

Assignment Guidance and Front Sheet

This front sheet for assignments is designed to contain the brief, the submission instructions, and the actual student submission for any WMG assignment. As a result the sheet is completed by several people over time, and is therefore split up into sections explaining who completes what information and when. Yellow highlighted text indicates examples or further explanation of what is requested, and the highlight and instructions should be removed as you populate 'your' section.

This sheet is only to be used for components of assessment worth more than 3 CATS (e.g. for a 15 credit module, weighted more than 20%; or for a 10 credit module, weighted more than 30%).

To be completed by the student(s) prior to final submission:

Your actual submission should be written at the end of this cover sheet file, or attached with the cover sheet at the front if drafted in a separate file, program or application.

Student ID	U1943205
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To be completed (highlighted parts only) by the programme administration after approval and prior to issuing of the assessment; to be consulted by the student(s) so that you know how and when to submit:

Date set	19/01/2023
Submission date (excluding extensions)	13/03/2023 12 noon (mid-day)
Submission guidance	<p>Submission requirements</p> <ul style="list-style-type: none">• You must submit your report indicating your student ID number in the title of the submission. i.e., 1300001_Report.pdf.• The report must be in PDF format.• The report must be submitted via Tabula and must not be Zipped.• You must zip all the codes used for your report without objects and executable files, and then submit the zipped file indicating the student ID number in the title of the submission, i.e., 1300001_Code.Zip.• You must check if the report and the zipped file have been uploaded successfully.• You must include the assessment front sheet in your report. <p>Report Requirements</p> <ul style="list-style-type: none">• The report should be no more than 2500 words ± 10%.• The report should include a title page in the report.• You should specify the total words used for the report.• The report should be less than 50 pages.• The report should follow a logical and well-defined structure with headings and subheadings.

Marks return date (excluding extensions)	Within 20 working days after the submission deadline.
Late submission policy	If work is submitted late, penalties will be applied at the rate of 5 marks per University working day after the due date, up to a maximum of 10 working days late. After this period the mark for the work will be reduced to 0 (which is the maximum penalty). "Late" means after the submission deadline time as well as the date – work submitted after the given time even on the same day is counted as 1 day late.
Resubmission policy	If you fail this assignment or module, please be aware that the University allows students to remedy such failure (within certain limits). Decisions to authorise such resubmissions are made by Exam Boards. Normally these will be issued at specific times of the year, depending on your programme of study. More information can be found from your programme office if you are concerned.

To be completed by the module owner/tutor prior to approval and issuing of the assessment; to be consulted by the student(s) so that you understand the assignment brief, its context within the module, and any specific criteria and advice from the tutor:

Module title & code	WM398 User Experience and Application Development
Module owner	Dr Young Saeng Park
Module tutor	Dr Young Saeng Park
Assessment type	Written individual report
Weighting of mark	100% of the total module mark

Assessment brief
The purpose of this assignment is to assess students' understanding of user experience and user interface, and to apply their understanding to real application development based on user experience (UX) design. There are two parts in the assignment. You must perform each part according to the requirements and submit a report which meets the requirements. The report should be no more than 2500 words \pm 10%. In particular, Part 1 requires you to develop a prototype mobile application using Android with Kotlin, based on your deliverables from user experience design for the given scenario.

PART 1: Favourite Restaurant Finder App

(Marks: 80)

People love to go out and eat delicious food with friends and family because going to a restaurant with them could be a great enjoyable outing to spend quality time. Also, people like to eat their favourite food whilst also trying a different taste for a different experience. For this reason, it is an important activity to look for a quality or good rating restaurant before going to a restaurant or to

find a restaurant out in advance. Depending on the selection, it can play an important influence in determining joy or regret at the restaurant. Thus, it might be very useful to have a good restaurant finder app which helps you select a right restaurant easily without spending much time to find it.

Based on the initial thoughts mentioned above, you are going to design and implement **the Favourite Restaurant Finder (FRF)** app through **the UX design process**. It helps you understand what kind of solution they might need to address the problem, to come up with ideas, design and test them, and eventually, build them into a live product. Importantly, the UX design process ensures that you are building the FRF app that people actually want to use and also give the clear vision for the app.

You can consider various actions for the FRF implementation through the UX design process and produce various deliverables. While you cannot do all the actions and also cannot include all the deliverable in your report, at least the following deliverables must be included:

- **Empathy maps:** You must conduct surveys or interviews and there is no limit on the number of people. However, due to time constraint, it is recommended to have a survey or interview with 2 or more people. Then, you must provide an empathy map based on the surveys or interviews in the report.
- **Competitor analysis:** To understand company's business operation including service, product and goals better, you must conduct competitor analysis. You should select at least two competitors and include your findings in the report.
- **User personas:** Considering potential user groups for the FRF app, you must define at least two user personas which allow to better understand your target audience. There is no specific template for defining a user persona, but you can define a user persona that best represents a real user for the FRF app based on the user groups.
- **User flow:** To give stakeholders a better understanding of the FRF app flow, you must provide a path which a user goes through when using the app from the start point to the final interaction using user flow. You must include at least one user flow in the report but can include more user flows if necessary.
- **Low-fidelity wireframe:** You must design a low-fidelity wireframe for the FRF app. The low-fidelity wireframe must be drawn on a paper using a pen or pencil rather than digital. Then, you should include the captured images with description in your report.
- **High-fidelity prototype:** You should conduct the usability testing using interactive high-fidelity prototype. For the prototype, you must use Figma to design high-fidelity wireframe with interactions. In your report, you must include the captured images with description.
- **Usability testing:** after having usability testing with the high-fidelity prototype, you should include feedback in the report. Due to time constraint, there is no further iteration UX design required.

Here is the detail instruction for the implementation are given below.

- You **must use Android with Kotlin** for your implementation.
- The implementation **must be based on the UX design deliverables**.
- You **must include comments** in your code to provide better understanding for readers.
- You **must provide a README file** which include how to setup and execute your FRF app. There is no format restriction in the README file as long as it is readable by readers.
- You **must provide a zip file** containing all source code but **should not include dependencies**.
- You **should include as many screen-captured images as possible** in your report or provide the images separately with your cod in a zip file. It is also possible to provide a video which shows your FRF app running.

PART 2: Individual User Experience Design

(Marks: 20)

Assuming you are a UX designer who has done many **UX mobile projects** and are applying for a new UX designer job. Now, you are asked to **provide a UX design portfolio** which only includes one of the best UX projects to showcase your outstanding UX skills and knowledges in the UX design process to potential employers. Here is the instruction for the portfolio:

- You **must include the description** about the project.
- You **must include problems or challenges** for the project.
- You **may include some of the deliverables (at least 2 deliverables) occurred during the UX design process** in order to clearly understand the UX project, such as competitor analysis, user persona, user journey map, surveys or interviews with empathy map, user flow, user stories, design system, low-fidelity wireframe, design system, high fidelity wireframe, interactive high-fidelity prototype, usability testing, etc.
- You **must include low-fidelity wireframe** using Figma.

Remember that PART 2 is to only demonstrate your UX skills and knowledges for the UX design. So, there is **no implementation required using Android with Kotlin for PART 2**. Also, there is no limit on the number of words only for PART 2 but there is a limit for the overall report (2500 words ± 10%).

Word count	2500 words + 10% but there are no minimum words. Any source codes in the report are not included in the total word count. Word count is defined as the number of words contained within the main body of the text which include titles, headings, summaries, in-text citations, quotations, and footnotes. Items excluded from the word count are acknowledgements, tables of contents, a list of acronyms, meeting notes, a glossary, a list of tables, or figures. Exceeding the work count: For more than 10% up to and including 20% a deduction of 10 percentage points will be applied. For more than 20% up to and including 30% a deduction of 15 percentage points will be applied. More than 30%, The work will be assigned a grade of 0.
Module learning outcomes (numbered)	1. Describe what is meant by accessibility and usability in user-experience design process. 2. Describe how user experience design fits within a company's business operations. 3. Undertake analysis and design a usable, useful and desirable interface considering customer requirements. 4. Develop a prototype based on the UXD incorporating user preferences. 5. Interpret, implement, and test the design and prototype for usability and accessibility.
Learning outcomes assessed in this assessment (numbered)	LO1, LO2, LO3, LO4, LO5

Marking guidelines	<p>First class report is expected to be very high-quality work demonstrating excellent knowledge and understanding, analysis, organisation, accuracy, relevance, presentation, and appropriate skills.</p> <p>Second class report is expected to be high quality work demonstrating good knowledge and understanding, analysis, organisation, accuracy, relevance, presentation, and appropriate skills.</p> <p>Report that presents competent work, demonstrating reasonable knowledge and understanding, some analysis, organisation, accuracy, relevance, presentation, and appropriate skills.</p> <p>Work that is below the standard required for the appropriate stage of an Honours degree will be deemed as fail.</p>
Academic guidance resources	<p>How to seek further help</p> <p>Students are strongly advised to ask tutors via Moodle forum</p> <ul style="list-style-type: none"> • https://warwick.ac.uk/services/library/students/your-library-online/ <p>Numerous online courses provided by the University library to help in academic referencing, writing, avoiding plagiarism and a number of other useful resources.</p> <p>Referencing</p> <p>Follow the University of Warwick referencing guidelines, found via the links:</p> <ul style="list-style-type: none"> • https://warwick.ac.uk/services/library/students/referencing/referencing-styles • https://warwick.ac.uk/fac/soc/al-archive/leap/writing/referencing/intext/ <p>Should you experience difficulties likely to seriously impact your ability to complete any module work, please see the website section for Mitigating Circumstances and Reasonable Adjustments at:</p> <ul style="list-style-type: none"> • https://warwick.ac.uk/services/aro/dar/quality/categories/examinations/policies/u_mitigatingcircumstances/

WM398: User Experience and Application Development



u1943205
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Warwick Manufacturing Group (WMG)
The University of Warwick
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Abstract

This report focuses on the creation of two applications aimed at enhancing user experience. Part One covers the development process of a restaurant finder app, including the use of Android Studio to bring the design to life. Part Two examines the development of a tutoring application named Tutor Tree and offers a comprehensive overview of the application and its potential for improving user experience.

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Introduction

Creating an application that provides an optimal user experience (UX) is essential for ensuring its success in today's competitive market (Ferrer, 2022). UX directly impacts how users perceive and interact with an app or product and is therefore a key factor for differentiating a product from its competitors. In 2020 Google released the *page experience update* which measures aspects of how users perceive the experience when interacting with a web page (Google, 2020). Research conducted by (Forrester, 2016) details that good user experience is associated with conversion rate lift of 200% to 400%.

In this report, the importance of UX within application development will be explored. The utilisation of design tools like Figma and Android Studio will also be discussed through creation of two applications. The primary objective of this report is to provide valuable insights into the best practices for catering to user needs and delivers a seamless user experience.

1 Part One: Restaurant Finder App - Tasty Tour

A popular pastime for many people is dining out with loved ones. Whether it's to celebrate an occasion or to simply spend quality time together, it's a terrific way to create memories and enjoy cuisines. However, with so many options available, picking the ideal restaurant can be difficult. The level of service, ambience, and food quality can all have a significant impact on the whole experience. A restaurant finder app can be useful for relieving the pressure of selection. Tasty Tour is a restaurant finder app which gives users the ability to discover and select the best restaurant for any occasion. With features such as customer ratings and reviews, menu previews, and location-based search options, they can easily discover new dining hot spots. Users can book or save for later, allowing them to plan their dining experiences ahead of time.



Figure 1: Tasty Tour Logo

1.1 User Research

User research has been a crucial step in the UX design process, it has helped to understand the needs and expectations of the target audience. According to (Qualtrics, 2021), thorough research can also cut development time by up to 50%. By providing data-driven insights, informed decisions have been made throughout product development and marketing. Research has also supported innovation by showcasing opportunities that can fulfil unmet user needs.

The research goal for Tasty Tour was to **gather information about the current methods used by people to find restaurants and to identify the pain points and opportunities for improvement**. This information has been evaluated to design a user-centred app that meets user needs. To achieve this goal, the following research questions have been addressed and answered by

1. How do people currently find restaurants?
2. What are the common pain points when searching for a restaurant?
3. What features and functionality would people like to see in a restaurant finder app?
4. How satisfied are people with the current methods of finding restaurants and what opportunities for improvement do they see?

1.2 Research Analysis

A combination of qualitative and quantitative research analysis methods have been conducted to answer the research questions. Throughout analysis, areas where the user experience can be improved have been identified and inform design decisions have been made based on user behaviours and preferences.

Empathy Maps

After conducting three user interviews, an empathy map has been created for each to provide further framework into synthesising the data collected.

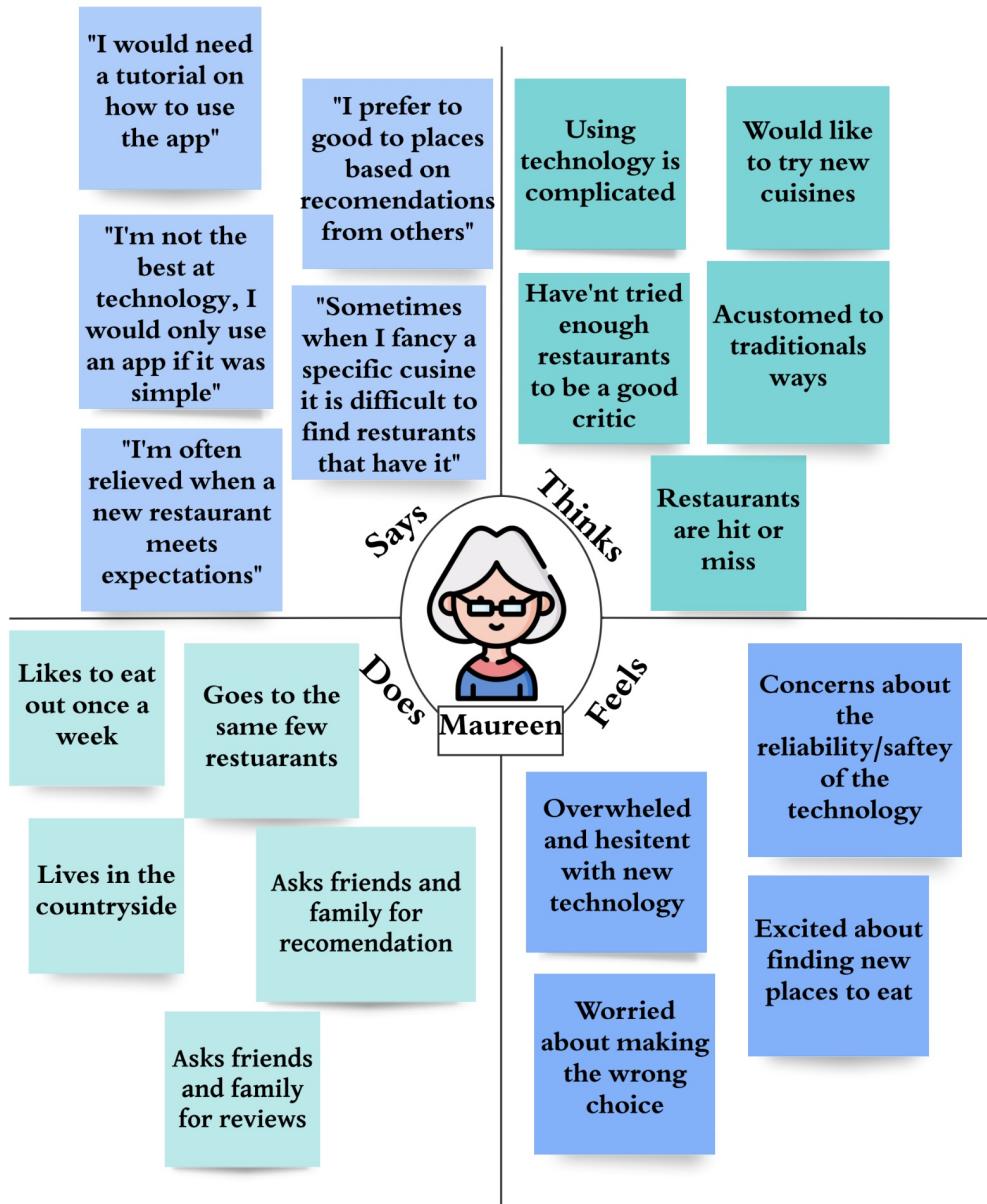


Figure 2: Empathy Map 1

Based on this interview and empathy map, TastyTour has included reassuring messages that emphasise the reliability and safety of the technology, given her worries about using unfamiliarity. Additionally, the app has highlighted the unique features and benefits of using TastyTour to find restaurants, such as personalised recommendations based on preferences and location.

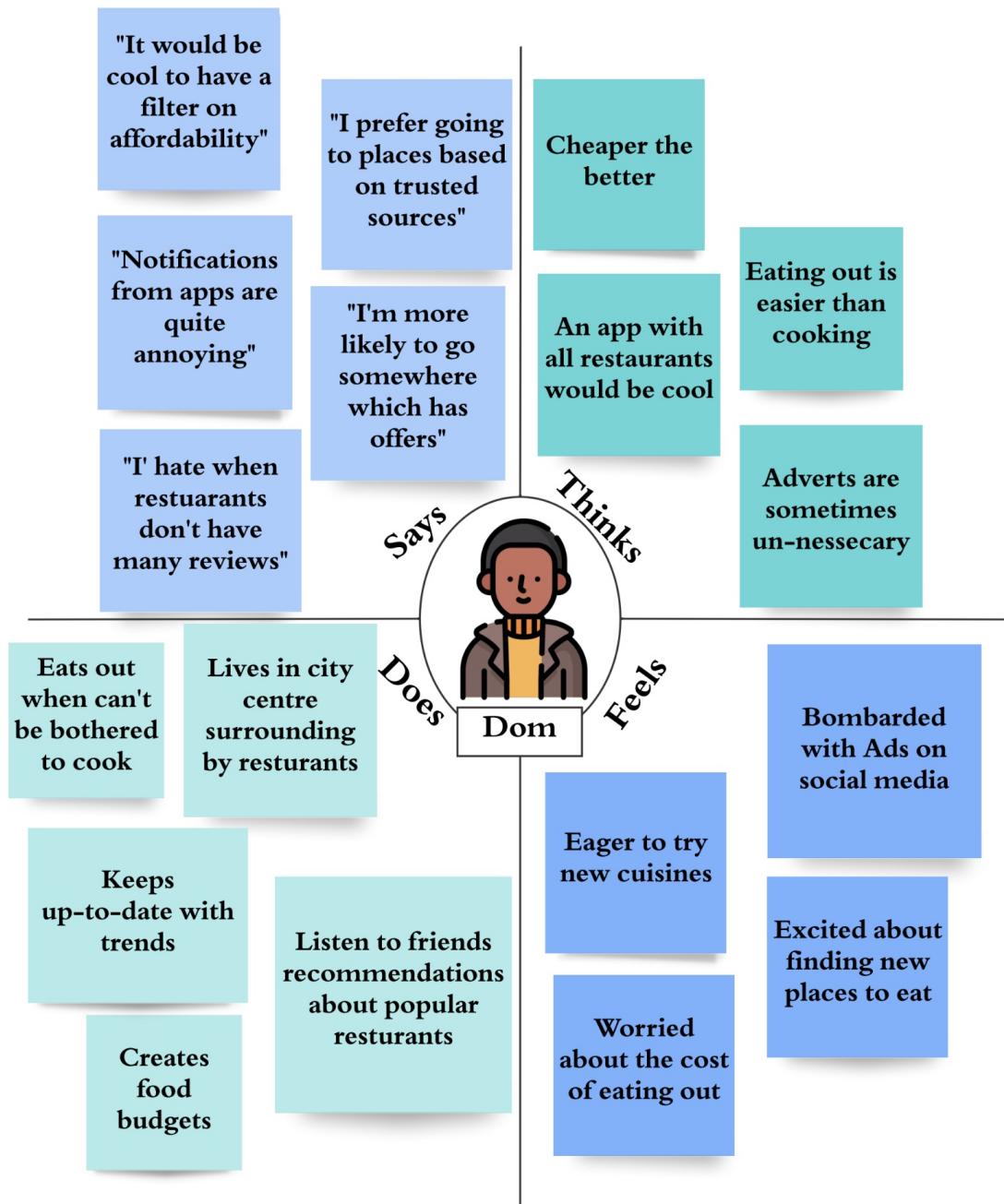


Figure 3: Empathy Map 2

Based on this empathy map, TastyTour has prioritised including features such as user reviews, price range filters, and location-based suggestions to help students find affordable and convenient dining options. The app also presents unique and trendy dining experiences, and plans to include social features that allow users to share their dining experiences with friends and followers. Additionally, the app plans to provide information on new and popular restaurants, as well as upcoming food events and festivals, to help their users stay up-to-date on the latest food trends.

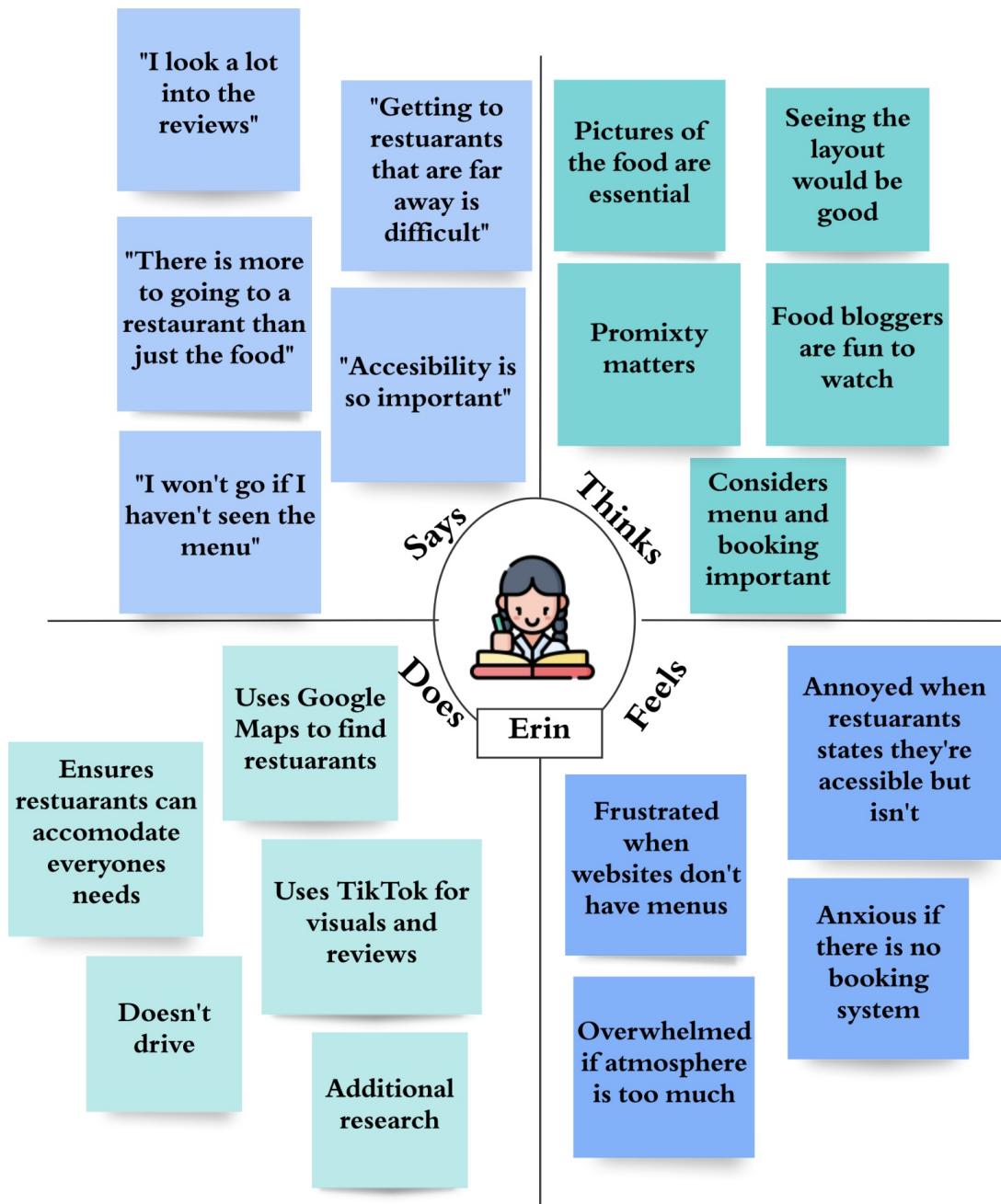


Figure 4: Empathy Map 3

TastyTour includes all restaurant menus as this was a crucial factor this interviewee. Restaurant social media accounts such as their website, Instagram and TikTok are also hyperlinked so user's can do their own research before booking. The app also allows users to book their reservations directly as a more convenient and preferred method of booking. Additionally, the platform provide information about the restaurant's atmosphere, such as noise levels and business. Accessibility is clearly presented on restaurant pages including pictures of the food, layout and any potential barriers to access for users with disabilities.

Competitor Analysis

The following competitor analysis revealed areas where TastyTour can out-do its competitors, by offering better value, superior customer service or more innovative products. By leveraging this knowledge, the application can seek competitive edge over others within the sector. Two types have been conducted based on direct and in-direct competitors. Direct competitors offer the same product and share the same goal such as three popular restaurant finder apps. Whereas indirect competitors chosen are social media platforms and google maps. Although their goal is different to TastyTour, they are still commonly used when searching for restaurant reviews, pictures or videos and then locating it. Prabhakar Raghavan, a senior vice president at Google said that in their studies almost 40% of young people use TikTok or Instagram instead of googling or searching when looking for somewhere to eat (Fortune Media, 2022). Huang also discusses how TikTok is the new search engine. She refers to a quote from Nailah Roberts, 25 who used the app to look for restaurants in Los Angeles because "you see how the person actually felt about where they ate" (2022). (*Zoom to view*)

	STRENGTHS	WEAKNESSES	KEY FEATURES	USER RATING	MISSION	UNIQUE FEATURES
	Huge user base, lots of features. There is a friendly UI and offers personalised recommendations based on user behaviour One of the most recognised reservation systems. Quick search and easily make bookings. Mobile app is popular. 50,000+ restaurants available	Fake reviews, unreliable ratings which can damage business reputation. Can be overwhelming due to the volume of information Limited availability outside of North America so restricts international market reach	<ul style="list-style-type: none"> • Reviews • Recommendations • Bookings <ul style="list-style-type: none"> • App for on-the-go • Loyalty program • Reservations <ul style="list-style-type: none"> • Bookings • Reservations 	 4.5/5 (based on 155K reviews)	"To help people around the world plan and have the perfect trip"	Personalisable planning tools Millions of reviews accessible
				 4.9/5 (based on 215K reviews)	"To power great dining experiences for diners and restaurants alike."	Invite friends to dinner via messages. Communicate directly with restaurants
	Global presence, loyalty program which provides users with incentive to return	Newer than others so harder to establish trust and credibility		 4.8/5 (based on 5K reviews)	"To connect diners with the best restaurants around the world and to help restaurants grow their business "	Photos of restaurants available Manage reservations

Figure 5: Direct Competitor Analysis

STRENGTHS	WEAKNESSES	KEY FEATURES	USER RATING	UNIQUE FEATURES
 TikTok	<p>"FoodTok" trend is popular for finding restaurants. Users can view videos from bloggers at specific restaurants</p> <p>"Explore" feature allows users to search for food based on hashtags. People often take photos of their food and post onto the platform</p> <p>Users can search for restaurants and has simple integration to location and their website</p>	<p>Algorithm can be unpredictable and challenging to find consistent reliable recommendations. Also time consuming to sit through videos</p> <p>Explore can be limited making it difficult to find specific cuisines. Visual content doesn't define quality or taste</p> <p>Some reviews are fake or biased. Platform is affected by paid promotions and advertisements</p>	<ul style="list-style-type: none"> • Reviews • Recommendations • Younger target audience • Video content <ul style="list-style-type: none"> • Photo content • Location based search • Blogger content <ul style="list-style-type: none"> • Reviews • Search function • Location information 	 4.7/5 (based on 1.8M reviews)  4.7/5 (based on 3.6M reviews)  4.7/5 (based on 677K reviews)
 Instagram				Photo-sharing capabilities
 Google Maps				Real-time traffic

Figure 6: In-direct Competitor Analysis

User Personas

Another effective way of translating the findings into a tangible tool for design and development is through the creation of user personas. Each following persona is built based on the data and insights gathered from user research, and is crafted to represent a specific segment of the target audience with unique needs, goals, frustrations and behaviours. (Zoom to view)

 **Conor**

"I keep up-to-date with all things FoodTok. I love finding hidden gems"

<p>Goals</p> <ul style="list-style-type: none"> • Find hidden gem restaurants • Have reviews reliability 	<p>Frustations</p> <ul style="list-style-type: none"> • Some great restaurants don't have social media • Dislikes bland cuisines
---	---

Age: 36 **Education:** A Levels **Location:** London **Family:** Single **Occupation:** Associate **Dietary:** Foodie

Requirements:

Conor, a foodie in his mid-30s who loves trying out new and exotic cuisines. He values the opinion of other food enthusiasts and often relies on online reviews and social media recommendations when selecting a restaurant. He enjoys spending time exploring and finding hidden gem restaurants in the city.

(a) Conor

 **Samirah**

"I'm excited to try new foods and connect with a community of like-minded individuals who share my passion for culinary exploration and cultural appreciation."

<p>Goals</p> <ul style="list-style-type: none"> • Looking for ways to expand her culinary horizons and try new foods and flavors that align with her cultural traditions 	<p>Frustations</p> <ul style="list-style-type: none"> • Struggles with navigating family expectations and cultural traditions when it comes to food • has limited time and resources to explore new dining experiences on her own
--	--

Age: 24 **Education:** BEng **Location:** Birmingham **Family:** Single **Occupation:** Graduate **Dietary:** None

Requirements:

Samirah recently graduated lives at home with her family and has limited control over her food choices. Samirah's family is of South Asian descent and places a strong emphasis on traditional and cultural foods, which can sometimes feel limiting or repetitive

(b) Samirah

 **Trevor**

"I may not be the most tech-savvy person out there, but I can definitely appreciate the convenience of using an app. I value comfortable and relaxed atmospheres, good service, and classic, traditional cuisines."

<p>Goals</p> <ul style="list-style-type: none"> • Use technology to make restaurant reservations conveniently and easily • Enjoy eating out with friends 	<p>Frustations</p> <ul style="list-style-type: none"> • Difficulty in finding restaurants that offer the type of cuisine and atmosphere that he enjoys • Dealing with technology and apps that may be difficult to navigate or understand
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Age: 63 **Education:** PhD **Location:** Bristol **Family:** Married **Occupation:** Retired **Dietary:** Diabetes

Requirements:

Trevor, a retiree in his 60s who enjoys dining out with friends. He values comfortable and relaxed atmospheres, good service, and classic, traditional cuisines. He may not be as tech-savvy as younger users, but still appreciates the convenience of being able to find and make reservations through a restaurant finding app.

(c) Trevor

 **Leona**

"I may be on a tight budget, but that doesn't mean I can't treat myself to a good meal with a great deal."

<p>Goals</p> <ul style="list-style-type: none"> • To be able to enjoy eating out without breaking her budget • Locate budget-friendly restaurants without sacrificing quality 	<p>Frustations</p> <ul style="list-style-type: none"> • Inability to find deals and discounts that fit her preferences • Limited options for affordable dining
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Age: 20 **Education:** Undergrad **Location:** Manchester **Family:** Single **Occupation:** Student **Dietary:** None

Requirements:

Leona, a college student in her early 20s who is on a tight budget but still enjoys eating out. She often looks for restaurants with special deals and discounts, and values the ability to order food online and have it delivered.

(d) Leona

Figure 7: User Personas

User Flows

To chart the steps a user would take when interacting with the app, a user flow was created. It highlighted pain areas, drop-offs, and chances to improve the user experience as well as get a better understanding of TastyTour. In this instance the user flow showed that when a user searched for a restaurant without any filters they would be presented with a long list of cuisine types to choose from. A list likely to be overwhelming. Adjustments were made by introducing filters including, price, cuisine, atmosphere to help users tailor to their preferred dining experience.

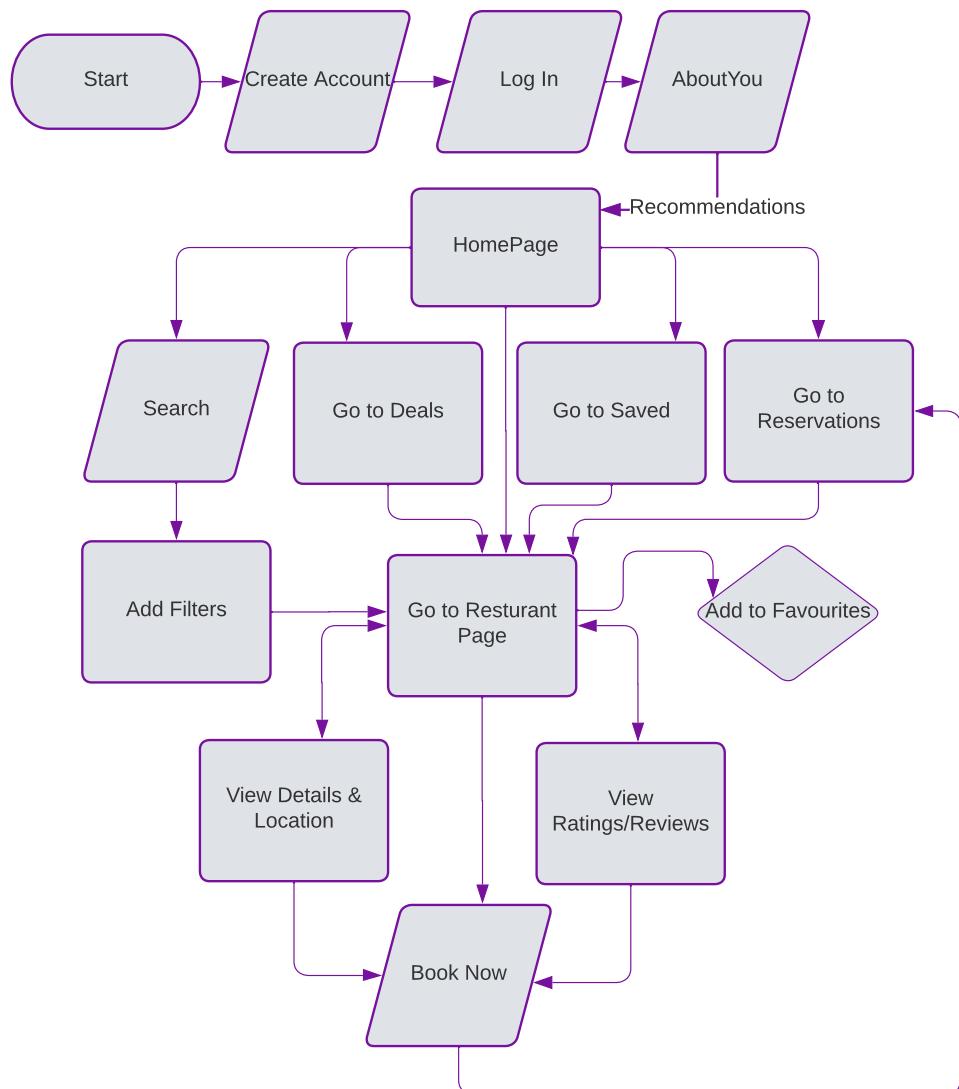


Figure 8: UserFlow

1.3 Wireframes

Low-Fidelity

In this project, a low fidelity wire-frame was utilised to help design the app's user interface. It helped create a basic visual representation of layout and functionality before investing time in creating high-fidelity designs. This allowed for quick iterations and modifications to be made to the overall design, which helped to refine the user experience and ensure that TastyTour's core features were well-defined. Low Fidelity wire-frame can be seen in Figure .

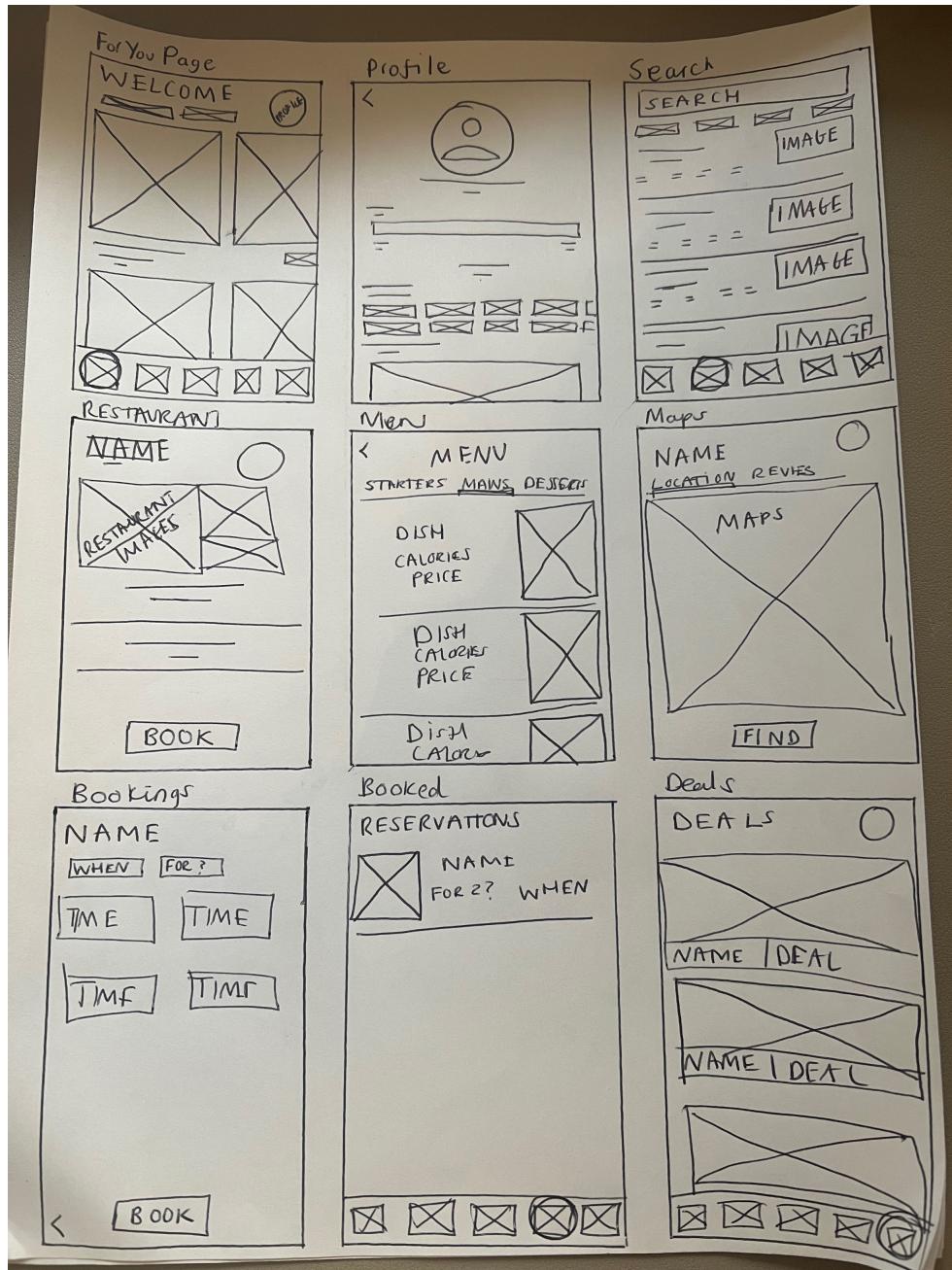


Figure 9: Low-Fidelity Wire-frame

High-Fidelity

Figma was used to produce high-fidelity wire-frames that can be seen in Figures 10-13. They offer a more polished and accurate depiction of the intended application. The creation gives a more realistic picture of the final user interface, which made it simpler to envisage the outcome and spot any problems early on.

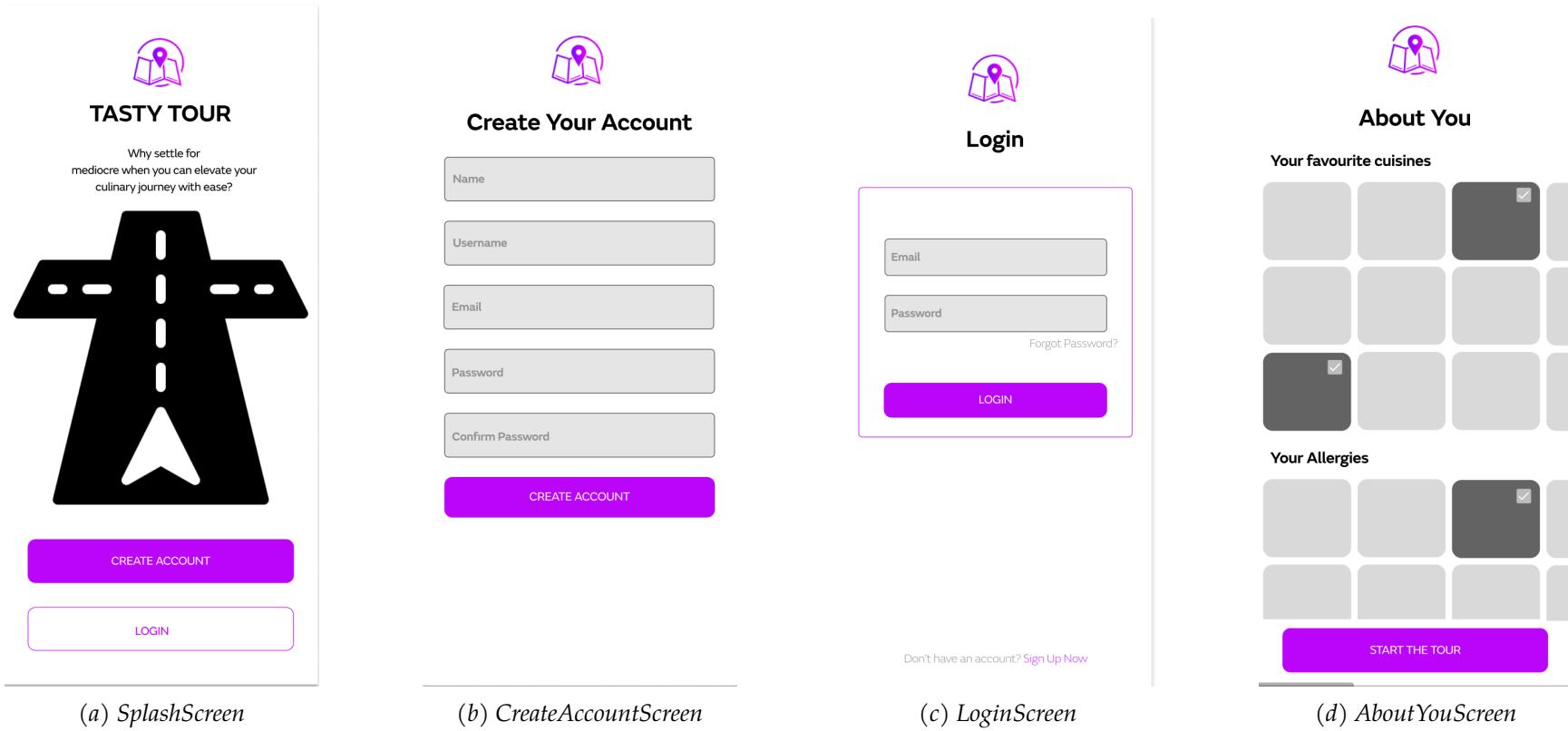


Figure 10: Welcoming UIs

(a) ForYouPage

Good Morning, John

For You Experiences

Today 10:00, 2 2 Current Location

Grab Yourself Breakfast

CafeTwoTen £ • English • ★ 4.1 10:45 11:00 11:30

Grounded Kitchen £ • English • ★ 4.4 11:00 11:15

View All

Why not Brunch?

Tree House Cafe ££ • English • ★ 4.3 10:45 11:00 11:30

Bill's ££ • American • ★ 4.5 10:45 11:00

View All

Home Search Saved Reservations Deals

(b) ExperiencesPage

Good Morning, John

For You Experiences

Today 10:00, 2 2 Current Location

Suggestions

Afternoon Tea Oreille Birmingham Mar 19 £30 per person

Join us for Mother's Day Celebrations

View All

Bottomless Brunch

International Women's Day

Happy Mother's Day

Home Search Saved Reservations Deals

(c) ProfilePage

John Doe Member Since November 2022

Points

Earned 208 Next Reward

About You

Dining Preferences

Vegan Gluten Free Vegetarian

Nut Allergy Lactose Celiac

Important Dates

Birthday

Jan	Feb	Mar
Apr	May	Jun
Jul	Aug	Sep

Sign Out

Home Search Saved Reservations Deals

(d) SearchPage

Search Current Location

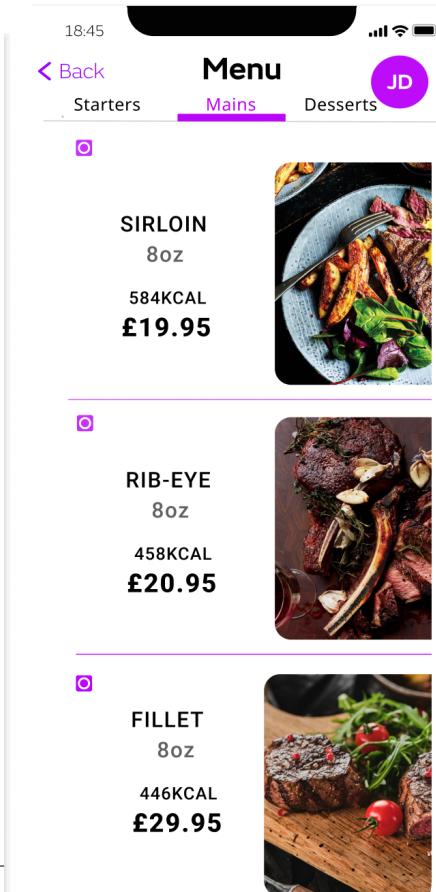
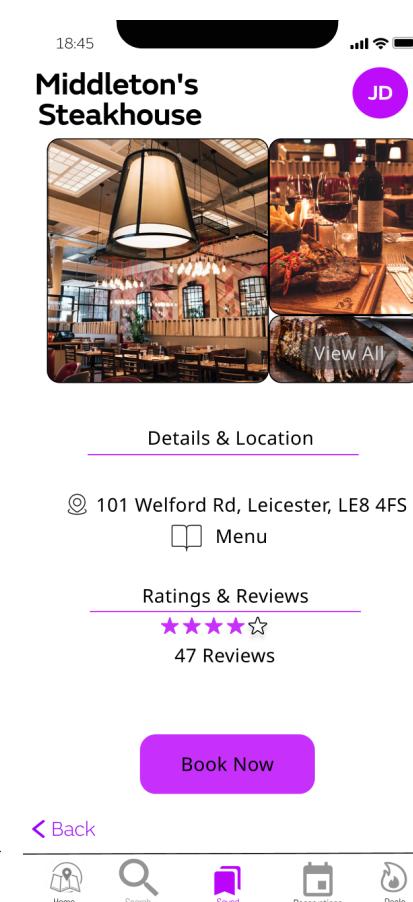
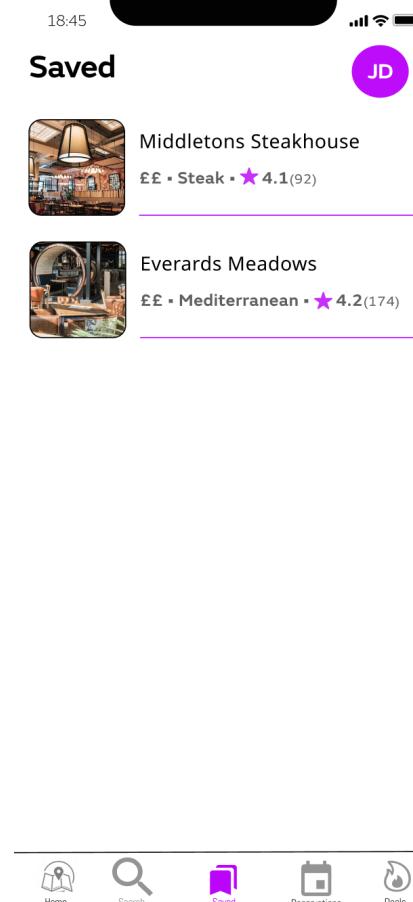
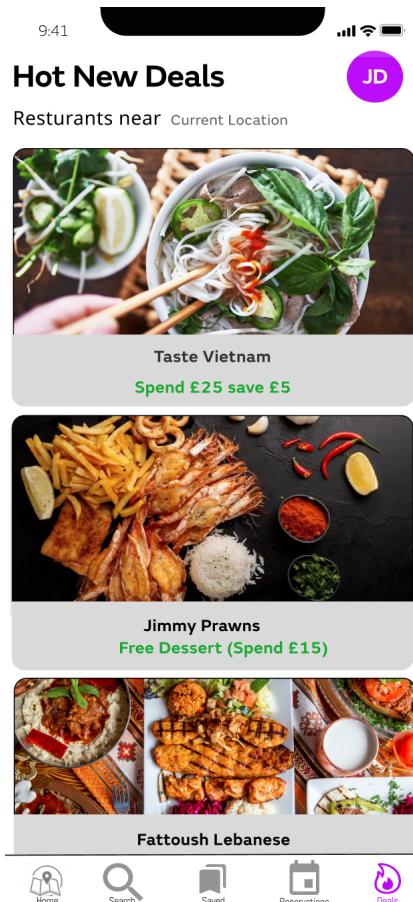
Filter Buttons: Cuisine, Atmosphere, Seating

86 Restaurants Found Nearby

- Middletons Steakhouse ££ • Steak • ★ 4.1(92)
- Everards Meadows ££ • Mediterranean • ★ 4.2(174)
- Middletons Steakhouse ££ • Steak • ★ 4.1(92)
- Everards Meadows ££ • Mediterranean • ★ 4.2(174)
- Everards Meadows ££ • Mediterranean • ★ 4.2(174)

Home Search Saved Reservations Deals

Figure 11: Dashboard & Search UIs



Middleton's Steakhouse

Location Rating & Reviews

Rating (1,451) Write a review

Traveller type Time of year Language

Rating: 1,346 Families Mar-May All languages
2nd 78 Couples Jun-Aug English (1,450)
3rd 6 Solo Sep-Nov Danish (1)
4th 10 Business Dec-Feb

What mention

Sort by: Most Recent

Review reviews

brunch burger great drinks friends birthday food was amazing great atmosphere nice fast service lovely meal sam britney server beatriz rian chanel

Reviewed yesterday via mobile
Celebratory meal & drinks
As always, the restaurant has a great atmosphere with exquisite food and gorgeous cocktails.
On this particular occasion, we had the lovely Clara serving us. Not only welcomed with a warm friendly smile, anything asked was no trouble at all.
The cocktails and food were served sharply, especially considering it was at peak time or a Saturday evening where the whole place was brimmed with customers.
A lovely evening was endured, to which we will be back again soon.
Date of visit: February 2023

Ask Smithhd101 about Turtle Bay, Coventry

Book Now

Find

Home Search Saved Reservations Deals

(a) ReviewsPage

Middleton's Steakhouse

Location Rating & Reviews

Map

Rating (1,451) Write a review

Traveller type Time of year Language

Rating: 1,346 Families Mar-May All languages
2nd 78 Couples Jun-Aug English (1,450)
3rd 6 Solo Sep-Nov Danish (1)
4th 10 Business Dec-Feb

What mention

Sort by: Most Recent

Review reviews

brunch burger great drinks friends birthday food was amazing great atmosphere nice fast service lovely meal sam britney server beatriz rian chanel

Reviewed yesterday via mobile
Celebratory meal & drinks
As always, the restaurant has a great atmosphere with exquisite food and gorgeous cocktails.
On this particular occasion, we had the lovely Clara serving us. Not only welcomed with a warm friendly smile, anything asked was no trouble at all.
The cocktails and food were served sharply, especially considering it was at peak time or a Saturday evening where the whole place was brimmed with customers.
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Date of visit: February 2023

Ask Smithhd101 about Turtle Bay, Coventry

Find

Home Search Saved Reservations Deals

(b) MapPage

Middleton's Steakhouse

Tonight 2 people

Availability

19:45 20:00 20:30

Book

Find

Home Search Saved Reservations Deals

(c) BookingPage

Reservations

Middletons Steakhouse 2 people Tonight at 19:45

Find

Home Search Saved Reservations Deals

(d) ReservationsPage

User Journey Map

A user journey map was created, to visualise the steps that a user takes when interacting with the app. The map showed the user's initial actions such as browsing the menu, selecting an restaurant, saving a page, and booking. It also highlighted the possible roadblocks or confusion that the user may encounter during the process. From this, adjustments were made to the user flow and design to ensure a smooth and seamless experience for the user. (Zoom to view)

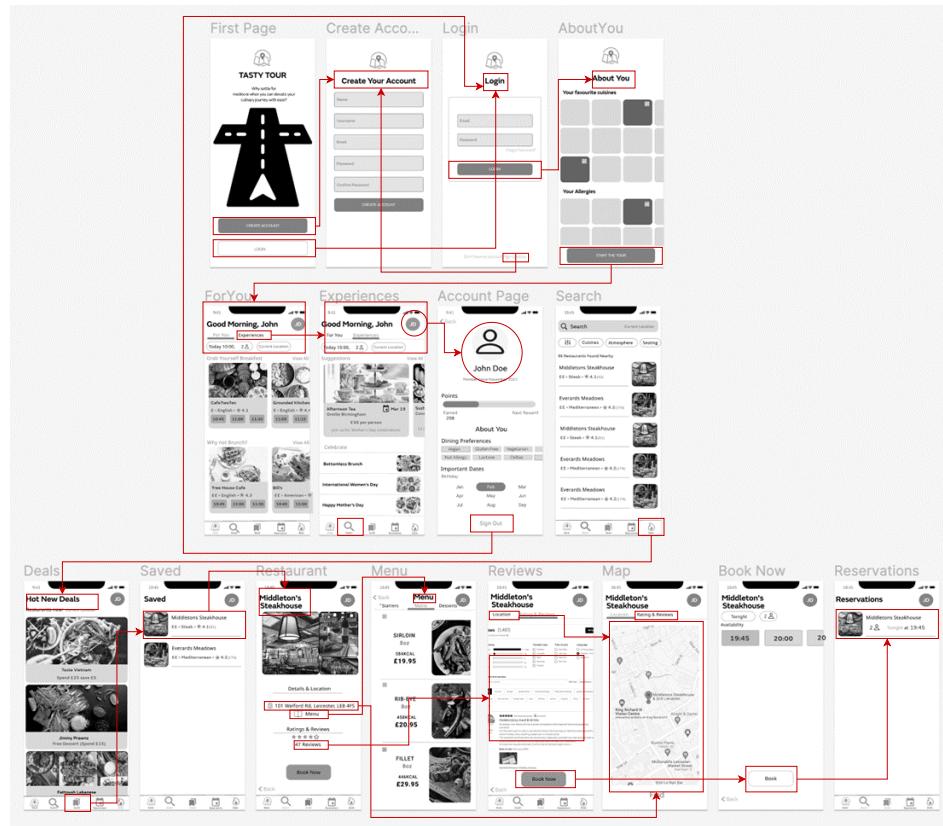


Figure 14: User Journey Map

Usability Testing

Usability testing has been crucial throughout development because it has helped identify issues or areas of improvement in the app's design, functionality, and user experience. Testing was conducted by sharing the wire-frames and sending out a survey to gain feedback. By testing the wire-frame with real users, valuable insights have been gained into how people would use the app and what features they find helpful or frustrating. Feedback has been used to improve the app and make it more user-friendly through android studio development. Responses for survey can be found in this [Microsoft Forms](#) and Table 1 visualised key feedback and actions it derived.

What's missing?	Adjustments Made
"Connect social media accounts to restaurants"	Hyperlinked accounts on the restaurant pages
"Option to switch to dark mode"	Dark mode toggle on profile page
"Prices and full menu"	Full menu's linked on restaurant page
"Add reservation to calendar"	Option to add to outlook or google calendar

Table 1: Survey Key Feedback

1.4 Android Studio Development

TastyTour has been developed using Android Studio. Its powerful code editor, advanced debugging tools, and extensive libraries and APIs made it an excellent choice for developers looking to create high-quality, feature-rich applications. By leveraging Android Studio's capabilities, the app has been designed not only for visual aesthetics, but also has intuitive, user-friendly, and delivered a seamless experience for users. Github repository for this can be seen <https://github.com/u1943205/TastyTour>

Firebase is a cloud-based platform provided by Google that has been used for the authentication TastyTour users. It also stores these users in a real-time database so they can be synced and stored. Using this platform has enabled the scalability and security of TastyTour users and allows for simple integration in the future. Steps to connect firebase can be seen in Appendix A and the supplementary folder titled *U1943205_ScreenRecordings* provides videos throughout the development of TastyTour.

UX Design Choices

During the creation of TastyTour, various UX design choices were made to ensure a seamless user experience. The navigation system was kept simple and intuitive, enabling users to access different sections of the app with ease. To maintain consistency throughout the app, a unified colour palette and typography were used.

Key Features Used

Component	Reason for Use
Activity	Provide a way to manage the lifecycle of the app and its user interface
Fragment	Allow for more flexible and modular app design creating a more complex and responsive user interface
Binding	Simplifies the previous error-prone and verbose method of referencing views making it easy to read
Progress Dialog	Provide feedback to users and prevent them from interacting with the app while a task is running. This enhances UX by preventing confusion or frustration
Toast	Communicates information without interrupting the user's workflow or requiring them to take any action
Models	Separate the restaurant data from the UI so it can be easily modified. Can reuse code whilst avoiding duplication
Adapters	Provides a bridge between the UI components and the data to efficiently reuse views as the user scrolls the list
Filters	Allow users to quickly find and view specific data that matches certain criteria

Table 2: Android Studio Features Table

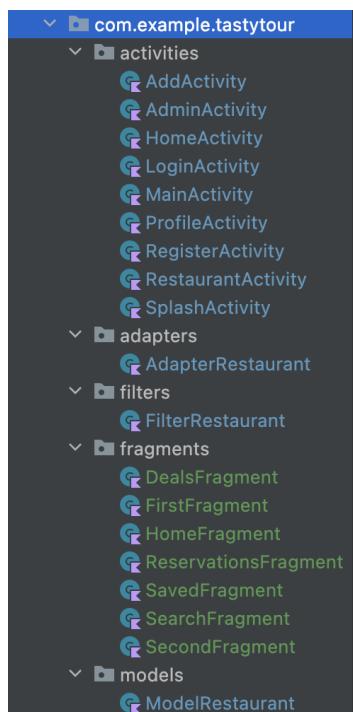
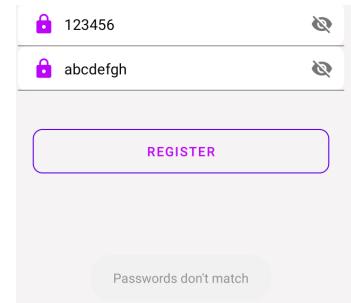
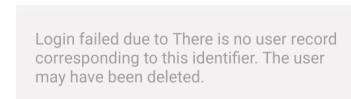


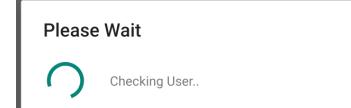
Figure 15: File Structure



(a) Toast Example



(b) Error Handling



(c) Process Dialog

Figure 16: Toast and Process Dialog

User Authentication

Before users can enter the application they must have created an account and logged in. Firebase authentication and the real-time database connection only allows authenticated registered user onto the platform. Listings 1 and 2 visualises the code that enables this. If a user has entered incorrect information or is not registered dialogue will appear to prompt them. The dialogue will also tell users if their login was unsuccessful due to an invalid email or password. A screen recording titled *U1943205_TastyTour_UserAuthentication* visualises these steps.

```

private fun validateData(){
    //input data
    name = binding.nameEt.text.toString().trim()
    email = binding.emailEt.text.toString().trim()
    password = binding.passwordEt.text.toString().trim()
    val cPassword = binding.conpasswordEt.text.toString().trim()
    //validate data
    if (name.isEmpty()){
        //name is blank
        Toast.makeText(this,"Enter Name",Toast.LENGTH_SHORT)
        .show()
    }
    else if(!Patterns.EMAIL_ADDRESS.matcher(email).matches()){
        //invalid email address
        Toast.makeText(this,"Invalid Email",Toast.LENGTH_SHORT)
        .show()
    }
    else if(password.isEmpty()){
        //password is blank
        Toast.makeText(this,"Enter Password",Toast.LENGTH_SHORT)
        .show()
    }
    else if (password != cPassword){
        Toast.makeText(this,"Passwords don't match",Toast.LENGTH_SHORT).show()
    }
    else{
        createuserAccount()
    }
}

private fun createuserAccount() {
    //create account through firebase auth
    progressDialog.setMessage("Creating Account...")
    progressDialog.show()
    //create user in firebase auth
    firebaseAuth.createUserWithEmailAndPassword(email,password)
        .addOnSuccessListener {
            //creating account
            updateUserInfo()
        }
        .addOnFailureListener{ e->
            //failed to create account
            progressDialog.dismiss()
            Toast.makeText(this,"Failed to create account due to ${e.message}",Toast.LENGTH_SHORT).show()
        }
}

```

Listing 1: RegisterActivity

```

private fun validateData() {
    // Get user input
    email = binding.emailEt.text.toString().trim()
    password = binding.passwordEt.text.toString().trim()
    // Validate user input
    if (!Patterns.EMAIL_ADDRESS.matcher(email).matches()) {
        Toast.makeText(this, "Invalid Email", Toast.LENGTH_SHORT).show()
    } else if (password.isEmpty()) {
        Toast.makeText(this, "Enter Password", Toast.LENGTH_SHORT).show()
    } else {
        LoginUser() // Log in user if input is valid
    }
}

private fun LoginUser() {
    progressDialog.setMessage("Logging In...")
    progressDialog.show()
    // Sign in user using Firebase authentication
    firebaseAuth.signInWithEmailAndPassword(email, password)
        .addOnSuccessListener {
            // If successful, check user type and move to corresponding activity
            checkUser()
        }
        .addOnFailureListener { e ->
            // If login fails, dismiss progress dialog and show error message
            progressDialog.dismiss()
            Toast.makeText(this, "Login failed due to ${e.message}", Toast.LENGTH_SHORT).show()
        }
}

private fun checkUser() {
    progressDialog.setMessage("Checking User...")
    // Get current Firebase user and check their user type
    val firebaseUser = firebaseAuth.currentUser!!
    val ref = FirebaseDatabase.getInstance().getReference("Users")
    ref.child(firebaseUser.uid)
        .addListenerForSingleValueEvent(object : ValueEventListener {
            override fun onCancelled(error: DatabaseError) {}
            override fun onDataChange(snapshot: DataSnapshot) {
                progressDialog.dismiss()
                val userType = snapshot.child("userType").value
                if (userType == "user") {
                    // Move to home activity for regular users
                    val intent = Intent(this@LoginActivity, HomeActivity::class.java)
                    startActivity(intent)
                    finish() // Finish current activity
                } else if (userType == "admin") {
                    // Move to admin activity for admin users
                    val intent = Intent(this@LoginActivity, AdminActivity::class.java)
                    startActivity(intent)
                    finish() // Finish current activity
                }
            }
        })
}

```

Listing 2: LogInActivity

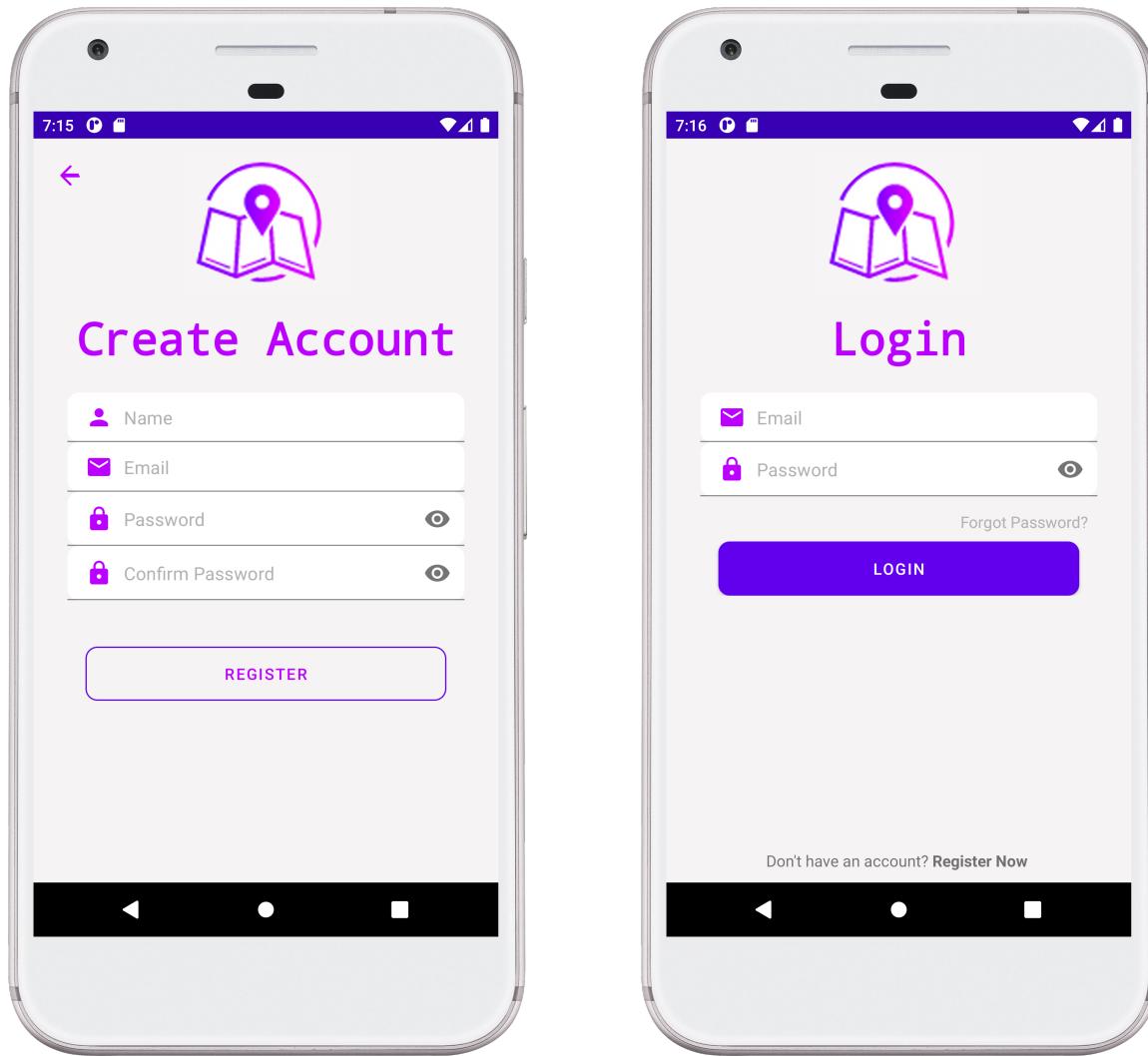


Figure 17: User Authentication

Users

TastyTour app has two user types: Admin and User. The admin has abilities to add restaurants to the application and the user can view the app as normal. Screen recording titled *u1943205_AdminPage* shows the Admin View.

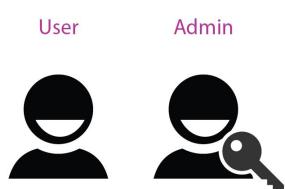
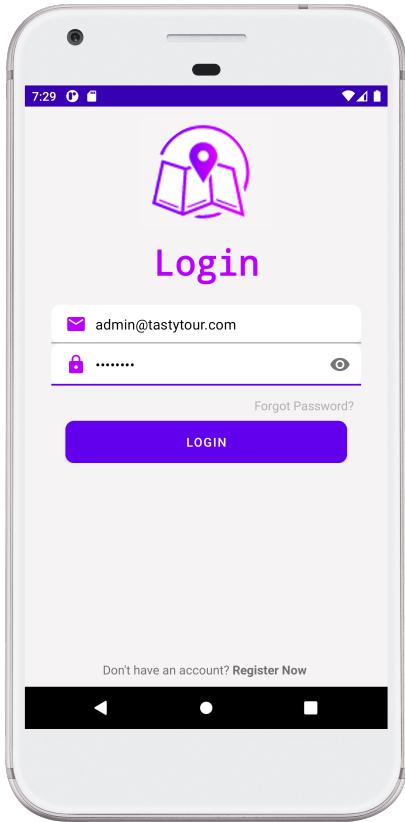
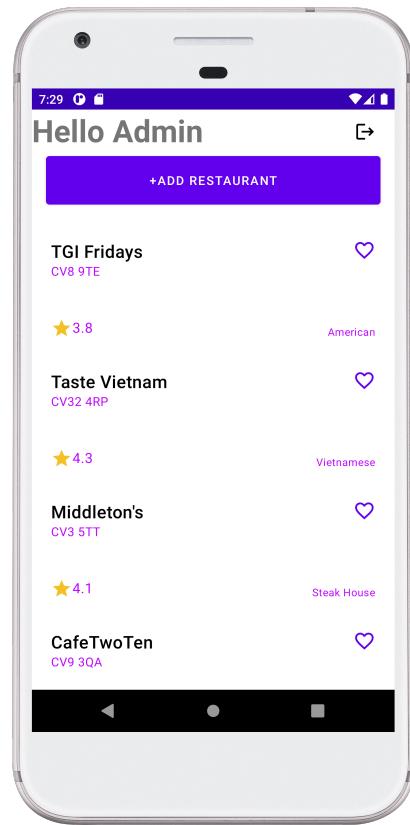


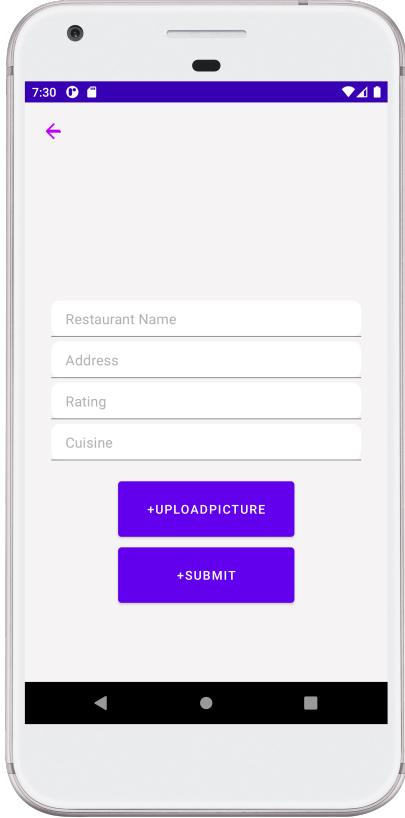
Figure 18: Users



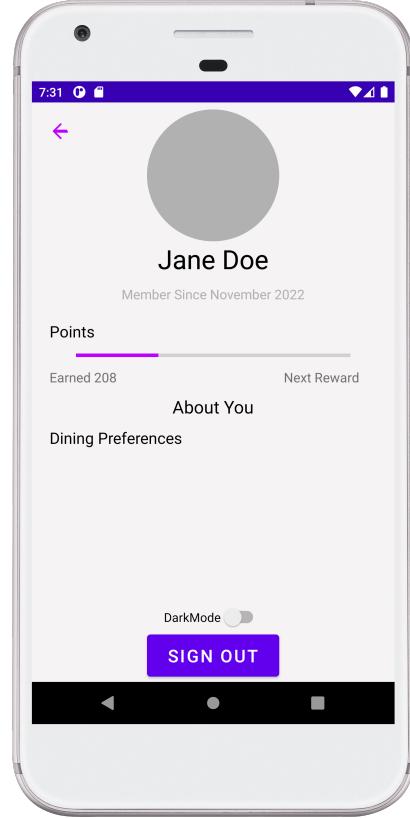
(a) Admin Login



(b) Admin Home



(c) Add a Restaurant



(d) User Profile

Figure 19: User/Admin Views

Application Layout

TastyTour has implemented a bottom navigation bar so that a more complex and versatile user interface could be developed. It allows for quick access, clear navigation and improved usability. It remains at the bottom of the page and users simply switch between different fragments, each of which displays a different content. Screen recording *u1943205_TastyTour* shows the fragments that go to:

- HomePage
- SearchPage
- SavedPage
- ReservationsPage
- DealsPage

```

class HomeActivity : AppCompatActivity() {
    private lateinit var binding: ActivityHomeBinding
    private lateinit var firebaseAuth: FirebaseAuth
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)

        binding = ActivityHomeBinding.inflate(layoutInflater)
        setContentView(binding.root)
        replaceFragment(HomeFragment())

        binding.bottomNavigationView.setOnItemSelectedListener {
            when(it.itemId){
                R.id.home -> replaceFragment(HomeFragment())
                R.id.search -> replaceFragment(SearchFragment())
                R.id.saved -> replaceFragment(SavedFragment())
                R.id.reservations -> replaceFragment(ReservationsFragment())
                R.id.deals -> replaceFragment(DealsFragment())
                else ->{
                }
            }
            true
        }
        firebaseAuth = FirebaseAuth.getInstance()
    }
    private fun replaceFragment(fragment: Fragment) {

        val fragmentManager = supportFragmentManager
        val fragmentTransaction = fragmentManager.beginTransaction()
        fragmentTransaction.replace(R.id.frameLayout, fragment)
        fragmentTransaction.commit()
    }
}

```

Listing 3: NaviagtionBarFragments

Restaurant Finding and Saving

The app utilised a RecyclerView to display the list of restaurants. A custom adapter was created to manage this list, create views for each item, and bind data to each view. Filtering was implemented using a search bar, which updated the list of restaurants in the adapter to display only those that matched the search criteria.

```
// Loop through the filterList to find matches for the constraint
for (i in 0 until filterList.size) {
    if (filterList[i].restaurant.uppercase().startsWith(constraint)) {
        filteredModels.add(filterList[i])
    }
}
```

Listing 4: Search Logging

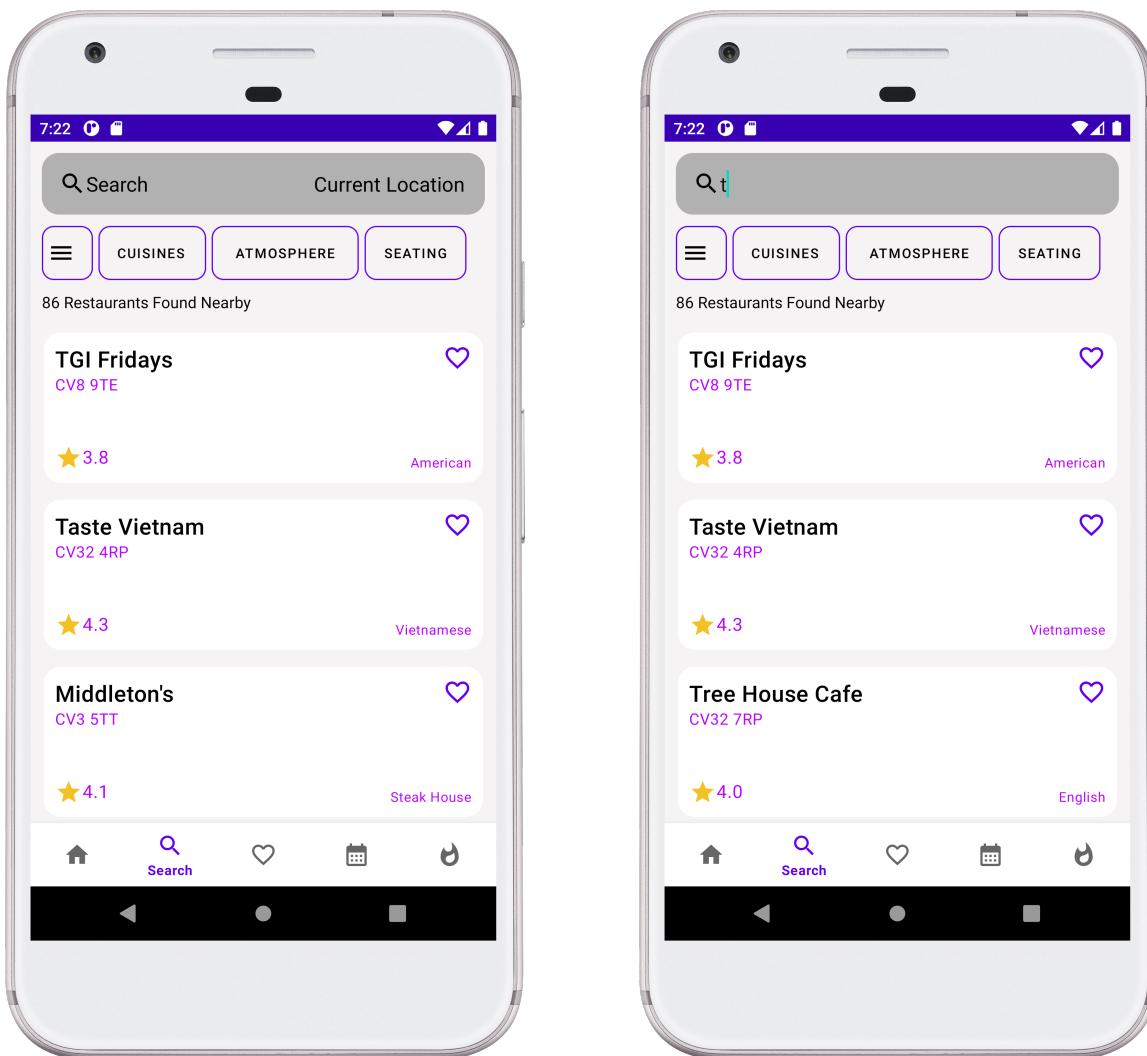


Figure 20: Search Functionality

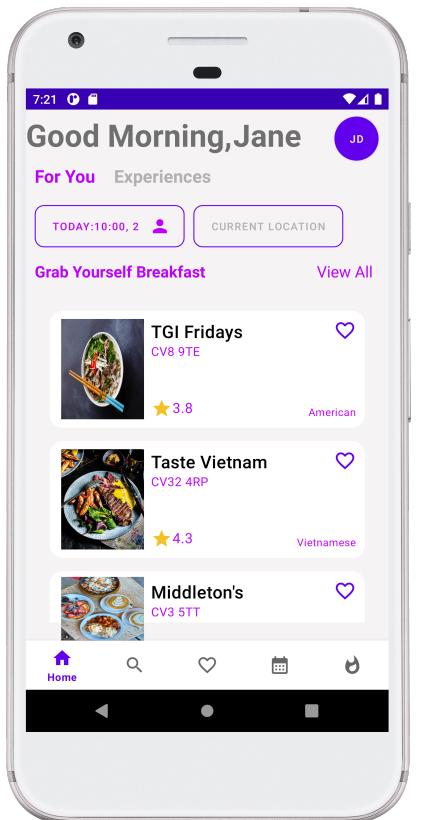
A feature was implemented in the app to allow users to mark a restaurant as saved. This was achieved by adding a Boolean flag to the Restaurant model class. A heart-shaped icon was added to each item in the RecyclerView, which changed colour to indicate whether the restaurant was saved or not. The saved fragment displays a list of all the restaurants that the user had marked as saved.

```
// Define onClickListener for favourite button
binding.faveTv.setOnClickListener {
    model.isFavorite = !model.isFavorite
    if (model.isFavorite) {
        binding.faveTv.setBackgroundResource(R.drawable.baseline_favorite_24)
        Toast.makeText(binding.root.context, "Added to favourites",
                      Toast.LENGTH_SHORT)
            .show()
    } else {
        binding.faveTv.setBackgroundResource(R.drawable.baseline_border_24)
        Toast.makeText(
            binding.root.context,
            "Removed from favourites",
            Toast.LENGTH_SHORT
        ).show()
    }
}
// Define onClickListener for the whole row
binding.root.setOnClickListener {
    // Create a new instance of destination fragment
    val destinationFragment = SavedFragment()
    // Pass data as arguments to the destination fragment
    val bundle = Bundle().apply {
        putString("restaurant", model.restaurant)
        putString("location", model.location)
    }
    destinationFragment.arguments = bundle
    // Navigate to the destination fragment
    val transaction =
        (binding.root.context as AppCompatActivity).supportFragmentManager.
        beginTransaction()
    transaction.replace(R.id.restaurantsRv, destinationFragment)
    transaction.addToBackStack(null)
    transaction.commit()
}
```

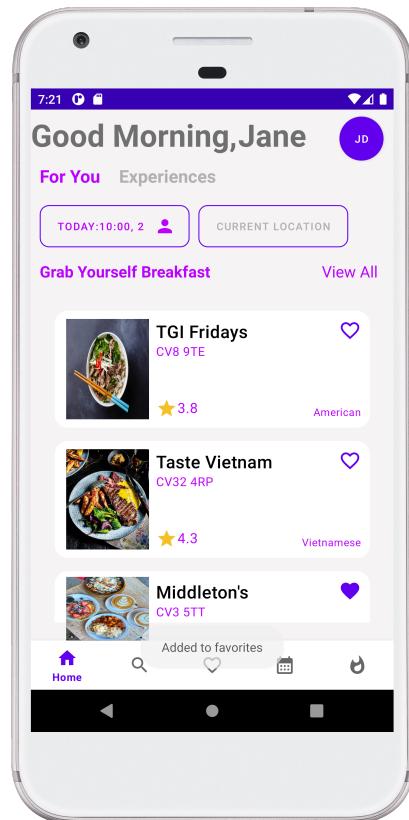
Listing 5: Save Logic

```
<androidx.recyclerview.widget.RecyclerView
    android:id="@+id/restaurantsRv"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_below="@+id/nearbytv"
    android:layout_marginStart="5dp"
    android:layout_marginTop="0dp"
    android:layout_marginEnd="5dp"
    android:layout_marginBottom="5dp"
    app:layoutManager="androidx.recyclerview.widget.LinearLayoutManager"
    tools:listitem="@layout/saved_restuarant" />
```

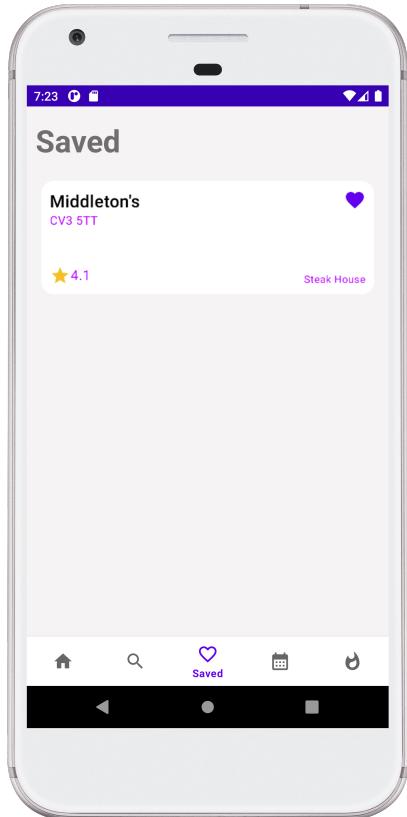
Listing 6: Saved XML



(a) Home Nothing Saved



(b) Added to Favourites

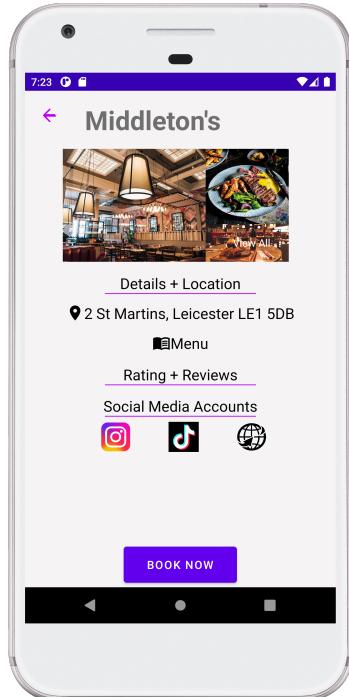


(c) Saved Page

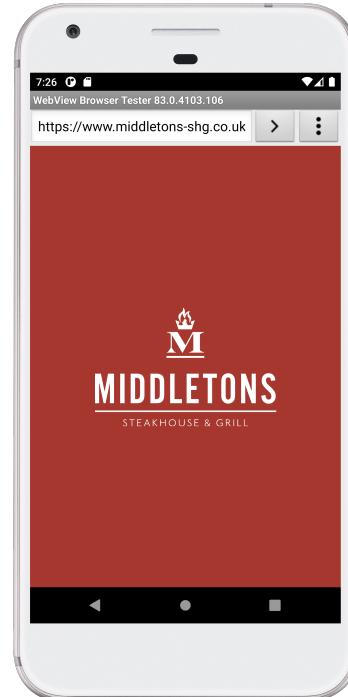
Figure 21: Saved Middleton's

Restaurant Details

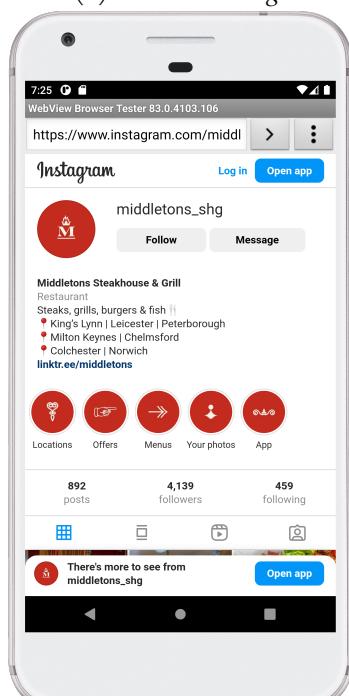
Screen recording title *u1943205_RestuarantDetails* shows additional details. It works by extending user permissions of the internet and location.



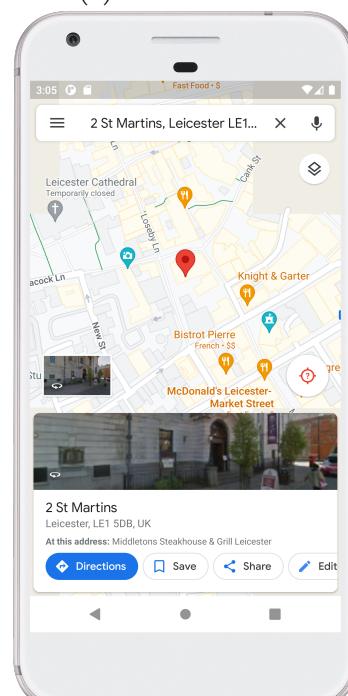
(a) Restaurant Page



(b) Full Menu URL



(c) Instagram URL



(d) Google Maps URL

Figure 22: User/Admin Views

Application Integration

TastyTour has completed most functionality. Ongoing testing is currently being carried out to identify any issues or bugs that may have been overlooked during development. This is an essential step in ensuring that the app is stable and user-friendly before release. Full Unit Test can be seen in the Appendix.

```
@RunWith(AndroidJUnit4::class)
class FavouriteUnitTest {
    // Set up the test by creating a new instance of the model and binding
    @Before
    fun setUp() {
        model = ModelRestaurant("Restaurant", "Location", false)
        binding = mockk(relaxed = true)
    }
    // Define a test for clicking the favorite button and adding to saved
    @Test
    fun 'click favorite button adds restaurant to favorites'() {
        // Set the model's isFavorite property to false
        model.isFavorite = false
        // Use mockk to mock the context and return the application context
        every { binding.root.context } returns ApplicationProvider
            .getApplicationContext()
        // Call the favoriteButtonClickListener method on the model
        model.favoriteButtonClickListener(binding)

        // Assert that the model's isFavorite property is true
        assertTrue(model.isFavorite)
        // Verify that the savedTv background resource is set to the favorite icon
        // Display Toast
        verify(exactly = 1) {
            binding.savedTv.setBackgroundResource(R.drawable.baseline_favorite_24)
            Toast.makeText(binding.root.context, "Added to favorites",
                Toast.LENGTH_SHORT).show()
        }
    }
}
```

Listing 7: IntegrationTesting

After the testing phase is complete, the plan is to publish the app on the Google Play Store. Platform-specific guidelines and regulations have been researched and implemented to ensure compliance.



Figure 23: Application Development Steps

2 Part Two: UX Design Portfolio - Tutor Tree

TUTOR TREE

Tutoring Application
UX Portfolio

Tools





ABOUT PROJECT

What is Tutor Tree?

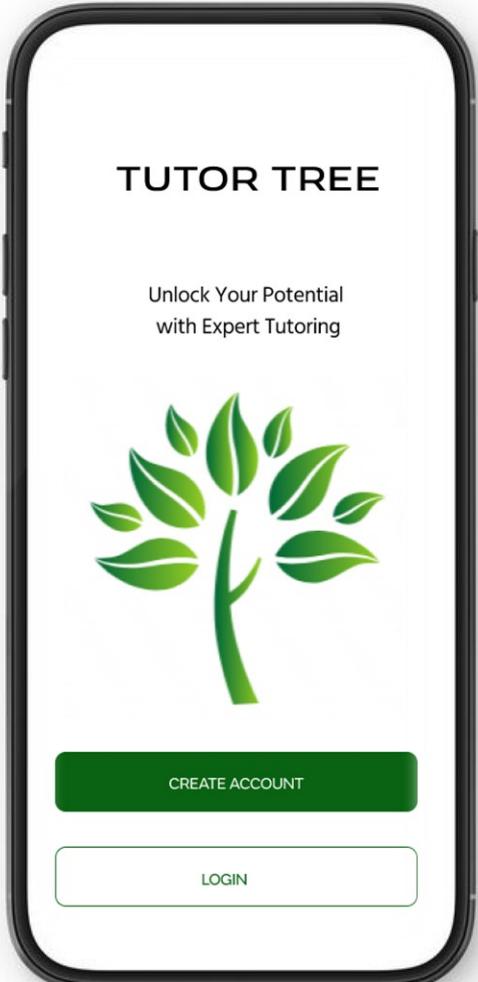


Pursuing academic success is an ongoing journey. For many students, tutoring is an essential component that has proven to be a game-changer in their educational path. However, finding a tutor that matches certain needs and learning styles can be a challenging and time-consuming process.

Fortunately, Tutor Tree has made the search for the perfect tutor easier than ever before.

Tutor Tree is a smart and intuitive solution that effortlessly matches students with the best-suited tutors, providing the extra help and guidance needed to reach their academic goals. This section of the report will explore the features of Tutor Tree and how it can help unlock potential and propel students towards success.





Problem Statement

- Students may struggle to find qualified tutors in their area or within their schedule, limiting their access to academic support.
- Many students may not have the resources or support at home to excel in their studies, leading to gaps in knowledge and understanding.
- Traditional tutoring services can be expensive and inaccessible to students from lower-income families, perpetuating educational inequality.

Solution

Tutor Tree is an application that can;

- Connect students with a wide range of qualified tutors, increasing their access to academic support and expanding their options.
- Provide a convenient and affordable way for students to receive academic support and guidance, regardless of their socioeconomic background or location.
- Offer a variety of resources and tools, such as personalised learning plans, progress tracking, and 24/7 access to support, to help students overcome gaps in knowledge and excel in their studies.





DESIGN PROCESS

Research

Research the tutoring industry, including trends, demographics, and challenges. Identify user needs and pain points. Explore potential solutions.

Define

Define app's scope, goals, tutoring services, target users, and key features. Create user personas and scenarios to guide development.

Ideate

Brainstorm tutoring features, create wireframes and prototypes to explore design options.

Design

Create high-fidelity mockups and prototypes, refine app's visual design and branding.

Test

Conduct user testing and feedback sessions, evaluate usability and effectiveness. Use results to inform further iterations, ensure a smooth tutoring experience.





RESEARCH

Interview Questions

- How do you learn best, and what features would be most helpful for your personal learning style in a tutoring app?

- What types of educational resources or materials do you think would be most valuable to include in a tutoring app, such as interactive tutorials or practice exercises?

- What type of tutor-student communication features would you find useful, such as in-app messaging or video calls?

- What types of data or analytics would you want a tutoring app to provide about your progress and learning outcomes, and how could that information be used to improve your overall experience with the app?

- What are the most important factors you consider when selecting a tutor, such as qualifications, availability, or teaching style?

- How frequently would you expect to use a tutoring app, and for what length of time per session?





Empathy Map

What They Say

- "I learn best when I can see examples and practice on my own."
- "Interactive tutorials and exercises would be really helpful for me."
- "I would like to have a way to message my tutor or have video calls for more personalized support."
- "I want to be able to see my progress and track my learning outcomes."
- "Qualifications and teaching style are very important to me when selecting a tutor."
- "I would use the app a few times a week for around an hour per session."

What They Do

- Searches for tutoring apps that offer a variety of resources and communication options.
- Chooses tutors based on qualifications, availability, and teaching style.
- Uses the app regularly to improve their skills and knowledge.
- Provides feedback to the app developers about their experience and any suggestions for improvement.



What They Feel

- Excited to have a personalised learning experience with a tutor who meets their needs.
- Frustrated when they can't find a tutor who meets their criteria or when the app doesn't have the resources they need.
- Relieved to have a way to communicate with their tutor and get personalised support.
- Anxious about the cost of the tutoring services and whether they will get value for their money.
- Empowered to take control of their learning and make progress towards their goals.

What They Think

- I hope this app will help me find a tutor who can help me improve my skills.
- I need to be able to access the app easily and find the resources I need quickly."
- "Having a tutor who can answer my questions and provide feedback will help me learn better."
- "I want to see how I am progressing and know where I need to improve."



DEFINE

User Persona 1

Carla



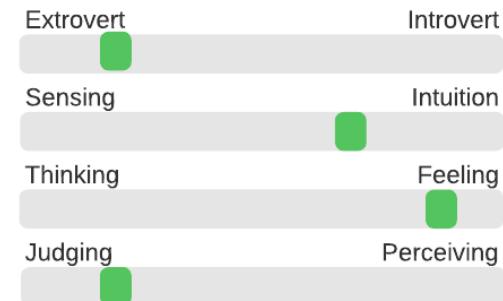
Age 33
Occupation Part-Time PR
Family Married
Education Bachelor

Hard-working
Busy
Perfectionist

Goals

- Improve her skills for her job.
- To be more successful and achieve her career goals.
- Find a tutoring application that can provide personalised instruction and practice exercises.

Personality



Bio

Carla is a working mother who is taking a course to improve her skills for her job. She has a busy schedule and is looking for a tutoring application that can be flexible and accommodate her schedule. She wants a solution that is convenient and easy to use.

Frustrations

- Difficult for her to find a tutoring application that offers flexible scheduling options.
- Frustrated with the lack of reinforcement for her skills.
- Looking for an affordable option that still offers high-quality instruction and practice exercises.

Technology



User Persona 2

Max



Age 21
Occupation Student
Family Single
Education Undergraduate

Persistent
Focused
Curious

Goals

- Improve understanding of algorithms and data structures
- Perform well in his course
- Become a successful computer scientist

Personality

Extrovert	Introvert
<div style="width: 50%;"></div>	<div style="width: 5%; background-color: red;"></div>

Sensing	Intuition
<div style="width: 70%;"></div>	<div style="width: 30%; background-color: red;"></div>

Thinking	Feeling
<div style="width: 10%; background-color: red;"></div>	<div style="width: 90%;"></div>

Judging	Perceiving
<div style="width: 40%; background-color: red;"></div>	<div style="width: 60%;"></div>

Bio

Max is a computer science student who is taking an advanced course in algorithms and data structures. He is struggling with some of the more complex concepts and is looking for a tutoring application that can help him clarify these concepts and provide additional practice exercises. Max is a busy student who also works part-time, so he needs a tutoring application that is convenient and flexible.

Frustrations

- Difficulty finding a tutoring application that fits his busy schedule
- Not receiving personalized instruction that addresses his specific areas of difficulty
- Feeling like the tutoring application is too expensive or not a good value for the money

Technology

IT & Internet	94	<div style="width: 94%;"></div>
Software	97	<div style="width: 97%;"></div>
Mobile Apps	83	<div style="width: 83%;"></div>



User Persona 3

Karen



Age 52
Occupation Marketing Manager
Family Married with 3 Kids
Education Bachelor's

Detail-oriented

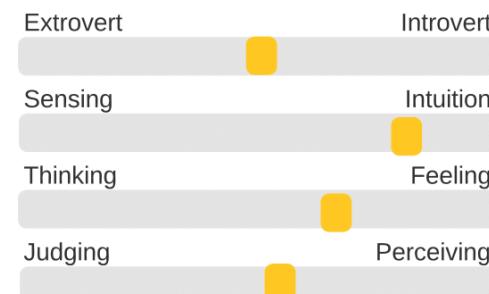
Organised

Caring

Goals

- Help her daughter improve grades and gain confidence in academic abilities
- Looking for a convenient and affordable solution
- Solution should fit into their busy family schedule

Personality



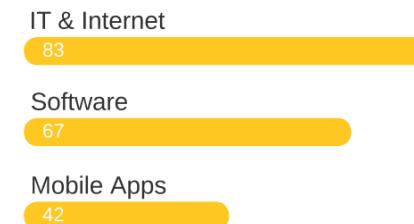
Bio

Karen has a 15-year-old daughter named Alice who is in year 10. Alice has been struggling with her grades in math and science, and Karen is concerned that she might not be able to keep up with the rest of her class. Karen and her husband both work full-time and they often find it challenging to help Alice with her homework or hire a private tutor due to their busy schedules.

Frustrations

- Feeling helpless or unable to provide her daughter with the support
- Difficulty finding a tutoring service that meets her needs and budget
- Frustrated by the time and energy required to research and evaluate potential tutoring options

Technology





User Stories

As a student struggling in math, I want to find a tutor who can help me with specific concepts and provide practice exercises, so that I can improve my understanding and perform better in class.

As a working professional, I want to be able to schedule tutoring sessions at convenient times and locations, so that I can balance my job and other commitments with my learning goals.

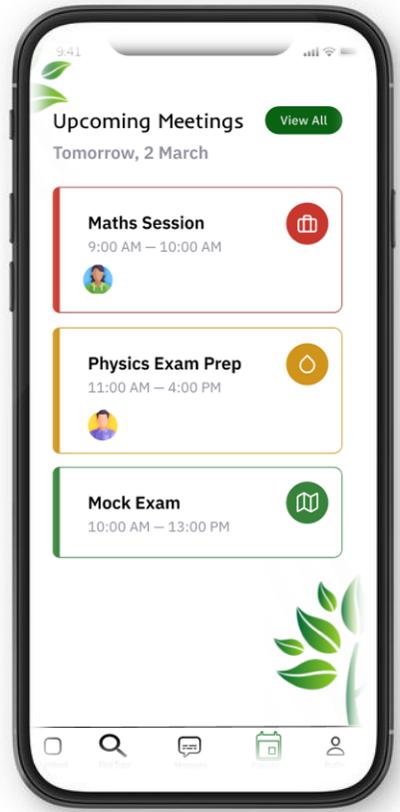
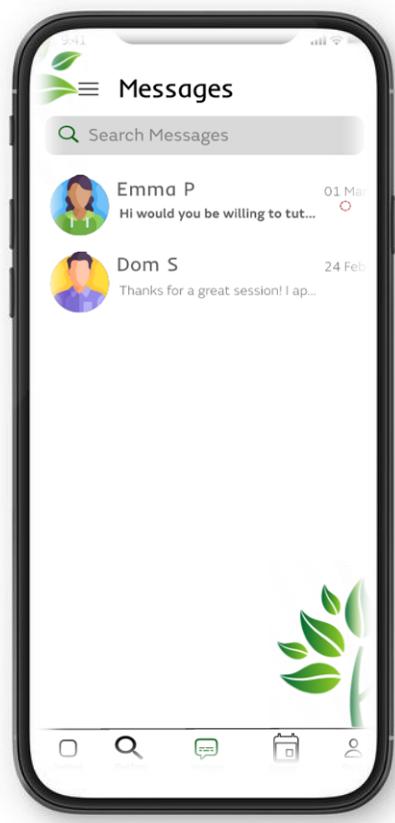
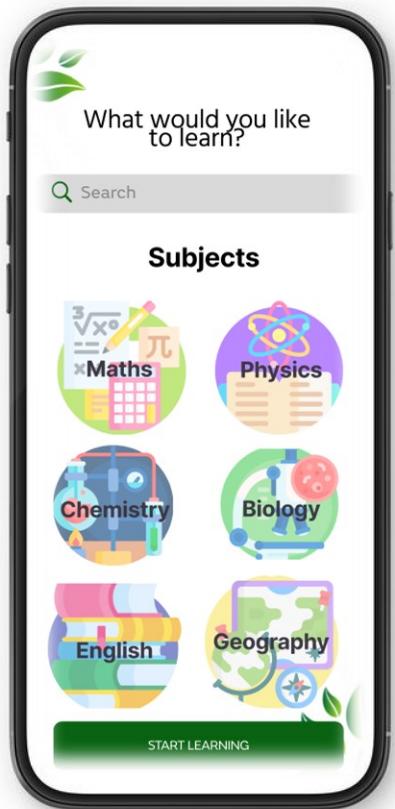
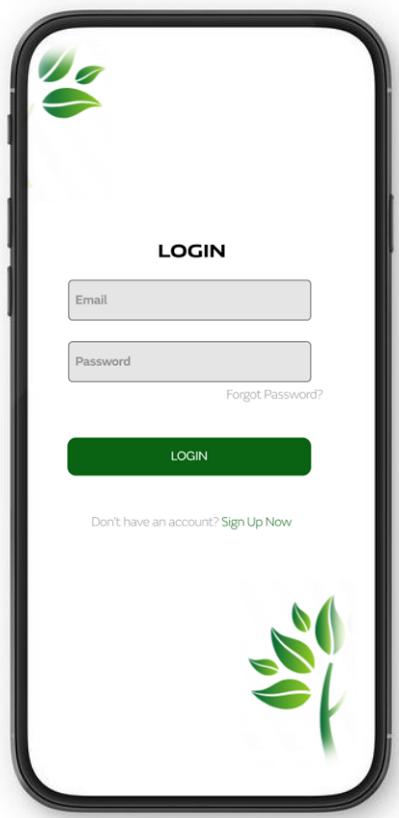
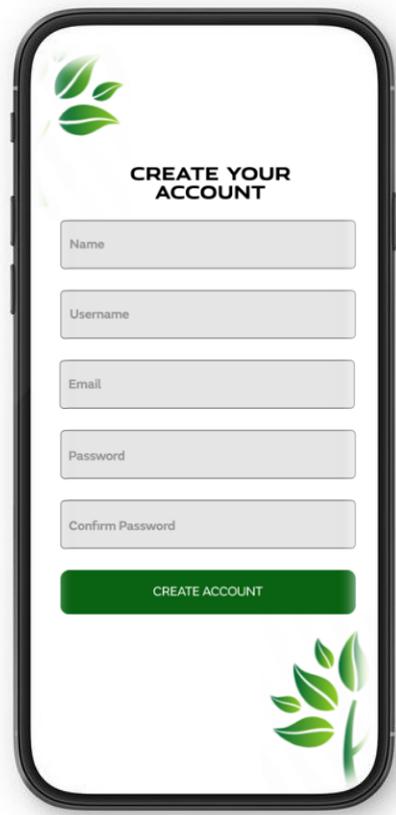
As a parent of a high school student, I want to be able to track my child's progress and receive regular updates from their tutor, so that I can support their academic success and feel confident in the quality of the tutoring services.

As a student with a learning disability, I want to find a tutor who has experience working with students like me and can provide customized support and accommodations, so that I can overcome my challenges and achieve my academic goals.



DESIGN

Wireframes

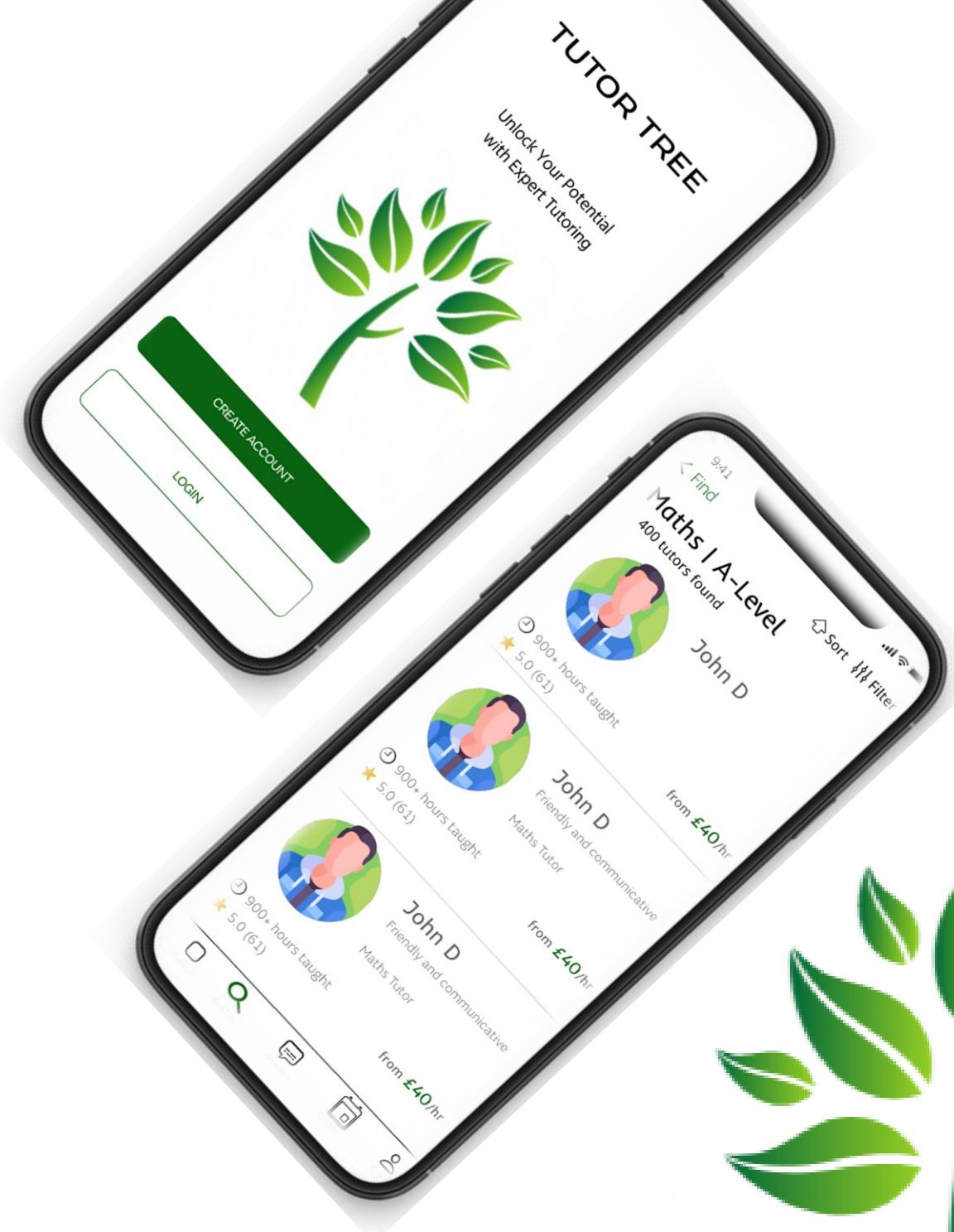


THANK YOU

UX Portfolio

WM398

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Appendices

A Tasty Tour

Interview Questions

- 1. Can you walk us through your typical process for finding a restaurant?
- 2. What factors do you consider when selecting a restaurant?
- 3. Have you faced any challenges or frustrations when searching for restaurants in the past?
- 4. How do you usually access information about restaurants (e.g. website, app, directory, etc.)?
- 5. How important is the ability to make a reservation through a restaurant finding an app to you?
- 6. Have you ever used a restaurant-finding app before? If so, what features do you like and dislike about it?
- 7. How do you rate and review restaurants you have visited in the past?
- 8. To what extent does social media influence your restaurant discovery and decision-making?
- 9. How do you navigate and search for restaurants within current restaurant-finding apps or websites?
- 10. how satisfied are you with the current methods of finding restaurants and what opportunities for improvement do you see?

```

class FavouriteUnitTest {
    private lateinit var model: ModelRestaurant
    private lateinit var binding: FragmentSavedBinding

    // Set up the test by creating a new instance of the model and binding
    @Before
    fun setUp() {
        model = ModelRestaurant("Restaurant", "Location", false)
        binding = mockk(relaxed = true)
    }

    // Define a test for clicking the favorite button and adding a restaurant to favorites
    @Test
    fun 'click favorite button adds restaurant to favorites'() {
        // Set the model's isFavorite property to false
        model.isFavorite = false
        // Use mockk to mock the context and return the application context
        every { binding.root.context } returns ApplicationProvider.getApplicationContext()

        // Call the favoriteButtonClickListener method on the model
        model.favoriteButtonClickListener(binding)
    }
}

```

```
// Assert that the model's isFavorite property is true
assertTrue(model.isFavorite)
// Verify that the savedTv background resource is set that a
// Toast message is displayed
verify(exactly = 1) {
    binding.savedTv.setBackgroundResource(R.drawable.baseline_favorite_24)
    Toast.makeText(binding.root.context, "Added to favorites", Toast.LENGTH_SHORT)
        .show()
}
}
// Define a test for adding and removing from fave
@Test
fun 'click favorite button removes restaurant from favorites'() {
    // Set the model's isFavorite property to true
    model.isFavorite = true
    // Use mockk to mock the context and return the application context
    every { binding.root.context } returns ApplicationProvider.getApplicationContext()

    // Call the favoriteButtonClickListener method on the model
    model.favoriteButtonClickListener(binding)

    // Assert that the model's isFavorite property is false
    assertFalse(model.isFavorite)
    // Verify that the savedTv background resource is set that a
    // Toast message is dispalyed
    verify(exactly = 1) {
        binding.savedTv.setBackgroundResource(R.drawable.baseline_favorite_border_24)
        Toast.makeText(binding.root.context, "Removed from favorites",
            Toast.LENGTH_SHORT).show()
    }
}
}
```

Listing 8: UnitTesting

3 References

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