



INTRO TO INFORMATION TECHNOLOGY

Team Vibing

Assessment 3 - Our Travel App

Our Website: <https://s3767707.github.io/Assignment-3/>

**PREPARED BY: ANSON GUANG PING GO/ JAKE PORTER/ MITCHELL
TAYLOR/ VINCENT LU/ DAT NGUYEN**

SUMMARY

This is team vibings third and final assessment. We start off again with an introduction into the team members and their ideal jobs in the industry however building on that and making action plans on how to achieve our goals.

This report focusses heavily on our original project idea. Extensive research has been done into it's viability and the steps needed to develop such an app in a real world project. Roles, stages, features and risks are all included.

Please follow the links below if you wish to see our teams report through another format.

Repository: <https://github.com/s3767707/Assignment-3.git>
Website: <https://s3767707.github.io/Assignment-3/>

Note: The GitHub repository does not reflect the teams efforts and contributions. Members volunteered for web based tasks and other members excelled in other areas.

TEAM VIBING MEMBERS



MITCHELL TAYLOR
ISTJ-A



DAT NGUYEN
ISFJ-T



JAKE PORTER
ISFJ-T



**ANSON GUANG PING
GO**
ISFJ-A



VINCENT LU
ISTP-A / ISTP-T

Mitchell Taylor

A LITTLE ABOUT ME

After finishing school, I've had a long journey of pursuing my interests, from criminal justice to nursing, army reserves to police, paramedicine to electrician, I have decided to start a degree in Information Technology as it's always been an interest of mine. I've been working at Man with a Van for the past three years and hope to start a job where I don't have to lift heavy things for a living, so IT sounds perfect. I love music (techno, deep house, trance), enjoy playing video games, watching movies and television, and going to the gym.

MY IDEAL JOB - SENIOR JAVA DEVELOPER

This position involves working directly with the designing and developing of web applications using java technologies, development of frameworks, and team management. A senior developer position currently appeals to me as I enjoy problem solving, so being able to keep my mind active by having problems and issues to solve daily is desirable. Being directly involved in the design and development process is important to me as I would like to be working on projects, in addition to being able to provide advice to others.

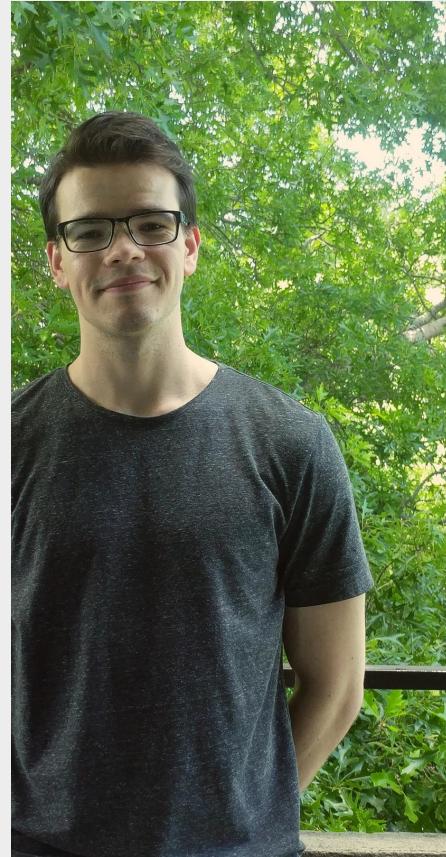
Learning opportunities and career advancement are also available, such as moving to a project management role or team leader roles. The pay rate is usually reasonable for the work done, with work life balance presumably being reasonable as it's a government funded organisation.

WHO AM I

- Myer Briggs: Logistician (ISTJ-A)
- Learning style: Strong Kinaesthetic
- Big five: Conscientiousness 72%

Mitch's Webpage:
<https://mtaylorrmit.github.io/Assignment-1-/>

Click the link to find out more about Mitchell.



DAT NGUYEN

A LITTLE ABOUT ME

I am currently doing a Bachelor of International Business at RMIT University. I am a transfer student from Vietnam, and I am going to graduate after this semester. I can speak English, Vietnamese, and French. Moreover, I also have a part-time job delivering food in Melbourne City. On the other hand, I used to be a gamer addicted when I spent nearly a day just playing League of Legends, but when I grew up and found that I have a better hobby is playing soccer, and until now I am in the RMIT University soccer team. At the moment, I hope that the Covid-19 pandemic will end soon so I can book a flight ticket to visit my parents.



MY IDEAL JOB

As I am currently studying for a Bachelor of International Business (IB) major, there are numerous kinds of jobs such as the Business Development Manager, the Senior Financial Manager, and the Management Accountant. Among them, I am very much looking forward to becoming a Management Accountant. This industry requires me to have monthly management reports prepared to track financial performance against the budget-making comments on management reports. Cash flow projections are created-variance analysis of actual outcomes vs budget and prediction for each profit and cost center.

The business analyst role is responsible for delivering proactive and effective financial assistance and guidance to operational teams that respond to a grasp of operational and economic imperatives. The job is an outstanding opportunity for an emerging candidate to grow and progress with one of the most recognized businesses in the industry and be part of a collaborative team. As an international business student, I believe that I have sufficient skills or knowledge of Australian and International Financial Reporting Standards to improve my skills in Microsoft Excel. To be better in my ideal job, I think that at least I must know a number of IT works, which is why I want to study IT. In addition, I have good speaking and writing skills and the attention to detail that a company offers. I always want to develop myself and a business in general.

WHO AM I

- Myer Briggs: Turbulent Defender (ISFJ-T)
- Learning style: Visual learner
- Big five: Agreeableness 62.5%
- Dat's webpage:
<https://github.com/DatNguyennn/datnguyen.github.io>

Click the link to find out more about Dat.

JAKE PORTER

A LITTLE ABOUT ME

I am currently 22, graduated high school in 2016 and went straight into studying Engineering at University of Queensland. I did my first year there but did not overly enjoy Engineering and therefore transferred to QUT (Queensland University of Technology), to major in electrical and aerospace engineering. Unfortunately, I still did not enjoy what I was studying and decided to pick another career path; I followed wrong advice from my career's counsellor at QUT and did a year of a Bachelor of Justice until I moved down to Melbourne in January of 2021 and took up a Bachelor of IT, hoping to major in cyber security.

During the back and forth of finding a degree I wanted to pursue, I managed to work full time here and there, complete a Certificate 3 in Civil Construction and get work experience in many different industries. I was able to fund many of my hobbies which included building my own computer, anything to do with my cars and visiting as many pubs as possible. I like to think the choice to prioritise work over studying taught me the importance of getting a degree. While the money was good for a short period of time, career progression really became for my future. By 22, I have lived out of home for 4 years, had 5 different cars, been engaged, travelled, and experienced things that just wouldn't be possible if I chose to prioritise study. Beyond all this, I love photography, although I have never pursued it, I have many favourites of my own work which I like to share on Instagram.

WHO AM I

- Myer Briggs: Defender (ISFJ - T)
- Learning Style: Equal pragmatist and reflector style
- Big five: highest percentile - Conscientiousness (84%)
- Jakes webpage:
<https://sergeantsquirrel.github.io/MyProfile/>
- Click the link to find out more about Jake.

MY IDEAL JOB

Cyber Security Operations Specialist with Boeing Defence Australia:
The specialist role is directly involved with their current Currawong project. The Currawong project is 'an integrated Battlefield Telecommunications Network system' (JP 2072 Project Currawong). It is a revolutionised communication network that allows direct video and audio transmission with Australia's headquarters and troops deployed around the globe. Boeing, who is the prime contractor for the project, is looking for an individual who can assess, analyse, and test the vulnerabilities of the network and identify solutions to mitigate the problems.

Though this specific position will not always be available as projects come and go, I am still determined to fill a Cyber Security role within Boeing. The majority of Boeing's contracts are military based and coming from a military family, I am motivated to pursue this path.



ANSON GUANG PING GO

A LITTLE ABOUT ME

I am currently studying my bachelor's degree at RMIT in Melbourne, 3000 VIC, Australia. I was born on 17 September 1998 and finished my high school education in Malaysia. I enjoy reading novels and playing multiplayer battle online games during my free time. I was once a swimming athlete but had to retire to continue my study. My highest achievement is competing in the ASEAN university games. I am interested in cooking, and I am more likely to become a food blogger if not working in the IT industry in the future.

I started my interest in IT as a gamer during primary school. Playing mobile games has become my hobby ever since my first try. However, the novelty of continuing to continue playing a particular game wears off quickly, resulting in me trying a lot of games along the way. After a few try, I had the idea of developing my very own games which suit my aesthetic. Since then, I did some research and found myself interested in game design and development. The only imperfection is that science subjects are the only focus in our high school education leaving IT a brand new field yet to be discovered and learned later on which much more increases the difficulty of me mastering it.



MY IDEAL JOB

Since I am a fan of online multiplayer games, League of Legends is my all-time favourite video game so I would want to pursue it as a Engineering Manager of League Content Efficiency. I believe my passion in character and game content design pretty much suits this position and most importantly working under a desired environment contributes to a long run career although it can be stressful sometimes. Besides that, this position enables me to showcase my outstanding leadership and creativity in supporting my team and planning future patches to serve long-term goals. The job has its perks, including offering medical, dental, and vision plans that cover me, my spouse, and children. Life insurance, parental leave, plus short-term and long-term disability coverage are also available. Furthermore, balance between work and personal life is encouraged with open paid time off, and a play fund so you can broaden and deepen your personal relationship with games. This position requires a bachelor's degree in Computer Science or a related field, or equivalent experience. One should have at least 3 years of working experience in an engineering leadership position on a team shipping large PAGE 6 large-scale, modular desktop applications and at least 6 years of software engineering experience. Furthermore, experience in developing software desktop applications with a heavy emphasis on data management and experience in one of the following programming languages: C/C++, Java, Go, C# are also part of the requirements for this job.

WHO AM I

- Myer Briggs: Assertive Defender (ISFJ-A)
- Learning style: Equal pragmatist and theorist
- Big five: Conscientiousness (95%)
- Anson's webpage: <https://s3767707.github.io/>

VINCENT LU

A LITTLE ABOUT ME

I was previously enrolled in the Associate Degree in Information Technology program, and I completed my Victorian Certificate of Education in 2020 at Salesian College, Chadstone. I chose to matriculate to the Bachelor of IT degree simply for more choices in electives and a more flexible schedule allowed by the multiple lecture/tutorial sessions offered by bachelor's degrees. A few facts about me are: I am of Chinese and Vietnamese descent, as a result of this, I am trilingual being able to speak Cantonese and Vietnamese. In my free time, I like to take my two dogs for walks around the block or take them to dog parks to meet other dogs.

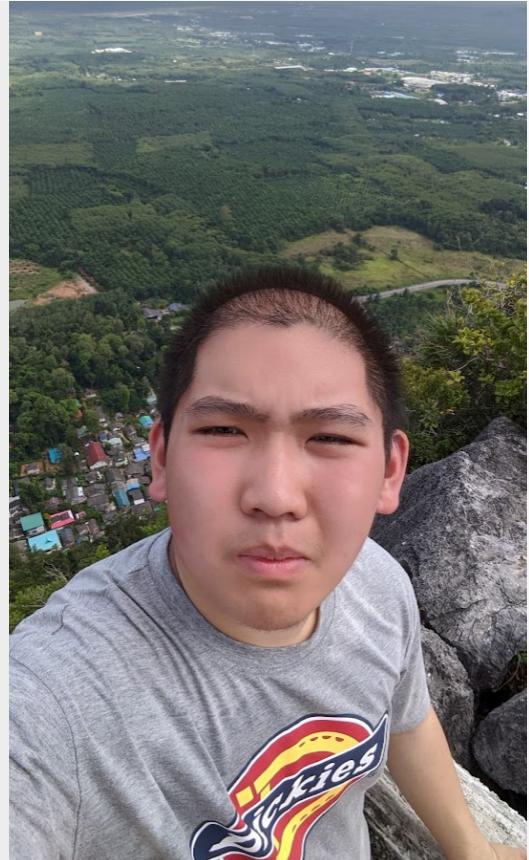
My field of interest in IT is software as the use of software has always played a large role in my life since early childhood, whether it'd be for educational or entertainment purposes. Discovering open-source software, I developed more respect for software developers. This respect has drawn me to aspire to reciprocate the effort put in for the greater community, satisfying me by making tangible difference in the life of end users.

WHO AM I

- Myer Briggs: Virtuoso (ISTP-A/ISTP-T)
 - Learning style: Auditory
 - Alignment test: Chaotic Neutral
-
- Vincents webpage:
https://s3896691.github.io/COSC1078-Assignment_1/
 - Click the link to find out more about Vincent.

MY IDEAL JOB

My ideal job is to be a software developer for The Australian Government Department whose responsibilities are to analyse, design, maintain and enhance the software needs for various branches of the ICT division. In doing so, standards for system requirements, system designs and technical specifications need to be met. This position is particularly appealing to me because it doesn't state any requirement or preference for a bachelor's degree in Computer Science/Software Engineering unlike the majority of listings found in seek for similar positions.



Group Processes

Through assessment 2, our team worked together to divide the work or parts of the task with the amount of work each person did so that no one had to do more than the rest of the group. Overall, our team worked well through assessment 2 creating internal deadlines to get the work done in an appropriate amount of time. The first meetings were important to layout the assignment and break it down into its different sections which was helpful in the delegation of work. We took a more laid back approach in the delegation and let members of the team volunteer for sections they are interested in, this proved quite beneficial as it gave the members a chance to choose sections they are more comfortable or knowledgeable in. The team as a whole were impressed with our progress in the first week. We were able to get a majority of content done as we knew the report, website and final edits will take some time.

Assessment 3: Many new features are challenging, so my team members have to be more active. We have improved the way we schedule the dates and times for meetings and help other members when they have a hard time. Unlike assessment 2, this time, we divide the parts and work together one by one, then we will ask for feedback and opinions of other members to improve the idea of the article to the fullest. This is due to the different content that is required in assessment 3. The second assessment involved a substantial amount of independent work and report writings and then met up to compile our findings. There were only a couple of sections where we had more than one member working on it at the same time. Conversely, assessment 3 is orientated around the development of our project idea. It involves more collaboration and communication on every stage of the assignment which means simultaneous report writing can be a struggle.

CAREER PLANS



Anson

Interested Field	User-centered design and software engineering
Education	Third year undergraduate of bachelor's degree of Computer Science
Employment History	None
Ideal Job	IT Software engineering manager
Current skills, qualifications, exp	Third-year undergraduate of bachelor's degree in Computer Science IT specific skills: C/C++, Java, SQL, C#, Git, Rest API, Python General skills: Communication, problem solving, teamwork
Skills, qualifications, exp needed	Bachelor's Degree in Computer Science or a related field At least 3 years of working experience in an engineering leadership position on a team shipping large PAGE 6 large-scale, modular desktop applications At least 6 years of software engineering experience IT specific skills: C/C++, Java, SQL, C#, Git, Rest API General skills: Leadership, Communication, problem solving, creative thinking
Action Plan	Take on online programming course on those programming languages which I have not learned Start as an software engineer in small agencies in order to sharpen my skills and enrich my experience

Data	
Interested Field	Business Management.
Education	Third year Bachelor of International Business.
Employment History	None
Ideal Job	Business Development Manager, the Senior Financial Manager, and the Management Accountant and also Hospitality.
Current skills, qualifications, exp	Analysis and will have the certificate of Bachelor of International Business this year.
Skills, qualifications, exp needed	Analyzing economic strategies, assessing the direction of development of a business or a company's currency. Having experience related to office computers, and understanding many foreign languages such as English, French, ...
Action Plan	I will try to find an internship to have more experiences and find a university to study another degree related to Information technology to explore more knowledge about computers in the office.



Mitch

Interested Field	Development
Education	1st Year Bachelor of Information Technology
Employment History	None
Ideal Job	Software Developer
Current skills, qualifications, exp	<ul style="list-style-type: none">Basic computer skillsGeneral skills: Communication, problem solving, teamwork
Skills, qualifications, exp needed	<ul style="list-style-type: none">Bachelor's Degree of Information TechnologyIT specific skills: C/C++, Java, SQL, C#, Git, Rest APIGeneral skills: Leadership, Communication, problem solving, creative thinking
Action Plan	<ul style="list-style-type: none">Finish my Bachelors.Develop coding skills



Jake

Interested Field	Cyber Security
Education	1st Year Bachelor of Information Technology
Employment History	None
Ideal Job	Security Specialist at Boeing
Current skills, qualifications, exp	<ul style="list-style-type: none">• Second Year Electrical and aerospace engineer• Second Year Bachelor of Justice• First Year Bachelor of IT• Cert 3 in Civil Construction
Skills, qualifications, exp needed	<ul style="list-style-type: none">• IT Specific: Computer security, data science, incident response, SQL• General: Troubleshooting, critical thinking, problem solving, communication
Action Plan	<ul style="list-style-type: none">• Continue and finish bachelors• Take on masters in Cyber Security• Achieve an internship at Jb Hi-Fi in the next 12 months to get some work in the industry

```
if ( ! $image_link )
    continue;

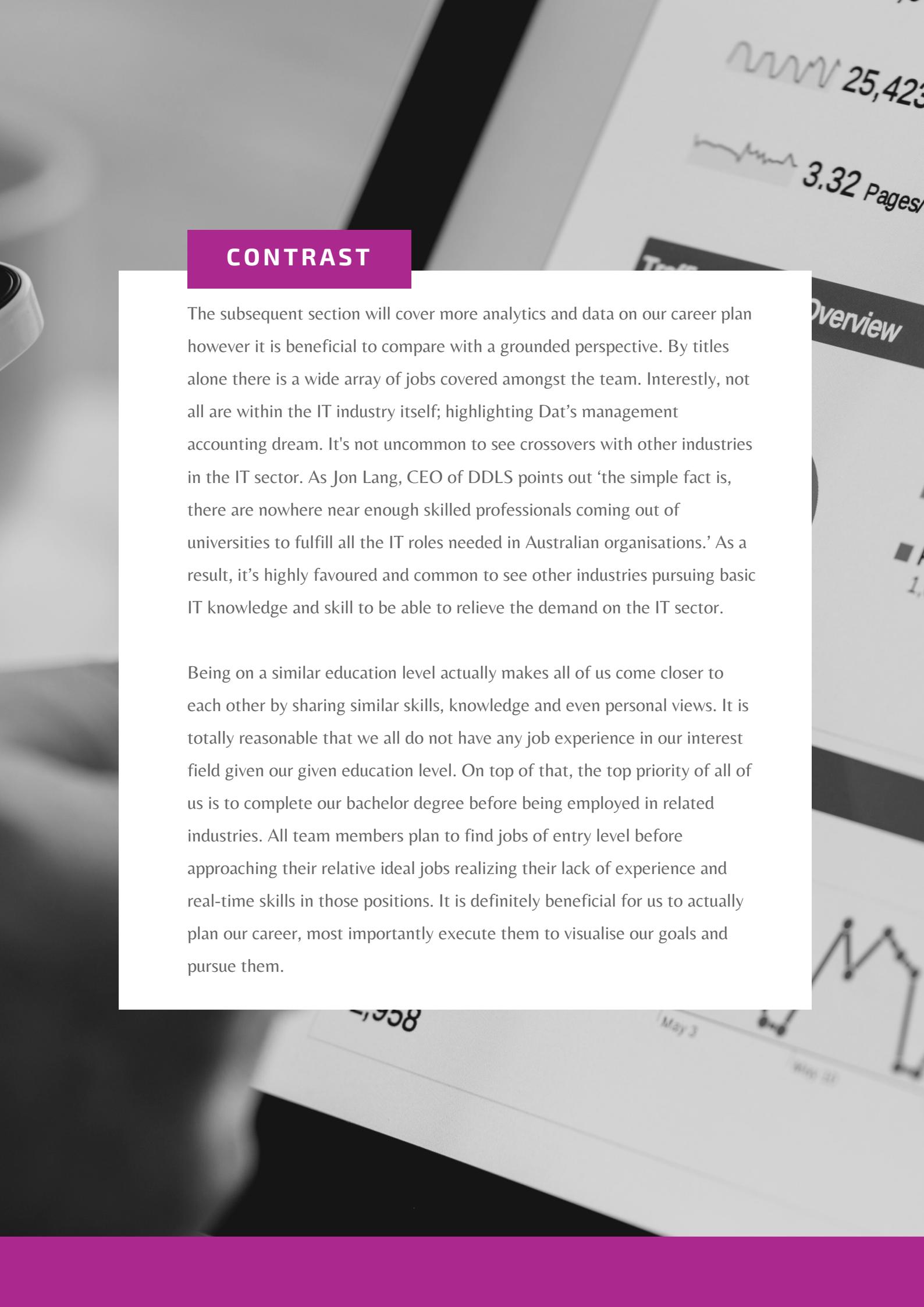
$image     = wp_get_attachment_image( $attachment_id, apply_filters(
$image_class = esc_attr( implode( ' ', $classes ) );
$image_title = esc_attr( get_the_title( $attachment_id ) );

printf( ' <div class="slide easyzoom"><a href="%s" title="'
        . $image_title . '"><img alt="'
        . $image . '" data-lazyload="true" data-size="'
        . $image_size . '" data-zoom="1" data-large-thumbnail-size="'
        . $large_thumbnail_size . '" /></a></div>', wp_get_attachment_url( $attachment_id ), $image,
        $image_size, $large_thumbnail_size, 'shop_single' ) );
}

$loop++;
```

VINCENT

VINCENT	
Interested Field	Networking and software development
Education	1st Year Bachelor of Information Technology
Employment History	None
Ideal Job	software development for a government agency
Current skills, qualifications, exp	None
Skills, qualifications, exp needed	<ul style="list-style-type: none">IT Specific: High-level programming languages , Linux , mathematics , SQL , git , docker , kubernetesGeneral: Critical thinking, problem solving, communication , time management , creativity
Action Plan	<ol style="list-style-type: none">1. Finish bachelors2. Find entry level job to gain experience3. Learn some maths on my own such as discrete mathematics4. Do comp sci



25,423

3.32 Pages

CONTRAST

The subsequent section will cover more analytics and data on our career plan however it is beneficial to compare with a grounded perspective. By titles alone there is a wide array of jobs covered amongst the team. Interestingly, not all are within the IT industry itself; highlighting Dat's management accounting dream. It's not uncommon to see crossovers with other industries in the IT sector. As Jon Lang, CEO of DDLS points out 'the simple fact is, there are nowhere near enough skilled professionals coming out of universities to fulfill all the IT roles needed in Australian organisations.' As a result, it's highly favoured and common to see other industries pursuing basic IT knowledge and skill to be able to relieve the demand on the IT sector.

Being on a similar education level actually makes all of us come closer to each other by sharing similar skills, knowledge and even personal views. It is totally reasonable that we all do not have any job experience in our interest field given our given education level. On top of that, the top priority of all of us is to complete our bachelor degree before being employed in related industries. All team members plan to find jobs of entry level before approaching their relative ideal jobs realizing their lack of experience and real-time skills in those positions. It is definitely beneficial for us to actually plan our career, most importantly execute them to visualise our goals and pursue them.



TOOLS

Our Websites

Jake's Webpage: <https://github.com/SergeantSquirrel/MyProfile.git>

Mitch's Webpage: <https://mtaylorrmit.github.io/Assignment-1/>

Dat's Webpage: <https://datnguyennn.github.io/datnguyen.github.io/>

Anson: <https://s3767707.github.io/>

Vince's Webpage: <https://s3896691.github.io/COSC1078-Assignme>

Audit Trail

- It is always important to keep track of our progress to reflect on our past work and suggest improvements in the future. The audit trail of our git repository is the perfect choice to serve this purpose which always acts as a document that records our team progress. In agile software development, projects are built up iteratively which requires continuous contributions of all team members to lead towards successful projects. Therefore, by reviewing the audit trails, we get to know what, who and when an action is performed, we get insights on whether our weekly progress is falling behind, is everyone completing their parts and plan our future software development process. Setting goals and accomplishing them are just the crucial elements for continuous integration practice that ensures an ideal development environment and vibe which encourages us to be more competitive through continuous improvements.

PROJECT DESCRIPTION

Topic

An overview of what you propose to do in your project. Concentrate on the big picture and outcomes, rather than intricate details. At least two paragraphs is expected.

Smartphones have become an essential tool for the modern traveller, with countless apps and tools available to improve the travel experience (Oshins. M 2017). With so many options to choose from, a traveller's phone can get cluttered with various apps ranging from trip planning, accommodation, currency converters, and more.

Initially, only a few features will be rolled out for ease of design and management, such as travel planners, purchasing power budgeting, and geolocation. In this team's project presentation, we will be creating an application to integrate these features into one platform. The app's main attraction is its purchasing power budgeting feature, which will generate a list of trips based on budget set.

Motivation

Before the COVID19 pandemic, the Travel and Tourism industry was a massive contributor to the global workforce and GDP. The World Travel & Tourism Council (WTTC) estimates that the industry produces an estimated 10.6% of jobs worldwide and 10.4% of global GDP (WTTC, 2021). Due to COVID19, the industry has declined, with the global GDP contribution reduced to 5.5% and a loss of 62 million jobs (WTTC, 2021). While this indicates a lower market for tourism, we believe that once people can freely travel again, there will be a massive resurgence of tourism worldwide. Currently, with a low amount of people travelling worldwide, we have been allowed to spend time developing a travel app that will be ready in time for the inevitable travel boom. When this happens, people will be looking for travel apps to help with planning and budgeting to best use the money they saved during lockdowns, which our app will provide.

From an economic point of view; a project like this one will be crucial for the impending increase. As mentioned, the travel industry suffered a major loss due to the pandemic and many people lost their jobs. Companies went bust, airlines lost competitors and the industries that had the resources to survive were able to dominate in their own market controlling the prices on their products. With such fluctuations in supply, demand and workforce resulted in unstable economies and constantly changing prices. With our purchasing power app keeping up with real time fluctuations, our users will feel comfortable and confident they are budgeting correctly.



It would be the hope for an employer to see a project like this one and look favourably upon it. I believe it shows forward thinking and an ability to take advantage of potential growth sectors. Understanding the climate and developing a product with the adaptability to survive in such an inconsistent world shows our resilience and motivation towards innovation.

Landscape

There are hundreds of travel applications available for Android and iOS, and the number is growing by the day. It is estimated that tourists spend more than 35% of their mobile time planning their next holiday on travel applications. Travel applications are beneficial since they make travel a lot easier. Travel applications account for more than 45 per cent of all travel reservations. Because of the growing popularity of travel applications, there is a greater demand for high-quality apps.

Travelocity, Delta, HomeAway, and Hertz are our rivals (Elliott. C 2015). These applications offer characteristics that set our apps apart and make them more appealing. For example, the Travelocity app for Android users, with limited functionality, encourages customers to vent about their negative experiences via app store ratings and reviews. According to users, Delta's iOS app might crash and show erroneous flight information. Customers using iOS at HomeAway are frequently frustrated by crashing apps, delayed booking confirmations, and pending credit card transactions. Finally, Hertz consumers are dissatisfied with their inability to preserve log-in information on their iPhones and iPads. Furthermore, our program can adapt and offer suggestions regarding users' budgets while travelling. Therefore, I believe our application will be well-received when it hits the market.

DETAILED DESCRIPTION

Aims

Our aim is to create a travel mobile app which has all sorts of features ranging from trip planning, budget planning, geolocation and other basic travel app features. Initially, only a few features will be implemented for ease of design and management, such as a travel planner, a purchasing power budget feature, and geolocation. The app's main attraction is its purchasing power budget feature, which will generate a list of trips based on the budget input.

To visualise our future plan and progress, it is important to set goals and achieve them respectively for a successful software development process. Our goals are as below (based on priority):

1. Create a functioning prototype

Prototyping is an experimental process where design teams implement ideas into tangible forms from paper to digital. Teams build prototypes of varying degrees of fidelity to capture design concepts and test on users. With prototypes, you can refine and validate your designs so your brand can release the right products. It also provides other benefits such as giving a solid foundation from which to ideate towards improvements, getting insights into less-obvious areas of the users' world, etc. This is the first approach of our project and we planned to complete it in two weeks time.

1. Software architecture planning

Software architecture planning is a process that aims to improve software development process predictability and includes tools and technologies, budget estimation, framework ideation, testing process, and often research and development into the areas that are unknown or risks to the project. All of the contents will be documented in the report's project description section which serve as a guide for future implementation. This is the minimum milestone set before the assignment due date.

1. Implementation of application features

This is where we actually put our hands on to develop the final product. It is a process that requires heavy codings and can only be achieved through long hours of learning and practice. It is impracticable to learn how to code and develop an app from scratch given the amount of time. Therefore, we aim to try our best to achieve as much progress as we can before the due date.

1. Software testing

Testing is the process consisting of all life cycle activities, both static and dynamic, concerned with planning, preparation and evaluation of software products and related work products to determine that they satisfy specified requirements, to demonstrate that they are fit for purpose and to detect defects. It will only be carried out after each development phase as we need to at least have 'something' to be tested. Therefore, we all agree that it has the least priority at the moment.



Aim Cont.

Create a functioning prototype

Create a functioning page focused on journey planning

Create a functioning page focused on budget planning

- A working drop down box with selectable countries
- Getting data from a price index website to display for selected country
- Display data from price index into 6 categories
- Create a working slider that divides a user inputted number into the 6 categories

Create a map page using data from google maps

Plan a journey with budgeting features

If someone is a travel enthusiast, they understand how essential it is to establish a realistic budget for their travels before they begin and be flexible with that budget. Once a budget is set, travellers may make changes to assist their trip objectives. The previously mentioned tourist-related app elements may be integrated into a single app, but they must be presented orderly and clearly. Allow consumers to track their journey from beginning to end, from flight to the hotel, attraction visit, and return home - an intelligent pocket guide. As a result, consumers may get a better knowledge of their travels.

Furthermore, they will have a comprehensive understanding of the expenses that will be incurred throughout the trip. For example, if they plan to spend six months travelling throughout Southeast Asia, they should first study the average cost per day based on their travel style and then establish a budget from there. If they only have \$2,000 to spend in six months and realize that they need \$7,000, they may want to adjust to ensure that they have a better experience on your vacation. They may need to reduce their journey or save more money before taking their vacation (Brooks T 2016).

Purchase Power Feature

Understanding how expenses will be allocated during their trip is beneficial for planning a budget for the average traveller. As prices for goods and services vary widely from country to country, expenses are not always going to be allocated in the same way. For example, the average amount spent on meals for one day in Hungary is \$30AUD, entertainment (museums, attractions, tours) is \$31AUD, and a pint of beer is around \$1.70AUD. With this information, a traveller could decide that they can afford to allocate more money to entertainment and food and not have to worry about alcohol prices. The purchase power feature implements this into an easy-to-use function.

The user will select from three budget styles, low budget, average budget, and high budget. Then the user will choose a country, which will then show six categories, displaying the average cost of each category per day, based on the budget type selected, or the user entered budget.

The user would then enter an amount of money they want to spend in that city, divided between the categories and display. Options to exclude categories or prioritize specific categories would be available through a percentage slider feature.

How does someone know the purchasing power? Well purchasing power can be calculated using a country's CPI (consumer price index). It provides a general measure of changes in prices of consumer goods and services purchased by households (ABS, 2017). NUMBEO which can be accessed here <<https://www.numbeo.com/cost-of-living/>> provides up-to-date CPI's globally and is an important tool for our app.

Geolocation

Geolocation navigation and maps are critical components of a travel application. 52% of all mobile app users, according to data, use at least one navigation app. This number increases to 85 per cent when visitors are included. Thus, although a map serves as the basis for the customer's application, if they want consumers to use the app's map rather than moving to another navigation tool, the trip map apps must be offline-capable. Moreover, one way to do this is by including a geolocation feature. It is no secret that adding this feature would raise the cost of developing travel software, yet consumers need it even in an MVP or beta version.

Geolocation Cont.

Several useful technologies to consider while building a travel application: Google Maps SDK for iOS and Android provides the map directly to the application; Google Places and Facebook Places APIs provide access to an extensive database of services, tourism, and other information.

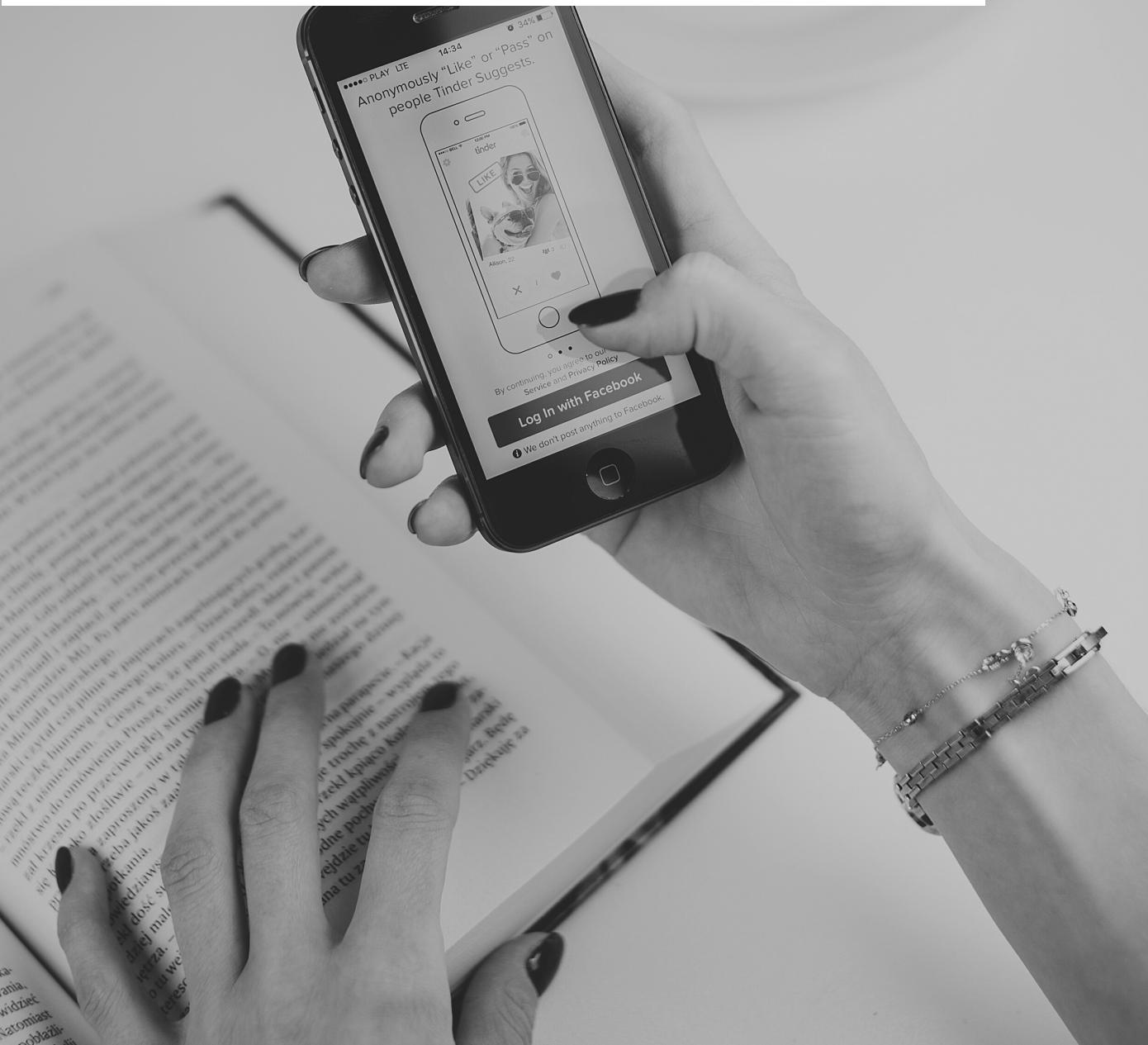
With the geolocation feature, the customer will have the ability to easily view places of interest with the option of selecting a price range (based on the budget plans). The map will have the six previously mentioned categories available as filters. For example, if food is selected and the price range selected was High Budget, the map will display restaurants nearby with a higher price range.

PLANS AND PROGRESS

Contents

1. User Experience Requirement
 2. User story and Acceptance Criteria
 3. User Interaction Design
 4. Software Architecture

- All resources can be found in teams file section under assignment 3 named “Resources”
- Resources is a link to our files tab





User Experience Requirement

A requirement is a singular documented need of what a particular product or service should be or perform. It is a statement that identifies a necessary attribute, capability, characteristic, or quality of a system in order for it to have value and utility to a user. A requirement is a singular documented need of what a particular product or service should be or perform. It is a statement that identifies a necessary attribute, capability, characteristic, or quality of a system in order for it to have value and utility to a user. User Stories help getting the high-level picture of requirements. Acceptance criteria refer to a set of predefined requirements that must be met to mark a user story complete. Acceptance criteria are also sometimes called the “definition of done” because they determine the scope and requirements that must be executed by developers to consider the user story finished.

User story and Acceptance Criteria



Country Search Feature

As a website user

I want to be able to choose a country that I am interested in travelling to
So that I can see price information about that country

*Given that I'm a user
And I'm on the front page
When I click on the select country field
And I select a country
Then the website will redirect me to that countries page showing a price index*

Categories of goods and services in selected country

As a user

I want to see travel specific costs of goods and services
So that I can get a sense of how much it will cost to travel

*Given that I'm a user
And I'm looking at the price index of my selected country
When I look at the price of goods and services
I want to see travel relevant goods and services
Then the presented price index will show travel related goods and services*

Category slider

As a user

I want to prioritise certain expenses over others
So I can remove unneeded expenses and get a better representation of my total cost

*Given that I'm a user
And I'm on the budget plan page
When I select the category sliders
And move the sliders left or right
Then the prices will increase or decrease based on the entered budget amount*

Travel save feature (Can be added in future)

As a user

I want to save my selected budgets
So I can see budgets for more than one country

*Given that I'm a user
And I have finished with my budget
When I select the 'Save budget plan' field
And I navigate to the saved budget page
Then the webpage will display my saved budget plans, as well as adding the costs of them together*



Profile page

As a logged out user
I want to be able to sign into the website
So that I can save and view my saved budget plans

*Given that I'm a logged out user
And I'm on the sign in page
When I fill in the username and password fields
And click the sign in button
Then the system signs me in*

Price budget options (For future implementation)

As a user
I want to have a guide of how much money I can budget if I want to spend more or less
So that I can get a greater understanding

*Given that I'm a user
And I want to see examples of budgets
When I click on the 'plan a budget' field
Then the app will present three budget options, low, medium, and high*

User entered budget

As a user
I want to enter the amount I am willing to spend
So that I can see how my money will be divided among the expenses

*Given that I'm a user
And I'm on the budget plan page
When I select the 'enter budget amount' field
And I enter an amount
Then the website will divide the entered amount among the expenses*

Weekly expenditure

As a user
I want to see how much it would cost for a week to travel
So I can better visualise how much it would cost in total

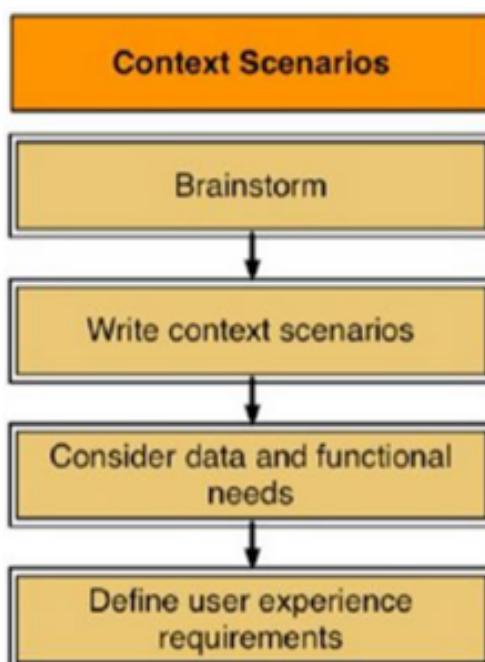
*Given that I'm a user
And I am on the budget page
When I select 'how many days are you travelling?'"
And I enter the amount
Then the page will display the total budget cost (daily budget * days entered)*

User Interaction Design

Features

Referring to the section above some identified features for a user include:

- Country search feature
- Categories of goods and services in selected country
- Category slider
- Travel save feature
- Profile page
- Price budget options
- User entered budget
- Weekly expenditure





Context Scenarios

The first step to designing an interface is creating context scenarios. To do this we create a scenario using a fake persona where the user engages with the application to achieve an end goal.

Scenario example – A young girl named Emily has been stuck in lockdown for months. She was considered an essential worker and has been saving her money through the pandemic. She hasn't travelled much and doesn't know what costs there are involved. Her dream is to travel to Japan and has saved \$8000 in the past 6 months. Using the app, she will be able to navigate though it inputting her budget and country of interest which will be broken into 6 different categories of purchasing power and Emily will have a clear idea on budgeting for her trip.

We want the experience to be personal. Emily will have her own profile where she can see her saved journey plans and there will be a function where she can view other profiles and trips where she could find some inspiration.

Scenario Step	User Interaction Requirement
Emily wishes to travel	Marketing and available information
Create account on mobile app	Sign up/ Sign in pages
Set Budget	Text field for whole dollar amount
Set Country of Interest	Search field for countries
Cost per day	Purchase power broken down into 6 categories the user can select and shows CPI
Save and view travel plan	Personal profile with minimal personal details and a saved trips section



Key Path Scenarios

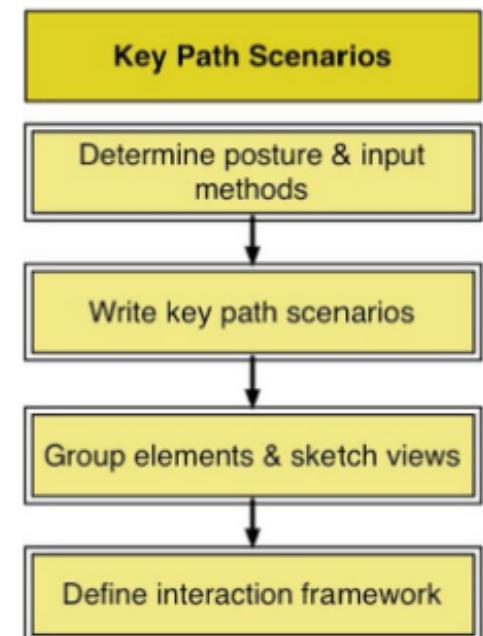
The next step is to construct key path scenarios. This comes from the context scenario driven from the user's needs. The following are the factors to take into consideration when creating a functional prototype:

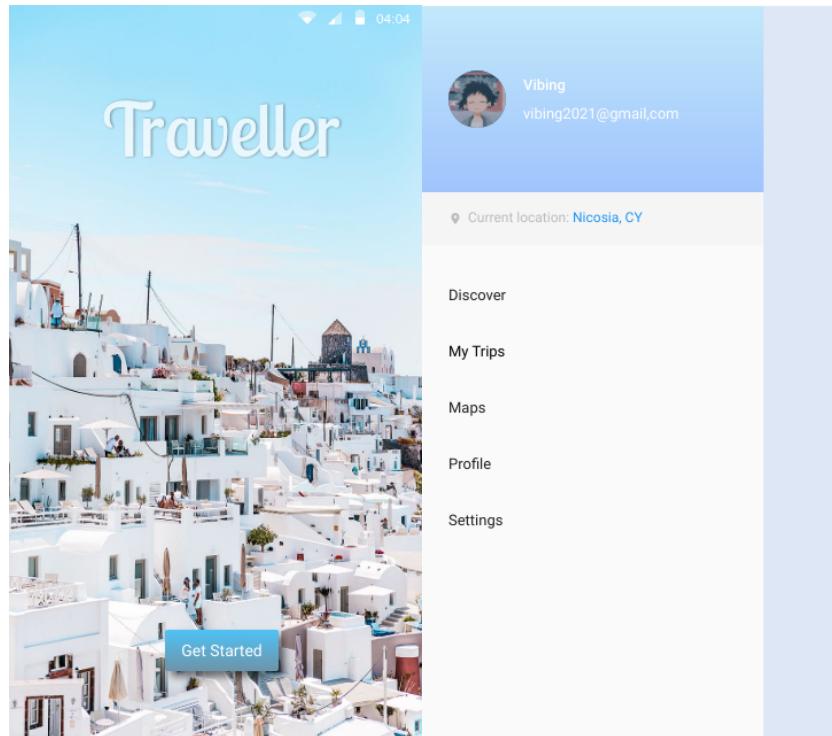
- Form factor describes what system is available for the user for example an iPhone, android, or tablet.
- Posture shows the approach the application presents to the user. The vibe and feel the app presents is important and needs to reflect what the user is looking for. Professional with lots of imagery is an example for a travel app.
- Input Methods demonstrate how the user interacts with the application. This can be keyboard, voice search, touch.

In this step, brainstorming is required to create functional elements. A functional element is an element on the interface that responds to the functional need of the user. For example, if the user's functional need was to see countries of the world without using the search bar, the functional element would be an interactive map.

For this project InVision and Proto.io are tools that will be used to create a usable interface for this project. The goal is to achieve a high fidelity prototype which has its advantages and disadvantages:

Advantages	Disadvantages
Completely functional and interactive	Time consuming
Look and feel of final product	Can be expensive to develop
User driven	Ineffective method for proof-of-concept designs





Examples

Above are a couple screenshots of our project. They are there to provide some insight to the elements and patterns used in the app. Firstly, the app opens to a beautiful image of Athens. As a travel app we want our user to be reminded and inspired about why they got the app. Throughout the app there is a lot of use of images which can be a powerful marketing tool as it encourages users to imagine future experiences.

The image on the right shows the use of the ‘sidebar navigation’ tool. The sidebar is usually depicted by 3 stacked horizontal lines and typically resides on the top left of the screen. This is a helpful feature for apps as screen sizes can be small and therefore the space needs to be utilized as best as possible, so a side bar tool is ideal to maximise efficiency.

Furthermore, scrollable attributes have been embedded to maximise content on the app. On select pages both vertical and horizontal scroll bars have been used. An important step in building an app’s architecture is developing a mental model, whether this is in the form of storyboarding, workflow diagrams or mind maps.

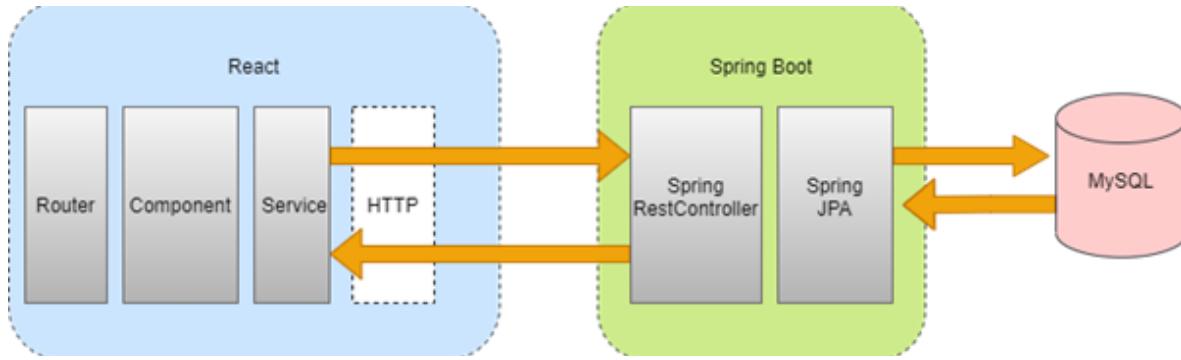
[Mind Map](#) - Our mind map to the basics of our layout

Software Architecture

We will first start by creating a CRUD (Create, Read, Update, Delete) app with minimal features and move on to the development of other app features at later phases. The back-end server uses Spring Boot with Spring Web MVC for REST APIs and Spring Data JPA for interacting with MySQL databases. Front-end side is made with React, React Router, Axios and Bootstrap.

Architecture of Spring Boot + React + MySQL CRUD application

This is the application architecture we're gonna build:



- Spring Boot exports REST APIs using Spring Web MVC & interacts with Database using Spring JPA
- React Client sends HTTP Requests and retrieves HTTP Responses using axios, shows data on the components. We also use React Router for navigating to pages.
- We use MYSQL as our database to manage our client data.

Spring Boot Rest APIs Back-end

Overview

These are APIs that Spring Boot App will export:

Methods	URL	Actions
POST	/api/budgetPlan	Create new budget plan
GET	/api/budgetPlan	Retrieve all budget plans
GET	/api/budgetPlan/:id	Retrieve a budget plan by id
PUT	/api/budgetPlan/:id	Update a budget plan by id
DELETE	/api/budgetPlan/	Delete all budget plans
DELETE	/api/budgetPlan/:id	Delete budget plan by id

We make CRUD operations & finder methods with Spring Data JPA's JpaRepository

Project Structure

```
— pom.xml
└── src
    ├── main
    |   └── java
    |       └── com
    |           └── vibing
    |               └── vibe-travel
    |                   ├── controller
    |                   |   └── PlanController.java
    |                   ├── model
    |                   |   └── BudgetPlan.java
    |                   └── repository
    |                       └── PlanRepository.java
    └── resources
        └── application.properties
└── test
    ├── java
    |   └── com
    |       └── vibing
    |           └── vibe-travel
    |               └── service
    |                   └── BudgetPlanTests.java
    └── resources
        └── com
            └── vibing
                └── vibe-travel
                    └── service
                        └── BudgetPlanTests-context.xml
    └── logback-test.xml
```

Technology

- Java 8
- Spring Boot 2 (with Spring Web MVC, Spring Data JPA)
- MySQL
- Maven 3.6.1

Data model class corresponds to entity and table tutorials.

- PlanRepository is an interface that extends JpaRepository for CRUD methods and custom finder methods. It will be autowired in PlanController.
- PlanController is a RestController which has @requestmapping methods for RESTful requests such as: getAllPlans, createPlan, updatePlan, deletePlan, findByPlanID...
- Configuration for Spring Datasource, JPA & Hibernate in application.properties.
- pom.xml contains dependencies for Spring Boot and MySQL.

Implementation

1. Create & Setup Spring Boot project

We will use IntelliJ to create a Spring Boot project. Then open pom.xml and add these dependencies:

```
<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-data-jpa</artifactId>
</dependency>

<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-web</artifactId>
</dependency>
```

We also need to add one more dependency for MySQL:

```
<dependency>
    <groupId>mysql</groupId>
    <artifactId>mysql-connector-java</artifactId>
    <scope>runtime</scope>
</dependency>
```

2. Configure Spring Datasource, JPA, Hibernate

Under src/main/resources folder, open application.properties and write these lines.

```
spring.datasource.url= jdbc:mysql://localhost:3306/testdb?useSSL=false
spring.datasource.username= root
spring.datasource.password= 123456

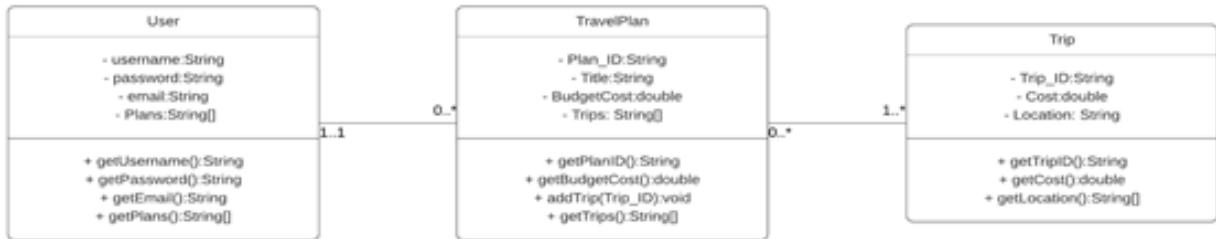
spring.jpa.properties.hibernate.dialect= org.hibernate.dialect.MySQL5InnoDBDialect

# Hibernate ddl auto (create, create-drop, validate, update)
spring.jpa.hibernate.ddl-auto= update
```

- spring.datasource.username & spring.datasource.password properties are the same as our database installation.
 - Spring Boot uses Hibernate for JPA implementation, we configure MySQL5InnoDBDialect for MySQL
 - spring.jpa.hibernate.ddl-auto is used for database initialization. We set the value to update value so that a table will be created in the database automatically corresponding to the defined data model. Any change to the model will also trigger an update to the table. For production, this property should be validated.
-

3. Define Data Model

First, we create a class diagram to show the static structure of a system, including classes, their attributes and behaviors, and the relationships between each class. We will be representing the relationships between user class and the relative app feature class in the class diagram below.



User Details

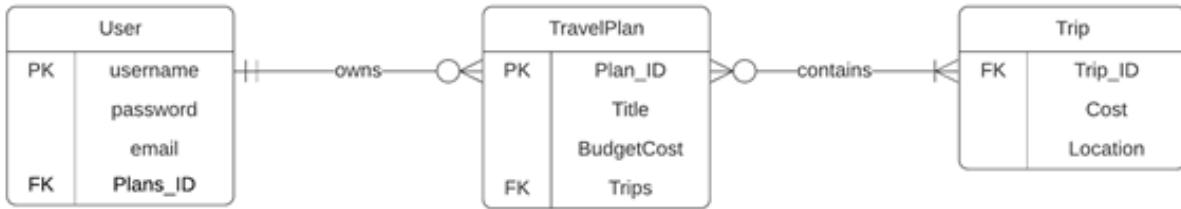
The users of our app have attributes like username and password for login verification and email address for password reset.

Journey Planning with Budgeting features

A user can have none or multiple travel plans. Each travel plan has an unique id, budget cost which is set by the user and an array which stores trips which are recommended by the system based on its cost. Trips in the travel plan can be edited through the editTrips() method. Users can access a trip's details such as its cost and location.

SQL tables

We create an entity relationship diagram (ERD) to show the relationships of entity sets stored in our database. An entity in this context is an object, a component of data. An entity set is a collection of similar entities. These entities can have attributes that define its properties. We will be using ER diagrams to sketch out the design of our database.



Let's say our data model is TravelPlan with three fields: id, budget cost and trips.. In the model package, we define the TravelPlan class.

model/TravelPlan.java

```

package com.bezkoder.spring.datajpa.model;

import javax.persistence.*;

@Entity
@Table(name = "TravelPlan")
public class TravelPlan{

    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    private String Plan_ID;

    @Column(name = "Title")
    private String title;

    @Column(name = "BudgetCost")
    private double BudgetCost;

    @Column(name = "Trips")
    private String[] Trips;

    public TravelPlan() {

    }

    ...
}

```

- `@Entity` annotation indicates that the class is a persistent Java class.
- `@Table` annotation provides the table that maps this entity.
- `@Id` annotation is for the primary key.
- `@GeneratedValue` annotation is used to define generation strategy for the primary key. `GenerationType.AUTO` means Auto Increment field.
- `@Column` annotation is used to define the column in the database that maps the annotated field.

4. Create Repository Interface

Next, we create a repository to interact with TravelPlan from the database. In the repository package, create TravelPlanRepository interface that extends JpaRepository

```
package com.bezkoder.spring.datajpa.repository;

import java.util.List;

import org.springframework.data.jpa.repository.JpaRepository;

import com.bezkoder.spring.datajpa.model.Tutorial;

public interface TravelPlanRepository extends
    JpaRepository<TravelPlan, Long> {
    List<TravelPlan> findByPublished(boolean published);
    List<TravelPlan> findByTitle(String title);
}
```

Now we can use JpaRepository's methods: save(), findOne(), findByPublished(), findAll(), count(), delete(), deleteById()... without implementing these methods.

We also define custom finder methods:

- findById(): returns travel plan with id as input
- findByTitle(): returns all travel plans which title contains input title.

5. Create Spring Rest APIs Controller

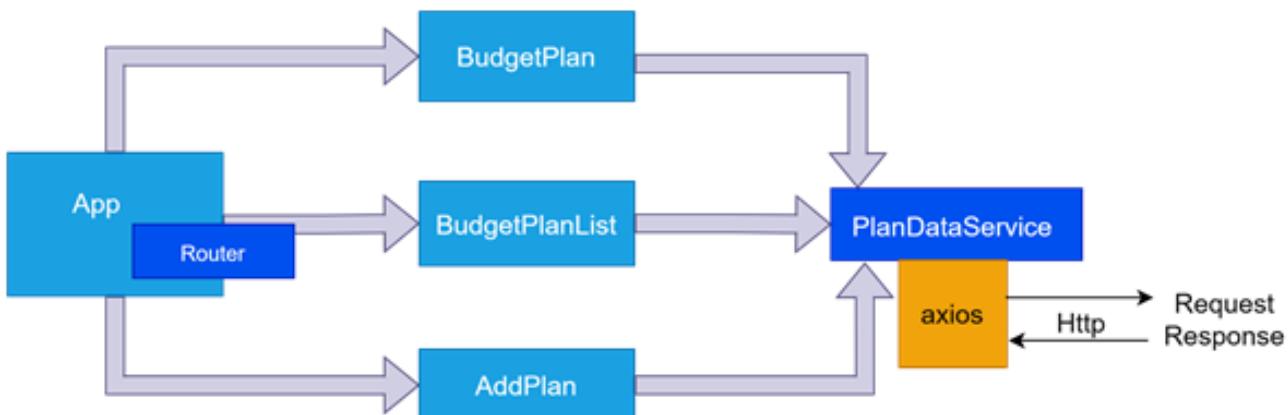
Finally, we create a controller that provides APIs for creating, retrieving, updating, deleting and finding Tutorials.

6. Run the Spring Boot Server

Run Spring Boot application with command: mvn spring-boot:run

React.js Front-end

Overview



- The App component is a container with React Router. It has a navbar that links to route paths.
- BudgetPlanList component gets and displays Tutorials.
- BudgetPlan component has a form for editing Tutorial's details based on :id.
- AddPlancomponent has a form for submission of a new Tutorial.
- These Components call PlanDataService methods which use axios to make HTTP requests and receive responses.

Project Structure

```
└── src
    ├── components
    |   ├── add-Plan.component.js
    |   ├── budgetPlan.component.js
    |   └── plan-list.component.js
    ├── services
    |   └── plan.service.js
    ├── App.css
    ├── App.js
    ├── http-common.js
    ├── index.js
    └── serviceWorker.js
├── .env
├── package-lock.json
└── package.json
└── yarn.lock
```

Technology

- React Native
 - react-router-dom 5.1.2
 - axios 0.19.2
 - bootstrap 4.4.1
-
- package.json contains 4 main modules: react, react-router-dom, axios & bootstrap.
 - App is the container that has Router & navbar.
 - There are 3 components: TutorialsList, Tutorial, AddTutorial.
 - http-common.js initializes axios with HTTP base Url and headers.
 - TutorialDataService has methods for sending HTTP requests to the APIs.
 - .env configures port for this React CRUD App.



Implementation

1. Setup React.js Project

- Open cmd at the folder you want to save Project folder, run command:
- `npx create-react-app react-crud`

After the process is done. We create additional folders and files with css templates. The css template we planned to use is FlexStart. FlexStart is a creative, developer friendly, clean, lightweight and modern Bootstrap website template. FlexStart is created for individuals and companies who want to build websites for software, startup, mobile app, digital agency, SaaS, internet services, fintech and related services and products websites.

2. Import Bootstrap into your React CRUD app

- Run the following command: `npm instal bootstrap`.

3. Add React Router to React CRUD App

- Run the command: `npm instal react-router-dom` to add React Router to our React CRUD app.
- Open `src/index.js` and enclose the `App` component with a `BrowserRouter` object.

4. Add a navbar to your React CRUD app

- Open `src/App.js`; this `App` component is the root container for our application; it will contain a navbar as well as a `Switch` object with multiple `Routes`. Each `Route` is associated with a React Component.

5. Set up Axios for the React CRUD HTTP Client.

- Install Axios using the command: `npm instal axios`.
- We create the `http-common.js` file in the `src` folder.

6. Make a Data Service

In this step, we'll build a service that sends HTTP requests using the `axios` object from earlier.

- `services/tutorial.service.js`
- To perform CRUD operations, we use the `axios` `get`, `post`, `put`, and `delete` methods, which correspond to HTTP requests: `GET`, `POST`, `PUT`, and `DELETE`.

7. Run React CRUD App

We can run our React CRUD app with the command: `npm start`.



Deploy a Spring Boot Java app to Kubernetes on Google Kubernetes Engine

1. Setup a Google Cloud Project
2. Clone source code into home directory
3. Run our app locally using Maven
4. Package the Java app as a Docker container
5. Create our GKE cluster. A cluster consists of a Kubernetes API server managed by Google and a set of worker nodes. The worker nodes are Compute Engine VMs.
6. Deploy our app to Kubernetes. A Kubernetes deployment can create, manage, and scale multiple instances of our app using the container image that you created.
7. Allow external traffic
8. Scale our service. One of the powerful features offered by Kubernetes is how easy it is to scale your app. Suppose that you suddenly need more capacity for your app. You can simply tell the replication controller to manage a new number of replicas for your app instances.
9. Upload our app to Google Play Store

ROLES

```
1 # An Array of Observations which were ignored
2 attr_reader :ignored
3
4 # An Array of Observations which didn't match the context
5 attr_reader :mismatched
6
7 # An Array of Observations in execution order.
8 attr_reader :observations
9
10 # Internal: Create a new result.
11
12 # experiment - the Experiment this result is for
13 # observations: - an Array of Observations, in execution order
14 # control: - the control Observation
15
16 # Initialize(experiment, observations = [], control = nil)
17 def initialize(experiment, observations = [], control = nil)
18   @experiment = experiment
19   @observations = observations
20   @control = control
21   @candidates = observations - [control]
22   evaluate_candidates
23
24   freeze
25 end
26
27 # Public: the experiment's context
28 def context
29   experiment.context
30 end
31
32 # Evaluate the candidates
33 # @return [Observation]
34 def evaluate_candidates
35   @candidates
36 end
37
38 # Freeze the results
39 # @return [FrozenResults]
40 def freeze
41   @frozen_results = self
42 end
```

Specifying roles is crucial for an effective and successful software development cycle. Every team member within an IT project should have a specific, crucial role to play in order to give the best performance possible. Flawless projects do not exist, but with the right team of people “on board”, projects can be completed as close to perfection as possible and going smoothly according to plan.

FRONT-END DEVELOPER - Jake

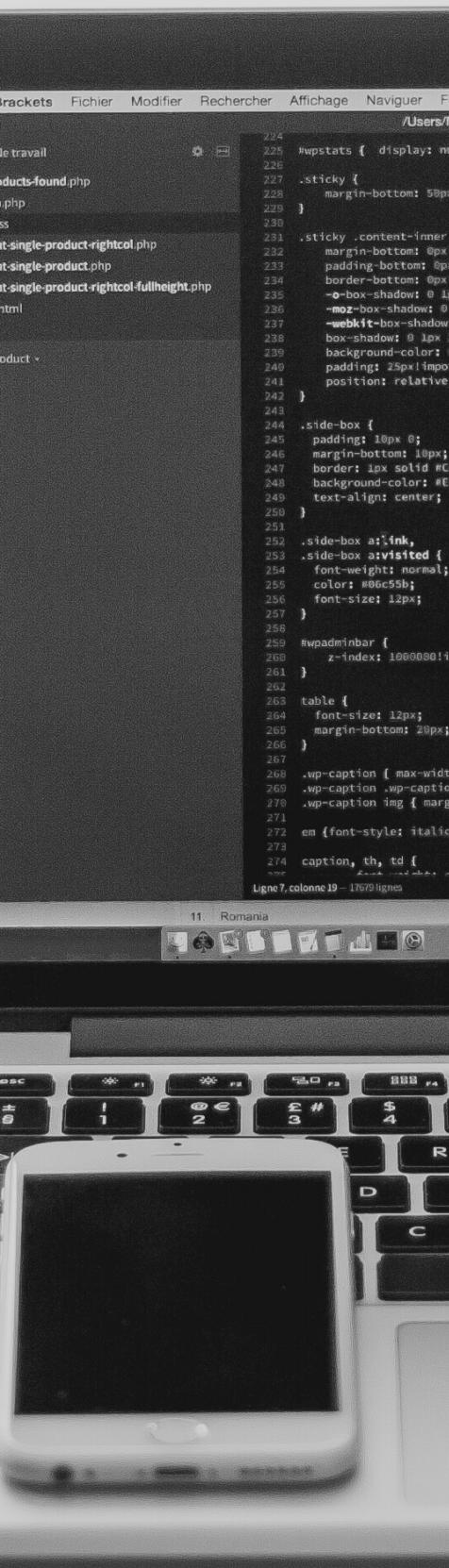
Front-end developers are the point of contact between the delivered business solution (a system undergoing implementation) and the end client (user). Such a person must, on the one hand, be responsible for ensuring the alignment of web design and user experience requirements, optimizing web pages for maximum efficiency, and maintaining brand consistency across all web pages, among other duties. I am much suited for this role by fulfilling the requirements of being an individual with good problem-solving skills, excellent verbal communication skills and interpersonal skills. Other than that, I am able to demonstrate proficiency in HTML, CSS, JavaScript, and jQuery while being experienced with responsive and adaptive design and having great understanding of server-side CSS.

BACK-END DEVELOPER - Anson

Back-end developers focused mainly on developing business logic and data layers. They specialise in building the software’s server-side functions and commonly work with programming languages like Python, C, PHP, Java and Ruby. Backend Developers work with the elements of software that are crucial to system functioning; its correctness depends on the quality of back-end developer’s work. What’s more, in a case of larger, more complex systems, such developer’s capabilities of building data queries (i.e. SQL) and its optimisation are of enormous value. As a computer science undergraduate myself, I had acquired general skills and knowledge in various programming languages as well as great experiences in the software development cycle through completing multiple assignments in the core subjects. Being a back-end developer alone might be tough but I am ready to face the challenges.

TESTER - Mitch

Testers fulfil an otherwise necessary role in software development. As a software tester, you'll be involved in the quality assurance stage of software development and deployment. You'll conduct automated and manual tests to ensure the software created by developers is fit for purpose and any bugs or issues are removed within a product before it gets deployed to everyday users. Frankly speaking, I do not have much experience in software testing but am willing to learn and build up the required skills and knowledge along the way.



UI DESIGNER - Vince

The primary duty of the UI designer is to prepare, or design, the user interface. This means transferring content, style, graphics connected with a client or product to a system presentation layer. Thanks to prototyping tools, I can prepare a template of the application's user interface. Later, together with a UX designer and front-end developer, I will work on providing a solution to continue per expectations and requirements.

UX DESIGNER - Dat

Contrary to the UI designer, it's a function characterised by a less 'digital' approach to a user interface. The UX designer, whereby UX means User Experience, must make sure that end users will have the best possible experience while using an application. Such person-based work not only consists of analysing user behaviour. It also takes into consideration what the competition is doing, and continuously changing human-computer interaction methods. As an International Business course student, I am confident in terms of generating useful business ideas which contribute to app functionality development in later phases. Besides that, I am more likely to have greater understanding about the project features as it originated from my previous project idea.

SCOPES AND LIMITS

Due to our group's lack of application development knowledge, we decided to display the features of our project using a prototype designer (Proto.io), which allows us to display our project as an interactive template. As using Proto.io limits what we can present, we had to prioritise certain features that would be possible to showcase. The following features of our project have been prioritised.

- Current priorities
- Working proto.io project that showcases the following features of the app
- A home screen
- A user login page
- A country search bar
- A template of a country's average prices for goods and services
- A profile page
- A map page
- A user input area for ideal budget

As mentioned earlier, certain features are not able to be implemented on Proto.io as they rely on code and external data. Therefore, these features would be planned to be implemented if we had the time to do so.

- Planned future features
- Travel save feature
- Price budget options
- Working relative sliders (relative to average price of goods and services / by budget amount inputted)
- A price index for each country
- Saved user profiles

TOOLS AND TECHNOLOGIES

Tools and Technology	Licences	Hardware Needed	Prior Experience
Proto.io	15 days free trial and subscription plan is needed to access all features after free trial ended	Any standard laptop that have a browser	<ul style="list-style-type: none"> Anson has gained half year experience through core subject User Centered Design in Bachelor degree of Computer Science
Java 8	Free for personal use and development purposes	<p>Can be installed on Windows, MacOS and Linux with the following hardware:</p> <ul style="list-style-type: none"> RAM : At least 128 MB Disk Space : 124 MB for JRE, 2 MB for Java Update Processor : Minimum Pentium 2 266 MHz processor 	<ul style="list-style-type: none"> Anson has gained some experience through core subjects like Programming Techniques, Further Programming and Software Engineering Fundamentals in Bachelor degree of Computer Science
IntelliJ Idea	<p>Apache 2.0 license which means free for personal use and development purposes.</p> <p>Free educational pack for extended version</p>	<p>Can be installed on Windows, MacOS and Linux with the following hardware:</p> <ul style="list-style-type: none"> 2 GB RAM minimum, 4 GB RAM recommended 1.5 GB hard disk space + at least 1 GB for caches 1024x768 minimum screen resolution 	<ul style="list-style-type: none"> Anson has gained two years of experience through completing assignments in core subjects like Programming Techniques, Further Programming and Software Engineering Fundamentals in Bachelor degree of Computer Science
Spring Boot 2	<p>Apache 2.0 license which means free for personal use and development purposes.</p> <p>Free educational pack for extended version</p>	<ul style="list-style-type: none"> Java 8 or 9 Spring Framework 5.0.10.RELEASE 	<ul style="list-style-type: none"> Anson has gained two years of experience through completing assignments in core subjects like Programming Techniques, Further Programming and Software Engineering Fundamentals in Bachelor degree of Computer Science



Tools and Technology	Licences	Hardware Needed	Prior Experience
MySQL	<p>Governed by the terms of the General Public License (GPL). This requires that anyone modifying the MySQL code (for anything other than personal / internal use) or building applications based on MySQL code must also make their derived product available under the same open source GPL terms. By licensing MySQL, you are not bound by the GPL and you gain an extended feature set and various levels of support.</p>	<p>Can be installed on Windows, MacOS, Canonical and Linux with the following hardware:</p> <ul style="list-style-type: none"> • 64 bit x86 CPU • 4 GB RAM minimum, 8 GB RAM or higher recommended • 1024×768 minimum screen resolution, 1920x1200 or higher recommended 	<ul style="list-style-type: none"> • Anson has gained two years of experience through completing assignments in core subjects like Programming Techniques, Further Programming, Database Concepts, Software Engineering Fundamentals in Bachelor degree of Computer Science
Maven 3.6.1	<p>Apache 2.0 license which means free for personal use and development purposes. Free educational pack for extended version</p>	<ul style="list-style-type: none"> • Maven 3.3+ require JDK 1.7 or above to execute - they still allow you to build against 1.3 and other JDK versions • Approximately 10MB is required for the Maven installation itself. In addition to that, additional disk space will be used for your local Maven repository. The size of your local repository will vary depending on usage but expect at least 500MB 	<ul style="list-style-type: none"> • Anson has gained two years of experience through completing assignments in core subjects like Programming Techniques, Further Programming and Software Engineering Fundamentals in Bachelor degree of Computer Science

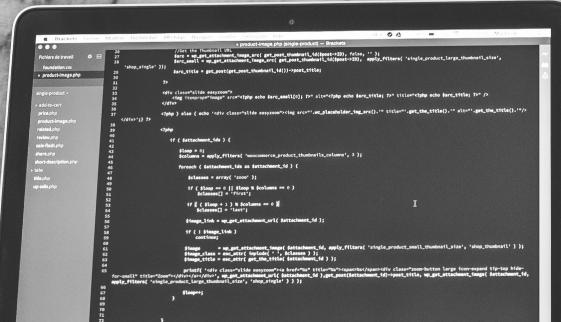


Tools and Technology	Licences	Hardware Needed	Prior Experience
React Native	MIT Licensed which allows permit use, redistribution, and redistribution with modification, as well as the provision to retain copyright notice and warranty disclaimer in common. However, the MIT License also explicitly allows merging, publishing, selling, and sublicensing, while the BSD only implies the first three and does not allow the latter.	<ul style="list-style-type: none"> All Windows 11 devices Windows 10 devices with Windows version: 10.0.16299.0 (aka 1709, aka Redstone 3, aka Fall Creators Update) or higher Some features may not work on all versions. See Windows 10 Compatibility for version support details. 	<ul style="list-style-type: none"> Anson has gained half year experience through core subject Software Engineering Fundamentals in Bachelor degree of Computer Science
react-router-dom 5.1.2	None	<ul style="list-style-type: none"> Requires npm installation 	<ul style="list-style-type: none"> Anson has gained half year experience through core subject Software Engineering Fundamentals in Bachelor degree of Computer Science
axios 0.19.2	None	<ul style="list-style-type: none"> Requires npm installation 	None
bootstrap 4.4.1	MIT Licensed	<ul style="list-style-type: none"> Supports the latest, stable releases of all major browsers and platforms. On Windows, they support Internet Explorer 10-11 / Microsoft Edge. 	None



Tools and Technology	Licences	Hardware Needed	Prior Experience
npm	Artistic License 2.0 where everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed	None	<ul style="list-style-type: none"> Anson has gained one year experience through core subject like Software Engineering Fundamentals, Software Engineering Process and Tools and Advanced Programming Techniques in Bachelor degree of Computer Science
docker	Free tier for limited resource access	<ul style="list-style-type: none"> Can be installed on Windows, MacOS, Canonical and Linux with the following hardware: Memory: 512MB RAM (2GB Recommended) Disk: Sufficient amount to run the Docker containers you wish to use CPU: Dependant on the applications you wish to run in the containers 	<ul style="list-style-type: none"> Anson has gained half year experience through core subject Cloud Computing in Bachelor degree of Computer Science
Kubernetes	Apache 2.0 license which means free for personal use and development purposes. Free educational pack for extended version	<ul style="list-style-type: none"> Available for 64-bit x86 hardware only with: 4 CPU cores (Intel VT-capable CPU) 16GB RAM 1GB Ethernet NIC 40GB hard disk space in the /var directory 	<ul style="list-style-type: none"> Anson has gained half year experience through core subject Cloud Computing in Bachelor degree of Computer Science
Google Kubernetes Engine	Free tier for limited resource access	None	None
Google cloud	Free tier for limited resource access	None	<ul style="list-style-type: none"> Anson has gained half year experience through core subject Cloud Computing in Bachelor degree of Computer Science

Testing



Testing is the process consisting of all life cycle activities, both static and dynamic, concerned with planning, preparation and evaluation of software products and related work products to determine that they satisfy specified requirements, to demonstrate that they are fit for purpose and to detect defects. The process consists of all life cycle activities, both static and dynamic, concerned with planning, preparation and evaluation of software products and related work products to determine that they satisfy specified requirements, to demonstrate that they are fit for purpose and to detect defects. The following are the types of test we planned to implement in order:

Unit Testing

Unit testing searches for defects in, and verifies the functioning of, software items (for example modules, programs, objects, classes, etc.) that are separately testable. The objectives of unit testing is to

- Reduce risk (for example by testing high-risk components more extensively).
- Verify whether or not functional and non-functional behaviours of the component are as they should be (as designed and specified).
- Build confidence in the quality of the component: this may include measuring structural coverage of the tests, giving confidence that the component has been tested as thoroughly as was planned.
- Find defects in the component.
- Prevent defects from escaping to later testing.

Test objects for unit testing include:

- code and data structures(Java 8)
- Classes(Java 8)
- database models(MySQL)
- HTML(React Native)

Tools for unit testing:

- Junit 5 for backend testing
- Selenium for front end testing
- DbUnit for database testing

Typically, unit testing occurs with access to the code being tested and with the support of the development environment, such as a unit test framework or debugging tool. In practice it usually involves the developer who wrote the code. The developer may change between writing code and testing it. Sometimes, depending on the applicable level of risk, component testing is carried out by a different developer, introducing independence. Defects are typically fixed as soon as they are found, without formally recording them in a defect management tool. Of course, if such defects are recorded, this can provide useful information for root cause analysis. Our approach is to apply test-driven development (TDD). This approach is highly iterative and is based on cycles of developing automated tests, then building and integrating small pieces of code, and executing the component tests until they pass, and is typically done in Agile development. The idea is that the first thing the developer does is to write some automated tests for the component. Of course if these are run now, they will fail because no code is there! Then just enough code is written until those tests pass. This may involve fixing defects now found by the tests and refactoring the code. (This approach also helps to build only what is needed rather than a lot of functionality that is not really wanted.)

Integration testing

Integration testing tests interfaces between components and interactions of different parts of a system such as an operating system, file system and hardware or interfaces between systems. Integration tests are typically based on the software and system design (both high-level and low-level), the system architecture (especially the relationships between components or objects) and the workflows or use cases. The objectives of unit testing is to

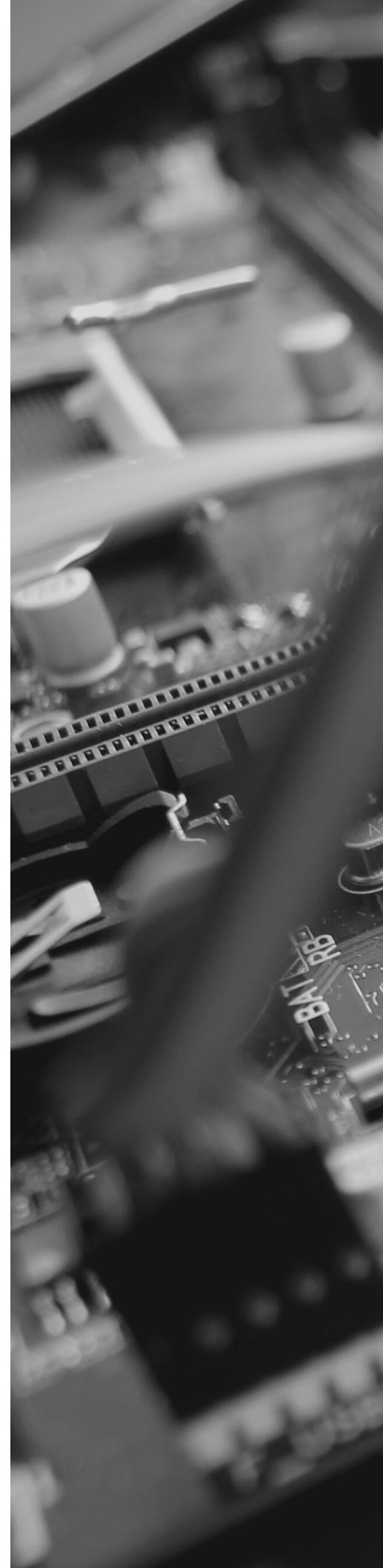
- Reduce risk, for example by testing high-risk integrations first.
- Verify whether or not functional and non-functional behaviours of the interfaces are as they should be, as designed and specified.
- Build confidence in the quality of the interfaces.
- Find defects in the interfaces themselves or in the components or systems being tested together.
- Prevent defects from escaping to later testing.

Test objects for integration testing include:

- Database(MySQL)
- APIs (Spring Boot REST api)
- microservices(Docker and Kubernetes)

Tools for integration testing:

- Junit 5 for backend testing
- Selenium for front end testing
- DbUnit for database testing



Our choice is to start integration testing with those interfaces that are expected to cause the most problems such as backend and database. Doing so prevents major defects at the end of the integration test stage. If integration tests are planned before components or systems are built, they can be developed in the order required for most efficient testing. A risk analysis of the most complex interfaces can help to focus integration testing. In iterative and incremental development, integration is also incremental. Existing integration tests should be part of the regression tests used in continuous integration. Continuous integration has major benefits because of its iterative nature.

Usability testing

User testing also known as usability testing should be happening at every point in the process as an integral part of an iterative design process. It's far better to run some usability testing using what we have to hand than to run no usability testing at all. Our goal is to gather as much feedback as we possibly can as early as we possibly can. This helps us to identify any design issues before we get to the expensive part of the process when we reach the final build. It's too late and too expensive to leave user testing until after you've built your product. At that point in the process, changes are incredibly costly.

The objectives of usability testing is to

- Measure the effectiveness of a feature set within your application.
- Identify if users are able to complete specific tasks successfully;
- Establish how efficiently users can undertake predetermined tasks; and
- Pinpoint changes to the design that might need to be made to address any shortcomings to improve performance.

Test objects for integration testing include:

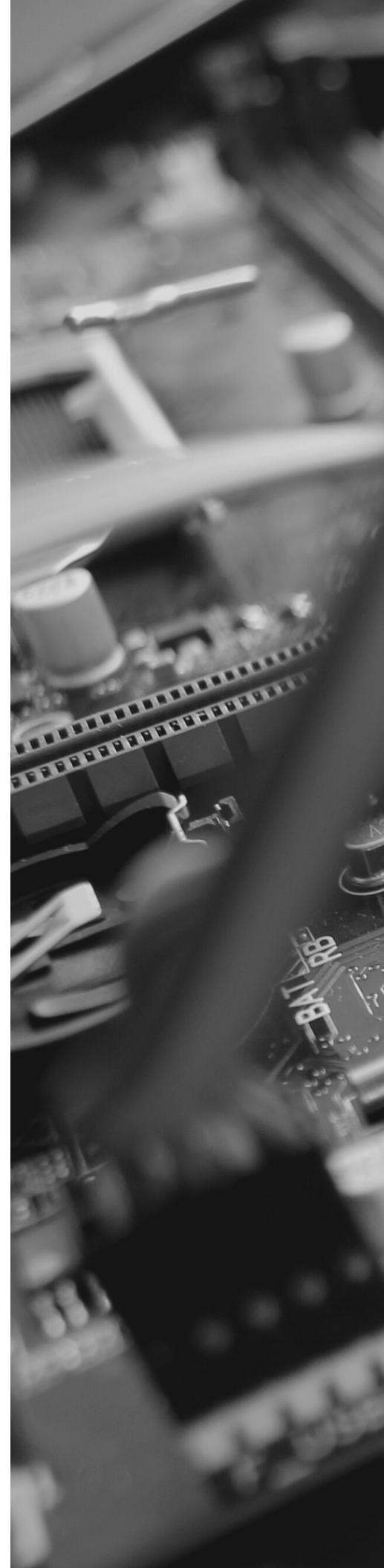
- Prototype
- End product

Tools for integration testing:

- Eye tracking to objectively and accurately record and analyze visual behavior. Eye tracking allows you to uncover usability problems without disturbing natural user behavior
- Interaction logging to store user interaction with app to generate report later for in depth analysis.

To run a usability test effectively will take between 30–60 minutes per participant. The longer a usability test runs, the more tiring it is for the participant, leading to diminishing returns. As such, preparation is key. It's important to establish exactly what you hope to learn from the test and, equally importantly, establish who you'll be testing. running a test will require a number of individuals:

- The test participants
- A facilitator, guiding the test and ensuring everything runs smoothly
- Some observers and note takers



Our steps to perform usability testing are below:

1. Creating a test plan.

Location	Quiet space such as a meeting room in RMIT
Time	Each after completion of prototype and end product
Scope	<ul style="list-style-type: none">• Can users identify interface elements accurately in a short amount of time?• Can the user complete the task within the time given? For example, can a user search the country Australia successfully in 30 seconds?
Timings	30 minutes
Equipment	Screenflow. It uses a laptop built-in webcam, enabling us to capture not only what the user is doing on screen, but also the look on their face.

2. Creating a script

Creating a script helps us to facilitate the usability test clearly and consistently. Creating a script helps to:

- Focus our mind on what exactly you're testing, so that our usability test doesn't drift and remains focused
- Ensure consistency across multiple test participants
- Talk about different user scenarios
- Clearly, articulate the different goals we are testing
- Help us put our users' minds at ease

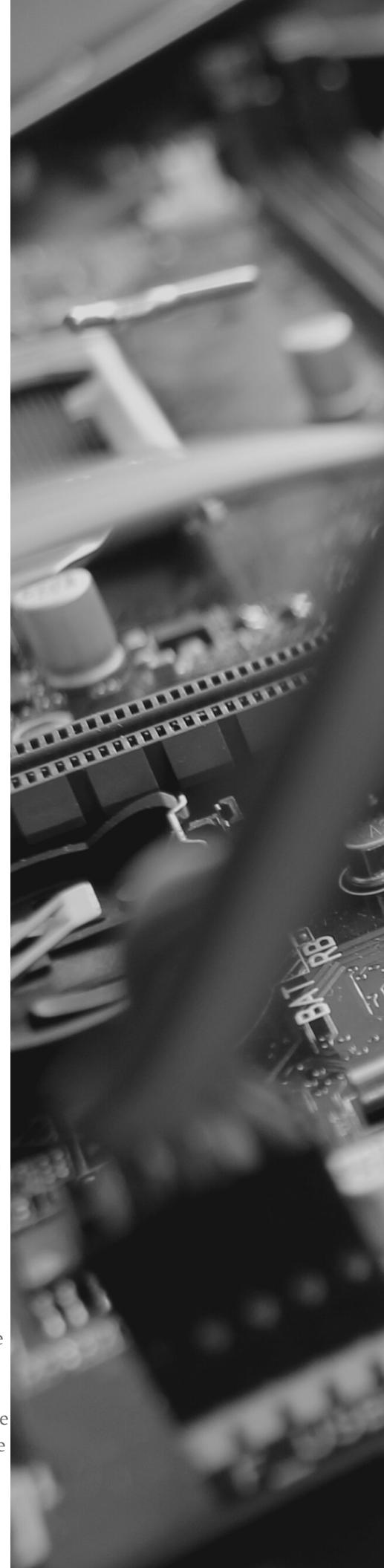
Our script is designed to focus your test on the scenarios we have established in our plan:

- How many people are making the journey?
- When are they traveling and do they have flexibility with their dates?
- What kind of budget do they have?

3. Recruiting participants

First things first, it's important to test more than one person. Everyone is different, and everyone draws from different experiences, so our results aren't skewed by too small a sample size. Identifying user groups is important as it allows us to recruit participants who accurately represent our potential users.

Aspects	Choice	Reason
Gender	Half male half female	Ages outside of range may lack of decision making skills that fits in travel goals
Age	18 - 70 years	Ages outside of range may lack of decision making skills that fits in society
Household Income bracket	2500 and above	Participants with lower income are less likely to travel
Experience in using travel app	Higher proportion on experienced participants	Experienced participants can give valuable insights about what the app is lacking or what they are expecting it to have. However, new users are required to provide information on how well the user interface is able to lead its user to perform goals.
Experience in travelling	Higher proportion on experienced participants	Experienced participants know the needs of a travel app better.

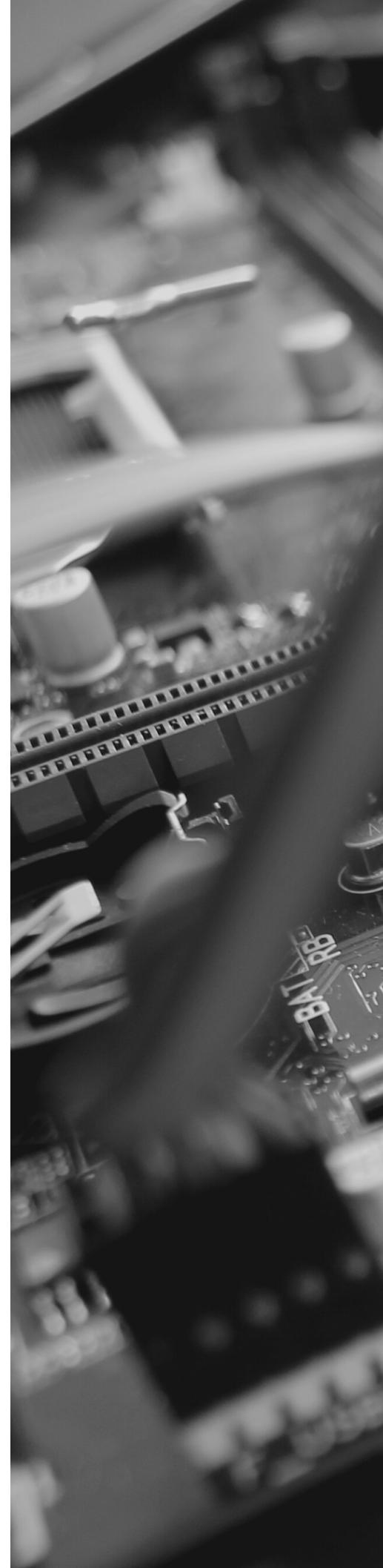


4. Conduct test

We must refrain ourselves by helping participants to keep the test neutral so that it serves its purpose. When running a usability test, it is important to listen and observe participant behaviour. It gives valuable insight into the application of what it does well or lack of.

5. Report analysis

Generating reports and doing an analysis is so important as it keeps a record which serves as a guide for later development phases. Without analysis, it leaves all the work to no avail as we will not conclude and learn from the inadequates and failures.



RISKS

App development isn't the most advantageous or intense sport but it definitely has risks involved. The scope of these risks are diverse and cover anything from software to marketing. Firstly, time management and resource allocation can be a big risk. Without a clear development plan or user interface design too much time and resources will be used in the wrong areas. In a real world example, there are projects which are restricted to budgets and timeframes which can prove critical if they are not met. Furthermore, communication between team members, or lack thereof, can pose more risks. Without proper communication channels and a clearly outlined strategy it can result in a clash of design which in turn means time and resources wasted.

On a bigger scale, some risks involve marketing and sustainability. The platforms and design we choose should reflect our target audience. As a travel app, we have a large audience to cater for. Ranging from freshly turned adults to retirees. Our design needs to be engaging enough to attract a young audience, yet simplistic for an older demographic to use. As mentioned in a previous section, the world has been affected by a pandemic and the tourism industry has suffered greatly. In today's climate it is quite the risk developing a travel app when countries can go into lockdowns and economies constantly fluctuating.

Of course, another risk to consider and potentially one of the biggest is security. This is an app which holds customers personal information and financial details which means that breaches in data can result in damaging consequences to users. During its development and leading into the distribution of our app, in a real context, it will undergo rigorous risk assessments and penetration testing. A cyber risk assessment is the process of identifying and evaluating risks to assets that could be vulnerable to attack (Ilia, 2018). They assess the 4 four pillars of cybersecurity: confidentiality, integrity, authenticity, and non-repudiation. The risks involved in such a breach are (for both developers and users):

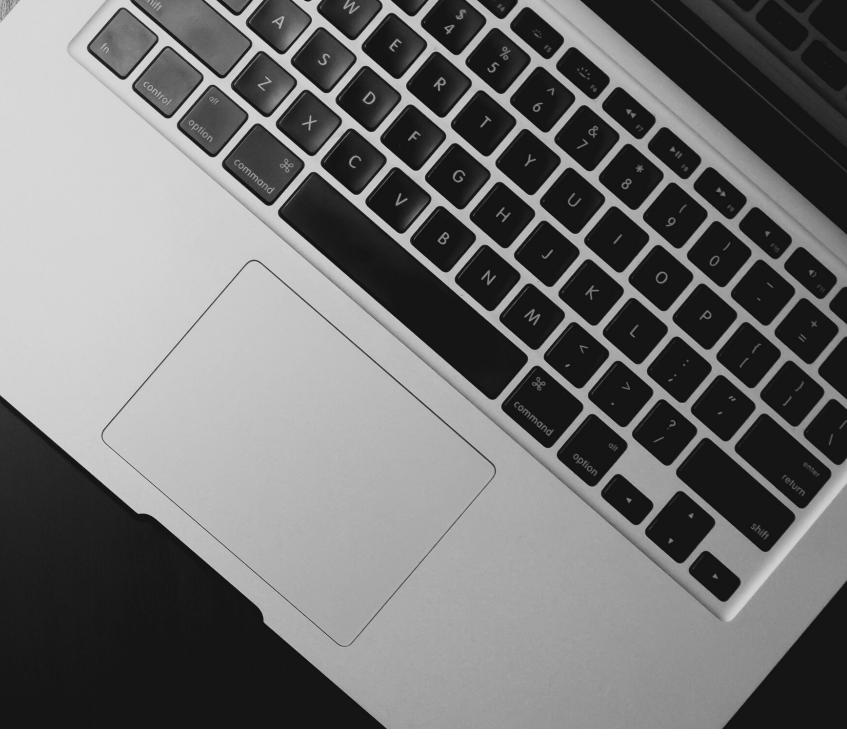
- Identity theft
- Data loss
- Financial harm
- Legal implications

TIME FRAME



Anson

Week	Actions
8	Plan and outline the progress of the project to set goals
9	Research on tools and technologies needed for software development Create and setup documents needed for collaboration
10	Plan and work on the software architecture of our software
11	Plan and work on testing section Compile the tools and technologies section
12	Proceed to help on refining our prototypes Writing report and group website



Data	
Week	Actions
8	Research and doing the topic part
9	Doing group processes and fill in the career plan
10	Research and working on the Aims section
11	Working on Project structure, Front-end section
12	Doing Group reflection and Timeframe



Week	Actions
8	Role delegation, project idea refinement
9	Created app mindmap, User story and Acceptance Criteria
10	Assisted with Proto.io mockup
11	Scope and limits
12	Group reflection, timeframe



Jake

Week	Actions
8	Break the assignment down into sections and delegate
9	Write up user interaction section
10	Start developing the app through proto.io
11	Read and fill in sections of the report Continue working/refining on the prototype
12	Reflections, timeframe and website Finish formatting the report



Vince	
Week	Actions
8	Planning , assigning roles for each member
9	Research competitors and databases
10	Make gantt chart
11	Research risks , jobs and skills
12	Timeframe write up

Note: A Gantt Chart was also created to follow the groups activity through out the week.

PROCESS

Communications

Communication is an essential part of helping my team move forward with planned steps, and it's easy when everyone on the team knows what they're doing. Microsoft Teams is the platform we use for communication and team meetings. Our team selected two days for group meetings and each member's progress report on Wednesday and Saturday at 8 pm. Due to the Covid situation, we prefer online group meetings more than face to face. In addition, any member having difficulty can use the "chat" function to seek help from the rest of the members.



Jobs and Skills

Product manager

A product manager is the main point of contact for clients and authorised representatives , in the case of the travel app , venture capitalists. A product manager will identify the needs of users and business goals , turning these requirements into tasks for a team. A product manager will typically work on three processes regarding the introduction of a product in corporations which are :

Product Planning which involves the analysis of product ideas and features

Product Introduction which involves cross-functional team management, product launch management and

Product Life Cycle Management which could involve service collection of user data , future development planning and strategy planning.

All these processes a product manager carries out requires the skills of:

- Empathy for end users
 - Strong decision making skills
 - Strong analytical skills
 - Problem solving skills
 - Digital marketing skills
 - Excellence in communication, presentation and interpersonal skills
-

Software Developer

A Software developer required for the travel app is required to be proficient in front and back end development. Technical skills required are high proficiency front end languages ,JavaScript frameworks, server side languages ,database technologies, microservices development , Android SDKs and IOS SDKs. The outcomes of a developer will include:

- Working with a UX designer to meet user goals
- Developing APIs for mobile functionality
- App development
- Assessing guidelines of app store operators
- Overseeing the software development process from ideation to deployment
- Managing the complete software development process from conception to deployment
- Maintenance of software following deployment



UX Designer

A UX Designer is concerned in User Experience design to accommodate user satisfaction in a holistic manner to include aspects of usability , accessibility , function and design. The activities of a UX designer can be separated into two categories of which is user experience design (UXD) and second is user experience research (UXR).

UXR is the process involving primary research, secondary, research and third-party research while UXD is the process of designing a solution to a product. These two activities together work on where the goals of the business and users converge , in trying to meet the demands of both parties. A UX Designer for the Travel App is required to bridge evidence-based design and user experience design with usage of software such as FlowMapp ,Sketch, Figma ,Adobe XD and Adobe Creative Suite and tools such as personas , interactive prototypes , use case scenarios and customer research.

The processes that a UX Designer for the travel app will loosely resemble:

1. User profiles and personas

This initial step for a UX designer consists of the creation of user profiles and personas. This step is particularly useful in being able to replicate the experiences and emotions of a customer. Making of profiles and personas is typically achieved through analytics and associated data in addition to internal and external interviews and surveys.

2. Interface testing

Multiple interfaces are compared in effectiveness and quality of experience , including the current site used.

3. User surveys & interviews

This process , a human-centered design process, involves interviewing potential users of the web app in order to gain an experience-centered perspective in order to evaluate design. Two methods are used to gain the experience-centered perspective of users in the form of surveys and interviews such as structured interviews, semi-structured interviews, and unstructured interviews.

4. User flow diagram

A flowchart is created in order to visualize how a user would move through the app and the steps taken to achieve their goal. Stakeholders are able to view the most efficient form of the flow of the app through a breakdown of what the user does and sees when using the app such as signing up and logging in.



UX Designer Cont.

5. Wireframes and prototypes

Wireframes and prototypes are used to approximate the location of elements of dialogs and buttons , providing how web pages or an app looks and feels. With wireframes and prototyping , issues regarding usability can be eliminated before adjustments further down the line are required. Low fidelity prototypes such as clickthrough prototypes can be useful in gaining insight of the basic interactive experience of the end product. High fidelity digital prototypes such as those on Proto are can be useful in getting final design approval from stakeholders in being interactive for usability testing and giving an idea of the feel and function of the end product.

6. Style tiles & Style guides

Design patterns set consistency in choosing the most effective design for a task based on usability. Style tiles and style guides help maintain consistency in providing guidelines for typography ,color scheme, button shapes, sizes & colors and brand attributes.

Software Tester

Having testers involved in requirements reviews or user story refinement could detect defects in these work products before any design or coding is done for the functionality described. Identifying and removing defects at this stage reduces the risk of the wrong software (incorrect or untestable) being developed. Besides that, professional testers are more trained to verify and validate the software prior to release and can detect failures that might otherwise have been missed – this is traditionally where the focus of testing has been. If we leave it until release, we will not be nearly as efficient as we would have been if we had caught these defects earlier. However, it is still necessary to test just before release, and they can also help to support debugging activities, for example, by running confirmation and regression tests.Other than that, having testers work closely with system designers while the system is being designed can increase each party's understanding of the design and how to test it. Since misunderstandings are often the cause for defects in software, having a better understanding at this stage can reduce the risk of design defects. A bonus is that tests can be identified from the design – thinking about how to test the system at this stage often results in better design. Lastly, having testers work closely with developers while the code is under development can increase each party's understanding of the code and how to test it. As with design, this increased understanding, and the knowledge of how the code will be tested, can reduce the risk of defects in the code (and in the tests).

PROTOTYPE

Links

Prototype PDF - This link takes you to a PDF document on MS teams that shows a screen by screen layout of our prototype.

<https://pr.to/G37VE5/> - This link will take you to a new tab in your browser which will allow you to interact with our prototype.





REFLECTION

Group Reflection

Reflecting upon past experience is an important capability for all professionals in order to develop better communications skills, conflict resolution and enhance future performance. To look back on the simulation that was conducted as group work this semester has allowed participating students to gain many practical skills in our industry. It could be argued that our team performed well overall; yet more effective delegation and organisation skills could have been improved.

Our team comprised five members and were all delegated with a particular role within the simulation. This has demonstrated that a team is more than the sum of its component parts. Crucial to what we did was assessing and recognising our strengths and contacts and bringing them together to create something more powerful than any of us individually. It also became clear that when you do this a real dynamic and momentum is built up and we realised that the team itself develops an identity that is much more than the additive talents of the people within it.

To therefore reflect upon some of the challenges that the simulation brought to our team, and how we could resolve them, it could be said that effective delegation and time management seemed to hamper us. At the time, our team noticed that it was often hard to delegate tasks to team members. This was often due to conflicting schedules, workloads and other commitments. Having experienced these issues and to critically reflect upon them, it could be argued that our team should have been more realistic about the timing of activities, clearly determining who was responsible and effectively ensuring that we could achieve the simulation goals in adequate time.

In commenting upon the team dynamics, as well as the academic literature that has supported the learning this semester, it can be argued that a new set of knowledge and understanding has been created. In addition, it has been particularly important to become a reflective practitioner and that in undertaking such observations helps to improve not only one's performance but also enhance discipline-specific knowledge.

Anson

I am pretty much satisfied with all our performance in this group project. We did not have a great start as we all felt lost due to lack of knowledge and experience in the software development process. The relieved part is we managed to pull ourselves together by doing a tonne of research and actually planned our process. I am very convinced that there is a huge improvement in terms of efficiency and teamwork after working through assignment two together. I am satisfied with my own contribution in this project as everything is working out as planned. For this project, I planned all my progress before the assignment due date and made sure I stick to it. As a result, all my tasks are completed on time and cause no delay to other's work. In my opinion, Jake and Mitchell did a great job on working on the prototype and the current progress looks convincing to me. They both play a great role as the meeting coordinator at my own point as they kind of lead all of our meetings. It is just pleasing to have teammates that have great communication skills which are able to connect all of us together and come up as a team. Besides that, Dat and Vincent have contributed more on the report content part and play the role of a team member pretty well. They are willing to contribute ideas and work in order to sort out this assignment. Other than that, they are ready to learn and absorb new skills and knowledge and apply them right on the spot. Everyone is responsible enough to attend all meetings and complete their tasks. This project would not have success without all of us. Overall, I am glad to have such teammates and looking forward to our future collaborations.

Dat

I am a newbie, and IT is quite an exciting field, but it is also challenging. After assessment two and coming to assessment 3, I am pleased to have great teammates. They help me a lot in terms of knowledge, as well as where I can help them. Anson is one of the people who helped the team and me a lot. He helped me while I was working on the front-end. I did not know what to do or what to write. I asked him, and he guided me. The rest of the team also completed the parts they were assigned. In addition, our team has two meetings a week to discuss difficulties and solve them together. I am delighted and satisfied to be collaborating with such teammates.



Jake

This third piece of assessment has been a big one. At times it has felt never ending. The beginning few weeks were good, we had a good momentum going and Anson really helped guide the team and provide some really good resources for us to use in our sections. Overall, both assignments with this group have taught me many things and I have quite enjoyed my time with the boys. Even in the final week and it is quite evident that people, including myself, are a bit burnt out and stressed with all our assignments being due, the team is still pushing to deliver a good finished product. The content, the programs and tools used throughout both assignments have been quite fun to learn and use.

Vince

This third assessment is a sign of relief being a sign of a close completion for the Intro to IT course. Noticeably we are more burnt out in this project but we have Anson in this group who go the project up and going. This project is more technical than previous assignments and is of higher difficulty but overall , communication between group members is good and the trajectory of this project appears to be heading in a good direction.

Mitch

At the beginning of this project, our group felt quite overwhelmed at the idea of having to plan out how we would implement our travel idea into a working prototype due to our lack of app development knowledge and experience. Anson really helped pull our group together by delegating roles to each of us as well as suggesting websites that we can use such as proto.io. Toward the end of the project, the team was feeling burnt out and meeting quality declined as some meetings were missed (myself included), but I believe that the quality of work did not. I've learnt that everyone always has something of value that they can contribute to the group.



MEETINGS

- 29/09/2021 - [Agenda](#) / [Recording](#) / [Actions](#)
- 02/10/2021 - [Agenda](#) / [Recording](#) / [Actions](#)
- 06/10/2021 - [Agenda](#) / [Recording](#) / [Actions](#)
- 16/10/2021 - [Agenda](#) / [Recording](#) / [Actions](#)



REFERENCES

1. Australian Bureau of Statistics (ABS), 2017. Australian Federal Government. Accessed 06/10/2021
[<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/guide-consumer-price-index-17th-series/2017>](https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/guide-consumer-price-index-17th-series/2017)
2. Ilia Sotnikov, 2018. How to perform IT risk assessment. Netwrix blog. <https://blog.netwrix.com/2018/01/16/how-to-perform-it-risk-assessment/>
3. PYPL PopularitY of Programming Language 2021, PYPL index, viewed 3 October 2021, [<https://pypl.github.io/PYPL.html>](https://pypl.github.io/PYPL.html)