Backup Storage Device.
3) Personal Dropbox to ensue project files are backed up.
4) Template of a IEEE requirements document.

Project Plan

Below is a Gantt Chart for the timeline of the project and a project plan of the tasks I will carry out throughout my project during the year. This relates to deadlines that were set out my project coordinator and Moodle. As the year goes on more and more tasks will be implemented into the plan as I complete them.

Christopher Murphy
X13326556

Info	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names	2017 Q1	Q2	Q3	Q4	Q1	Q2
		⊿ Project	142 days	Fri 27/10/17	Sun 13/05/18								
		Project proposal ratified	1 day	Fri 06/10/17	Fri 06/10/17								
		Project proposal document	7 days	Thu 19/10/17	Fri 27/10/17								
		Midpoint presentation	1 day	Mon 04/12/17	Mon 04/12/17								
		Showcase profile singed off	1 day	Fri 06/04/18	Fri 06/04/18								
		Showcase printed poster	1 day	Sun 13/05/18	Sun 13/05/18								
		Document upload	1 day	Sun 13/05/18	Sun 13/05/18								
		Project presentation	1 day	Fri 25/05/18	Fri 25/05/18								

Problem Statement

No application on the market currently that allows students to look up, search and avail of

discounts in their local area.

There are certain risks with the undertaking of this project one of which is as I gather requirements there is a risk that the list could keep growing and become too much to handle. To prevent this, I must manage the stakeholder's expectations accordingly.

It is difficult as of now to measure the scope of the project. I intend on developing the application as it progresses by adding features where needed.

Another risk to the project will be choosing a developer. To make sure I acquire the right developer I will have to use interviews and other resources I have at my disposal. It is vitally important that they understand what I am looking for and are able to produce the work.

Communication will be key throughout the project. I will have to keep in regular communication with each of the stakeholders to make sure targets are being met and to ensure everybody is happy with how the project is maturing.

Evaluation

To evaluate the project, I will use a number of various elicitation techniques such as brainstorming, surveys, interviews, requirements workshop and an interface analysis to gather requirements and produce a highly detailed requirements specification document. These specific techniques do not represent the techniques that I will definitely be utilising throughout the elicitation stage but are the

Christopher Murphy
X13326556

ones I have identified at this early stage of being the most beneficial to me for this particular project. After all the requirements have been documented I can begin to conduct the requirements analysis. I will gather the majority of the requirements of the app after the midpoint presentation has been conducted. I will then meet with the stakeholders to ensure no requirements have been missed they will then sign off on the document once they are happy with it. Then I will meet with my project supervisor after finishing the document to make sure he is satisfied with the document and discuss any changes that need to be made.

Reflective Journals

Reflective journal for September

Student name: **Christopher Murphy**

Programme: **BSc(Hons) in Technology Management**

Month: **September**

My Achievements

I started back college on the 18th of September to start my final year. In the month of September, I started brainstorming project ideas and looking at what was going to be expected of me. I start by examining projects from previous years that my lecture had uploaded to Moodle to give me an idea of what the project was going to entail. It took me a while to come up with a project idea because I wanted to do something that I was interested in but also keeping in mind that the idea had to be innovative and technology based.

My idea came from personal experience of looking for good deals/discounts in town when I was looking for somewhere to eat with friends and seen there was nothing really on the market at the moment. Once I had my project idea in mind I was able to start thinking about how I was going to start the project proposal that was due at the end of October and the project pitch that was happening on the 5th of October.

I felt it worked well to start thinking of possible project ideas as soon as I started back in September so I was not stressing over it in October.

However, I was not successful in commencing the project proposal as I had other assignments that were due so they were my priority at the time.

Next month I will try to get a start on my project proposal early on in October so I am not rushing it before the deadline so I can focus on my other assignments that are coming up. I plan on meeting my project supervisor once the project pitches have taken place and my idea has been accepted.

Reflective journal for October

My Achievements

This month was a much more productive month for me compared to September. I was able to pitch my project proposal to Eugene O Loughlin, Ron Elliot and my eventual project supervisor Eugene McLaughlin on the 5th of October, which was accepted. Once my project was accepted I then began

working on my project proposal which was due on the 27th of October. I also met Eugene McLaughlin my project supervisor to discuss my project idea and possible things I can add to it. We also discussed the main deliverables and looked at the marking scheme of what would be expected of me.

I felt it worked well to get a start on my project proposal early on in October so I was not rushing to get it completed closer to the deadline. it was good to meet my project supervisor as soon as possible to discuss my project and get an idea of where to start.

Next month I will try to organise a meeting with some of my stakeholders and complete an interview to gather relevant requirements that I can then implement into an Elicitation Requirements document.

Items discussed: I met with my project supervisor Eugene McLaughlin for the first time on the 17th of October and we discussed my idea and went through who my stakeholders were going to be and my plan of gathering the requirements from the interviews I was going to do. Eugene also gave me some tips and my app idea and features I could add to it. We also discussed important dates that were coming up regarding documents to upload for the assignment.

Reflective journal for November

My Achievements

This month I was able to develop plans for my requirements elicitation. I have made plans on the specific stakeholders involved with the project who I will be hoping to meet and conduct numerous interviews with but no dates are times have been agreed upon yet.

I have arranged a brainstorm session to take place on the 15/12/2017 at 1pm. There will be 4 participants in the brainstorm session and they have all confirmed they will attend.

I am currently in the process of creating the first draft of a survey that will be completed and approved rolled out in February. It will consist of approximately 17-20 questions and will be distributed to students.

Next month I will try to focus more on the project proposal document and the presentations that will be taking place on the 4-7th of December. I will also be looking to get my survey questions approved so I can have them ready to roll out.

I will be arranging a meeting with my supervisor to discuss and review my survey and any changes or recommendations that he suggests I should make before I distribute it to students. We will also discuss the mid-point presentations in December and what will be expected of me.

Reflective journal for December

My Achievements

December was a very busy month for me I had number of assignments due for other modules along with my Midpoint Presentation. I had to prioritise my work effectively and use my time well so I could stay on top of the workload. I did not concentrate on the project as much in December as I

also had exams to study for that were coming up starting the 4th of January but I had finished my planning for the elicitation techniques and was preparing for the midpoint presentation.

The midpoint presentation was happening earlier than normal this year so I had to adjust my time for that. It took place on the 6th of December in front of my project supervisor and another lecturer. I presented through Microsoft PowerPoint describing my app how it would function tasks I had completed up until then and the plans I had going forward in the coming months.

I had met with my supervisor (Eugene McLaughlin) a number of times in December to discuss my survey and how I would structure it and he gave me some good feedback we also discussed what was expected of me for midpoint presentation and the project proposal. For me at this point there may have been a misunderstanding in what my supervisor was expecting of me in the project proposal and what I was supposed to present because I was not actually creating a fully functioning app but just a requirements specification document.

I was not happy on how the presentation went because I had everything that was expected of me I thought that was outlined by Eugene O Loughlin when he talked to the class on what we should have ready for the presentation. This was a little setback because I was disappointed with the result and the uncertainty that it had created. But it just meant I had to keep focused and work even harder but most importantly any direction that I was being given had to be documented.

My goals in the coming few weeks and months is too solely focus on my exams after the Christmas break and start focusing on the project a bit more after that. I hope to have my survey questions finalised and conduct an interview soon so I can start gathering some further requirements.

Reflective journal for January

My Achievements

January was also quite a busy and stressful period for myself as I was focusing on my exams. In semester one I had 5 modules to study and each had their own exam which was tough. Exams commenced on the 4th of January and finished on the 12th of January. So I was not focused on my project during these few weeks. After the exam period I could start focusing on the project more.

I had a meeting with my supervisor when I returned from a week off after exams had finished. We discussed the misunderstanding that had occurred at the midpoint presentation. The issue was resolved and we discussed the next steps to take in the project. He gave me feedback on my survey about what questions to ask and he told me to draft version of it so he could review it in more detail.

This semester was not going to be as hectic as the previous one because I only had two modules so I could focus more time on my project but it was also important I did not lose focus on my modules and continue to manage my time well.

Reflective journal for February

My Achievements

I received a setback during February as my current supervisor Eugene McLaughlin became ill and was not longer able to supervise me for the remaining months of the semester which was unfortunate. Mr Pat Delaney was assigned as my new project supervisor straight away. I emailed Pat

immediately so we could discuss my project and at what current stage I was at. We arranged to meet a few days later and I showed him my draft survey that I had previously compiled for my previous supervisor. He gave me some feedback on the survey and approved it within a few days. So I began to distribute it out.

We also discussed possible interview candidates and what sort of questions I should pose. We decided that I should interview a store owner, a developer and maybe a potential user.

I also received my exam results at the start of the month which were better than expected so I was really delighted with that and it gave me extra encouragement to push on and continue working hard with my two modules and my project.

Mr Sam Cogan helped us throughout February with seminars dedicated to the WordPress which was interesting that we had to create for the project.

We also received seminars on the Project Showcase and our individual profiles and what they entailed from Eugene O Loughlin which was going to be worth 5% so they were important.

Reflective journal for March

My Achievements

I felt March was a productive month for me we had two weeks off college where I could focus on my project and start documenting my results from my requirements elicitation techniques and planning my interviews that I wanted to conduct along with questions etc. I was also receiving a strong response from my survey which I was pleased with.

During March we also had to make our profiles for the Showcase that consisted of a brief explanation of our project and the technologies we used along with having our headshots taken. We were marked on these so I had to get it approved by Eamon first.

We also received a seminar from Eugene O Loughlin regarding the marking scheme for the project and he also discussed what stage of the project we should be at that gave me a bit of a wakeup call.

I managed to conduct two interviews during the month one with a Developer and the other with a Store owner. I had prepared two draft sets of questions and showed them both to my supervisor who suggested small changes which I made before I conducted the interviews. Both interviews went really well and I received positive feedback about the app and gathered some potential requirements that could be implemented in the app.

Reflective journal for April

My Achievements

April was a very busy month. I had two assignments for other modules that were both due within a few days of each other so they project was not my top priority at this time. I also had two exams for these modules that started on the 25th of April. I did however manage to conduct a requirements workshop at the start of the month with 4 stakeholders and they gave me some important feedback regarding the look of the first prototype.

We were given an extra two days onto our previous project submission date which meant it was due now on the 13th of May this was to my advantage.

An ethics form for the project which was approved by the ethics committee also had to be completed and uploaded to Moodle during the month.

Reflective journal for May

My Achievements

Well this is it. The Exams are finished so I am able to solely focus on my project and finish documenting all my techniques and amending any changes I need to make before the final upload on the 13th of May 2018.

The final document will be uploaded along with the WordPress. The Showcase Printed poster is due on the 16th of May 2018. The exact dates and times of the presentations at the time of writing are yet to be announced but will take place between the 22nd – 26th of May 2018. The Showcase event will take place on the 30th of May 2108. So there are still some tasks to be completed.

Wordpress Website

http://studentlifedigital.com/

Christopher Murphy
X13326556