Assignment 3

Personal Information

S3637423 - Nicholas Low Khai Yang likes to take part in video games, basketball and swimming in his spare time. His interest in IT was sparked by wanting to know how hacking and coding works and also editing photos. Nicholas wants to pursue a career in software engineering in the future and chose to attend RMIT Melbourne for the location and the prestige that comes with RMIt university.

S3807389 - Allan Liem Became interested in IT mainly due to video games and esports, he was also influenced by his uncle's who owned computer and console modification business that helped with interest in IT. He has experience working in a computer hardware warehouse called Scorptec which has shown him the wide variety of needs that consumers need for electronics and computer hardware. In his spare time he enjoys playing games such as CS:GO and playing soccer. In the future he would like to develop a career in the area of Esports event planning.

S1111111 - Adele Di Lisio was born in Melbourne and has an Italian background; she is studying bachelor of applied science(psychology) and enjoys reading and playing video games in her spare time. Although Adele doesn't have a lot of experience in the area of IT she wants to be able to further her experience and knowledge in the area as she can see how important the different areas of IT will be in the world moving forward.

S3303005 - Paul Curran grew up in Ireland in his early years and then moved to Australia when he was around 9 years old. Building computers and playing video games is what first got him interested in computers, in his spare time he likes to play drums and video games. He doesn't have a lot of professional experience in the area of IT however he wants to garner this by utilizing the facilities that RMIT offers. In the future he would like to pursue a job as a full stack developer as it seems like it would be a varied career that he would enjoy.

Group processes

Assignment 2 presented some challenges for our group, most of these challenges were presented to us by the unexpectedness of remote group participation due the situation caused by COVID-19. Despite these challenges we think we worked well together, one of our group members failed to submit any work for our assignment but we still managed to put together a complete website by having deadlines set by our group members as a contingency for this situation; using this strategy we were able to have enough time to provide some content for the missing group member. Learning from this hurdle we plan to have more communication in the weeks leading up to the due date to avoid last minute problems like this.

Our communication using Microsoft teams was effective throughout the last assignment so we will continue to use this as our primary method of communication and file sharing.

Career Plans

Some of the team's ideal jobs are quite similar with Paul, Nicholas and Victoria choosing either a full stack developer or a software engineer. These jobs are likely to entail a lot of similar responsibilities such as skills in software design, user centered design and programming. Some things that could differentiate these positions could be Victoria's desire to enter a more web

developer focus area whereas Paul's was more related to application development which could lead to a different requirement in a programming language such as PHP vs Java.
Allan's ideal job was more focused on event planning around something like Esports which is quite different from others ideal jobs in the group. Even though it is a very different area than for example software engineering, some skills could still be transferable between the two areas such as team planning and project management.
Careers paths throughout the group could be quite similar between for example a full stack developer and a software engineer, however they also have potential to be very different between our ideal jobs. An Esports event planner career path would likely look very different to a software developer.

Project Description

What does it do?

The basic feature of the service will be to enter the computer parts that the user has purchased and then give the user instructions on how to build the pc based on the parts that they have purchased. For starters the user may need to enter what kind of case they have purchased; as most cases have generic set ups for the shape that they come in the user can be given a pre-made template for a case that fits the design of their case most. For example if they have a standard size case over a mini case they can be shown pictures and videos that have been made with this size case in mind. Attaching the different parts of the computer in the correct order can be shown keeping in mind the parts they previously entered.
An important part of the pc build is making sure that the correct cables are connected to the correct ports on parts such as the motherboard, this would be an integral part of the service ensuring the user has the instruction on how to properly set up the connections within their PC. As most connections inside a PC are similar even with the numerous parts available on the market this could be achieved by making videos that can be applied to more than one parts configuration without having to have the specific parts the user has entered; an important part of the instructions would be making clear any small differences that may occur due to parts variations.
An aspect of the service that will need to be taken into account due to feedback gained from our previous submission will be the fact that there is a large number of suppliers for the parts that our users will be building computers out of. One of the ways we will mitigate the inconvenience of this is having a database that combines the different types of products that are compatible with each other into one simple to understand category, for example a there are many different brands of M.2 solid states drives(SSD) and there are also many different brands of SATA cable SSDs. However M.2 SSDs use the same connection onto the motherboard meaning that we can categorize M.2 SSDs from different suppliers and different brands together. We can also use this strategy for something like motherboards that have an M.2 slot in them, this allows the user to easily see the compatibility of motherboards with M.2 type SSDs. This strategy can be translated to different computer parts to allow us to mitigate the problems that having different suppliers and brands will cause for our service.
The State of the art in this area of technology would be the website PC Part Picker, this website offers a number of the features that have been described above. With the databasing and web design implemented into this website there is a large list of pc parts which they allow to check the compatibility

of. They also offered featured builds by trusted users and premade PC builds where they try to cater to specific needs.
With technology in 3D modelling and augmented reality rapidly becoming more available and user friendly what can be done in the future with this kind of project could be allowing users to enter parts and then having augmented reality devices actually show the user how to build their computers with their actual computer parts in their hands in real time, Future Of 3D Modelling: 5 Upcoming Technological Trends. Increased development in the field of artificial intelligence(AI) could also provide users with more specific PC builds that match the users needs more accurately than generic builds that are designed with a one size fits all strategy; some of the developments in the area of predictive analytics could apply to these design needs, AI for Predictive Analytics: Everything You Need to Know.

What is the likely impact?

If the project is successful it would make it easier for a younger or less experienced audience to start from scratch and build a PC, this would solve the problem of the higher barrier to entry for purchasing and building your own PC. Over the last 15 years the number of people who have access to a computer worldwide has almost doubled from 27.3% and 49.7%. Even with the current barrier of entry being relatively high the dramatic increase rate would likely only increase if the inexperienced audience worldwide were given an easy and effective way of allowing them further access to the platform.
PC gaming is currently the slowest growing major form of gaming behind for example consoles which saw a 10% year on year growth compared to PCs 4.5% (The Global Games Market Will Generate $152.1 Billion in 2019 as the US Overtakes China as the Biggest Market). The reasons for this slower growth is unclear but one of the main speculations is the barrier to entry in terms of accessibility being much higher than console. A service like this could drastically increase the growth of PC gaming in the general public and show strong signs in potential growth areas such as this.
An increase in this kind of market growth would create jobs in a wide variety of areas from manufacturing and design of PC parts to the development of new video games. A shift in the market could potentially cause the migration of some jobs from for example the manufacturing of console gaming related industries to a more PC focused industry.

How Will this affect you?

For most of our group members this will not likely have a large effect on the way we interact with technology or live our day to day lives, as we are not the intended audience for this kind of product or service not a lot will change for us, however understanding this will be crucial for the development of our project in phases such as user testing.
For members of our friend group or family a project like this could offer many benefits to them. Using this product would allow them to easily and effectively choose and build their own PCs without any outside help. With proper descriptions on our builds it also has the potential to save them money as sourcing and building your own parts is cheaper than buying pre made computers from stores.
The overall effect of a service such as this would be allowing the people in our friend and family group to become more familiar with technology which could lead to more understanding of the process and eliminate any preconceived notions of difficulty or accessibility.

Project Overview

Topic

For our project we plan to design and develop a website that gives users information and instructions on picking and constructing computer parts into their own computers. We will need to create a plan that includes a timeframe and roles for each of our team members. We hope to further develop our understanding of information technology projects by undertaking this.
A project like this could create a new audience for computer use by lowering the barrier to entry and has the potential to create new target markets for information technology fields from PC gaming to software design.

Motivation

The motivation for this project is to give a less experienced audience the means to create their own computer while also learning valuable long term skills and information within the technology space. With the PC market growing our project fits in well with these trends and could show prospective employers that we are forward thinking and are aware of different target audiences and have good skills with project planning

Landscape

A main competitor in this space would be the web site PC Part Picker, they offer a similar service where they show the compatibility of different computer parts for you and confirm that they will work with each other. One differentiating factor for our project would be the specificity of our recommendations and instructions.

Project Aim

Provide users the knowledge and skills to independently source and construct computer parts; we have consciously chosen the words in this statement to explain the crucial points in our aims moving forward. We want to give our users the skills and knowledge to do this repeatedly and not just on a one off occasion. We want to be able to offer the users the opportunity to source the parts and we want them to be able to construct the PC independently without outside help.

Project Goals

- Construct a parts compatibility database that tells the user if the parts that they have selected will both fit and work together. The database will need to be easy to understand and efficient to use as we expect to have users that are inexperienced in the field of technology. Having a dedicated database for this information will mean that we will be able to work this information easier and access it for the users when needed.
- Have an easy to understand instructional process that caters to different groups. This will mean we will need to create avenues for people to follow instructions in different ways. Examples of this would be both videos that show and explain processes and also have alternatives such as text documents and pictures that show the process. This will

be essential to the accessibility of the site and ties in well with the core aim of having the users being able to use the site independently.

- Give users the resources to source the parts that they are searching or choosing from our website. This will require many outside links to websites such as Amazon or Pc Case Gear. If there are parts that we cannot source through official websites alternative avenues may need to be suggested or alternatives parts may need to be suggested. This goal will be beneficial for the long term viability of the product because users will be able to use it as an end to end product for the selection and sourcing of their computer parts.

Testing

Integration Testing/ Functional testing - This will be performed to make sure that the database of our compatible computer parts will be integrated properly into our website. A milestone for successful testing in integration here would be successfully getting any kind of result from our database; However successful functional testing would involve the website correctly displaying compatible parts that are relevant to the searched parts by the tester. This would involve heavy alpha testing prior to any beta testing as the user would not be able to accurately provide feedback on the back end workings of the service that would be required for useful testing feedback.

End To End Testing - Beta testing here will be a heavy focus as we need applicable feedback about how the users are navigating our website or application from start to finish. We will need new outside users as prior experience with the product would affect the results about accessibility and ease of use. For the early stages of our plan here approximately 10 user testing cases would be ideal as this would allow for a more wide variety of use cases. These users would ideally be an audience that does not have extensive computer building experience, for this reason younger audiences such as high school students could potentially be a good starting point, a younger audience would likely have enough technology experience to increase testing efficiency while still offering enough lack of experience to make their feedback useful. Successful testing here would be users being able to efficiently use the application without any outside assistance from our internal team.

Unit Testing - This would be almost exclusively performed by our internal team and would involve things like debugging, multiprocessing and optimization of our code. This testing will need to be heavily performed at the beginning of the project to try and increase the efficiency of the project later on in the time frame. Tests like this could also be automated simply running a large number of the same class/ method functionality of the code.

Scope and Limits

By the end of the 14 weeks we want to have design concepts for each of the major pages of the website done, these may just be done in wireframes for functionality at this stage but we would want to have definitive concept design for the pages to be done at this stage. The pages need not have any full functionality at this stage but the design should be almost finalised.

For this project we anticipate that the largest undertaking will be the integration of all the software elements. For example having someone put in parts and then website correctly identifying that they are compatible with each other. For the timeframe that we have the goal by the end of the 14 weeks we want to be able to put in parts into some sort of prototype search interface and have it correctly display if the parts entered are compatible with each other. If we can get the database interfacing parts of the project working accurately the only remaining part of this area would be the scalability of this technology, this could be a major milestone to achieve after the 14 weeks have taken place.

At this stage we would not expect full functionality of the compatibility database to be ready by the end of the 14 weeks however a proof of concept where we can show the functionality with simple examples would be expected to have been finished at this stage as explained above.

We would also want examples of instructional text documents and videos that show users how to build computers out of parts; this would be done with simple parts and simple computer builds as a proof of concept for the instructional segment of our project. This goal would also closely relate beta testing where we have inexperienced users follow these guides to get information on the efficacy.

Tools and Technologies

For this project the tools and technologies needed can be split into two main categories: hardware and software

Hardware: For this project we will need a complete build of compatible PC parts that we can use to complete initial instructional video and text walkthroughs. Example of compatible hardware parts could be as follows:

Graphics card: ASUS GeForce GTX 1070 Dual Fan OC 8GB
CPU Cooler: Silent Loop 240mm Liquid CPU Cooler
ASUS GeForce GTX 1070 Dual Fan OC 8GB
Case: NZXT H440 Mid Tower Case White/Black
CPU: Intel Core i7 7700
Motherboard: ASUS ROG Strix B250F Gaming Motherboard
PowerSupply: Thermaltake 750W Toughpower Gold
RAM: Corsair Vengeance LED CMU16GX4M2C3000C15 16GB (2x8GB) DDR4
Hard Drive: Seagate Barracuda 2TB

Software: A wide range of software would be needed for this project as it has a lot of components needed for the different software design areas. A good solution to the web design area at least to start with would be something like the service offered by wordpress which gives the user the ability to quickly and simply create websites with a wide range of flexibility, this requires a relatively cheap subscription so would also be cost effective, for preliminary designs a software like Adobe Dreamweaver could be good for this which requires a yearly subscription as well so may only be needed if we find during the project we require it. For design of the database LucidChart can be used for showcasing diagrams and structures of databases which is an important part for increasing the efficiency and reducing the redundancy of the database. Further along in the timeline we can use SQLite for testing and building of the database during the alpha and beta testing phases of the project; the benefit to each of these products is that they are free, lucid chart has a cost associated with additional features but SQlite is in the public domain which is an added bonus for reducing costs. Any coding that needs to be done would be best done in an IDE such as Visual Studio Code; this is a widely used code editor that is also free to reduce costs. Paul has experience with writing code in Visual Studio Code for software development purposes and has designed basic databases using LucidChart and SQLite, this previous experience will be beneficial especially in the early stages of our project to potentially lower the learning curve for members with less experience.

Reflection

For this assignment we had more troubles similar to that of assignment 1, with the ongoing pandemic we still had issues with scheduling and time management due to our changing schedules that were caused by the confusion and ongoing unpredictability of the COVVID-19 situation. We also had another group member who did not give us any notice and did not submit any work. However I think this situation actually proved that what we learnt from the situation that was presented to us in assignment 2. This time we were all present well before the due time of the assignment and we were able to delegate the missing work of Allan who did not submit any of his assigned work to the group. Due to this we were positioned much better than in assignment 2 and we were able to submit the work completed and to a much higher standard than the previous instance. This was encouraging as it showed that our group had learnt from our previous mistakes and were able to overcome the difficulties.\

In my opinion the group members that did contribute including Adelle, Nicholas and I did so effectively and we communicated well with each other and were able to split up the work and complete it to a standard that I am proud of. Moving forward I have learnt the importance constant communication and updates as well forward planning to avoid last minute problems and cramming of work.