A grayscale background image showing a close-up of a calculator's keypad, specifically the 'M+' and '%' buttons, and some coins scattered around a piece of paper with a line graph and financial data.

MANAGING FINANCES

KAMONCHANOK SUBAN NA AYUDTAYA 300471606

ASSIGNMENT 1: PERSONAS AND REQUIREMENTS

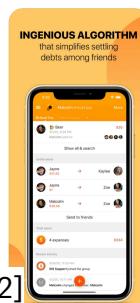
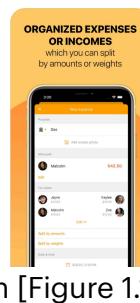
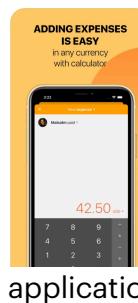
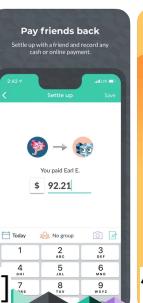
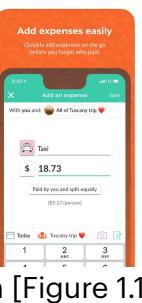
SWEN 303

Part 1: Introduction

DESCRIPTION 1.0

Existing Solutions 1.1

Various existing solutions act as a manager for shared and individual living costs (fixed and variable). Of those, 'Split-wise' and 'Settle up' are most commonly known to be most effective according to blogs [Urban Jungle](#), [Wired](#), and [the balance](#).



'Split-wise' application [Figure 1.11]

'Settle Up' application [Figure 1.12]

Both solutions share similar interfaces and offerings. We can observe that these application allows users to create groups, allocate expenses (variable and fixed) and observe outstanding balances. Additionally, these successful solutions implement a minimalistic user interface that can be easily understood and navigated.

Opportunities for improvement in functionality:

- >Pay bill directly within the application (*Observed in Venmo - Unavailable in New Zealand*).
- >Use images of receipts to automatically upload expenses (*Observed in Divvy (Used for tracking business expenses)* and *Split-wise premium user interface*).
- >Set a recurring day in which reminders for payment is automatically sent out.
- >Observe relevant user information (e.g bank account number, payday) from users profile.
- >Manage personal as well as communal finances.

Business Objectives 1.2

The main objective of a solution that manages shared and individual living costs is to make tracking shared and personal expenses more convenient. In addition, the solution must be easy to use and understand for users with varying degrees of financial knowledge. This objective is supplemented by a UI design that must be attractive, cohesive and easy to navigate.

The secondary objective is accurately and easily record and distribute expenses to users. This objective means a solution needs to ensure that inputs from users are simple. The UI for recording transactions must be minimalistic and intuitive to reduce the occurrence of error or user frustration.

The final objective is to track and settle outstanding balances and observe and edit past transactions. This objective allows users to correct an inaccurate transaction, understand how expenses occur and when they were settled. With the possibility of an extensive list of the recorded transactions, the UI supplementing this objective must be well organised and clear.

These objectives can be more comprehensively met with additional features complemented by a UI that aligns with users' needs and activities. Maintaining user satisfaction and needs ensures the solution maintain/grows its market share and generates profit.

Opportunities for improvement in UI:

- >'Settle Up' offers only a singular button for adding expenses and does not implement a navigation bar. As a result, adding an expense is complex compared to 'Split-wise' due to the various container pop-ups. Additionally, all the features displayed on a singular page make the UI unappealing.

To improve upon this design, we should ensure that there is a navigation bar to separate and easily navigate to features. In addition, we should minimise any unnecessary pop-up containers to make the entry of an expense is quick and convenient.

>'Split-wise' does not offer a feature that allows us to navigate past transactions easily. Instead, it has an activity feature that acts similarly to a news-feed.

To improve upon this design, we should reorganise to a more minimalistic list ordered by dates for ease of comprehension.

Significance to Stakeholder 1.3

The finance manager solution is important to various groups and individuals worldwide. Our solution aims to target university students as outlined by the assignment specification.

It is common to see an influx of students living situations change yearly as they navigate living by themselves (halls and living at home) to sharing a space (flatting). As a result, they are now responsible for managing finances relating to themselves and others. This may be an overwhelming responsibility for many, with financial disputes potentially causing rifts within personal relationships.

University students want to create and track reoccurring (fixed expense) and one-off expenses (variable expense) and split expenses equally or unequally by percentages, shares, or exact amounts, accurately and conveniently, to reduce the strain finance management can cause.

As this is important to our users, we must ensure that we provide a working and attractive UI to maintain/grow our clientele. Having the user overwhelmed with information and inputs can cause users to turn to different solutions due to frustration, resulting in the loss of market shares. Therefore, we must ensure we are providing a user-friendly and intuitive solution for users of varying lifestyles to meet our objective.

Basic functions and significance:

>Add expenses and distribute them to relevant parties.

Easily track expenses without confusion, conflict or disputes.

>Observe outstanding accounts and settle balances.

Allow payments to be completed within one transaction - reduces the need to transfer funds back and forth, which may cause loss of information (expenses left unpaid).

>Observe/modify past transactions.

Allow for correction of mistakes and ensures queries of expenses can be answered through historical transactions. This means users feel confident that mistakes do not result in financial ramifications/inaccuracies.

MODEL OVERVIEW 2.0

Persona generation technique 2.1

To better understand our users and create a suitable solution, we have developed personas to provide an overall representation of the needs of the end-user group of the finance manager.

We began this process by discussing with peers (University Students) about what they would like to see in a solution to generate characteristics and opinions of a user persona. From the discussion with 12 students, we understood where existing solutions were meeting users' needs and where there were development opportunities.

Our users are University Students who live a relatively active lifestyle with frequent small expenses (coffee, bus, food) and reoccurring more considerable expenses (rent, power, wifi). Some are personal and some are shared. They assume the solution will assist them in tracking these expenses and expect the solution to be easy to use and accurate. They also expect the solution to work on various platforms as various users with different devices will access shared balances and that users have a basic knowledge of how to use devices to access solutions.

To create our personas, we prioritise users who would most likely use our interface (represented the largest portion of the market). We then implemented abstract representation and user design

techniques to emphasise with potential users. We then took four abstract groups and their behaviour variables to create Timothy, Amelia, Sarah and Jack.

	Timothy	Amelia	Sarah	Jack
Financial Literacy	Low	High	Moderate	Low
Flatting Experience	Low	High	Moderate	Low
Lifestyle (social)	Moderate	High	Low	High
Expense type	Shared/Personal	Shared	Personal	Shared

Technique application 2.2

<https://uxpressia.com/> was used as an outline for our persona template.

These personas were identified from four abstract user groups within our end-user group of university students; generated using the technique of abstraction (categorising users by their situation, behaviour and characteristics). We took the characteristics we identified in our research and applied them to different personas to ensure we would generate a comprehensive solution for our end users. This prevents generalisation, which may make the solution inaccessible for groups with diverse traits.

Personas were then prioritised based on how their needs/circumstances aligned with the purpose of the solution, their likelihood of use (based on lifestyle and attitude towards finance management) and market potential (size of the market they represent).

Timothy McDermott represents our group of university students embarking on their first year of flatting - his expenses are shared and personal. He has a low amount of experience managing his finance as he previously lived in a catered residence hall. He is most likely to require assistance in managing his expenses as it is the first time he has to share living expenses and manage his own spending.

Amelia Waldorf represents our group of university students who have had experience flatting - she only wants to manage shared expenses. She has a high amount of experience managing her finances and does not have trouble with personal expenses. However, she finds it hard to keep track of communal expenses during her busy schedule (social lifestyle). Therefore, she would like a tool to assist in tracking her communal expenses.

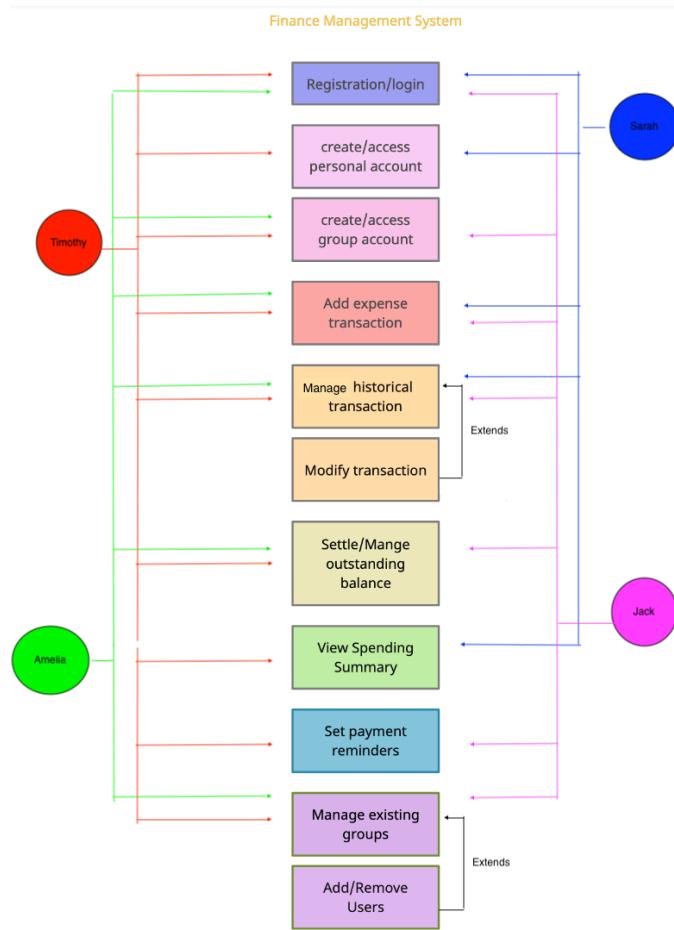
Sarah Yu represents our overseas group of university students living in an un-catered hall (recommended to international students by Victoria University of Wellington) - most of her expenses are personal due to her lifestyle (low social). She has a moderate amount of experience managing her finance. However, she finds it hard to track her personal expenses because she is not familiar with the cost of living in New Zealand. She would like a tool to assist in tracking her personal expenses.

Jack Apperly represents our group of university students who have just entered university and live at a catered hall. Therefore, he has no experience managing his finance - most of his expenses are communal (eating/drinking with friends). They are frequent due to his lifestyle (social). He would not mind having a tool to assist him in managing his finances but assumes most solutions require many user inputs, so he has never tried to find a solution.

Task Generation 2.3

We experimented with existing solutions' 'Split-wise' and 'Settle up' to determine the task personas would perform when using the solution. We created Accounts via registration, created a group for communal expenses and explored existing functionality and features. When generating tasks, we have to consider the ability to manage personal expenses, which is not offered in existing solutions. We broke these features and functionality down into individual tasks and looked at the relationship between these tasks.

We represented these tasks with their relationships to each other and how personas interacted with them in a use-case diagram.



Task Prioritisation 2.4

We prioritised the use case scenarios by looking at how critical they were to the system's functions and how they supplemented the purpose of our solution. Both components are equally crucial in our choice for prioritisation - this is because we do not fully comprehend the interactions of a use case without one another.

For example, to use most of the solution's functions, the user needs to register for an account. Therefore without considering the use case relationship with our purpose, the task of registration appears to be an essential use-case scenario. However, we need to equally consider the function and purpose's necessity. Users are not visiting this service to register for an account; they are here to track shared and personal expenses conveniently.

Less critical system functions are given a lower priority, especially if they do not directly align with the solution's purpose. This is because the solution does not require these functions to operate and they are observed as additional features.

For example, setting reoccurring payment reminders does not match the purpose of our solution and if removed, would allow the solution system to continue to function and meet its purpose.

In addition to system function and purpose, an additional factor that we used to evaluate the priority of a use case is how frequently each user would perform the task/use-case scenario. This determined tasks which affected the most users and thus created the most value for our solution.

For example, the ability to add expenses is given a higher priority since all users will add expenses as it is a core function of the application. However, not every user will be interested in observing categorised totals of their spending. Therefore it is of a lower priority.

Part 2: Personas

TIMOTHY McDERMOTT 1.0

Age: 19

Gender: Male

Occupation: Victoria University of Wellington (VUW) student

Location: Wellington

Nationality: New Zealander



Timothy (Tim) grew up in Wellington. He has always been passionate about software development and pursued this academically at VUW. Tim has just entered his second year of study for a Bachelor of Software Engineering. Recently he has moved from living in halls (Capital Hall) to a five-bedroom flat with his friends in Newtown. Tim currently works part-time as a tutor (VUW) to finance his living cost.

GOALS 1.1

>Complete his degree with a GPA over 8.0 (A)

>Save money to travel to Australia to visit his extended family

CHALLENGES 1.2

Tim is the lead tenant and is in charge of paying for rent and utilities. Rent and utilities are automatically charged from his personal account, which he also uses to pay for personal expenses. This makes it hard for him to budget as his flatmates do not always pay their share of expenses on time and there are often disputes on outstanding balances owed to Tim. As a result, Tim sometimes has to use money from savings to ensure bills are paid. Managing flat finances has been a significant source of conflict within his flat group and has affected his ability to save.

MOTIVATION 1.3

Tim wants a solution that will be easy to use and allow him to manage his own and his flat expenses. This is so he can use his time to concentrate on his studies and budget more effectively to save up and travel to Australia.

FRUSTRATIONS 1.4

>Existing solutions do not offer the ability to track personal expenses and group expenses.

>Existing solutions UI are over complicated (various fields).

NEEDS 1.5

>A solution that is easy to use with little/no financial calculation as Tim does not want to spend time calculating each flatmate's share of an expense.

>A solution must allow him to track personal and communal spending separately as to budget effectively and observe outstanding amounts owed by his flatmates.

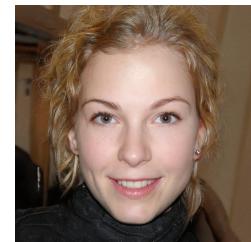
>Works on different types of devices (Apple, Samsung Huawei) so he and his flatmates can work collaboratively to track expenses as they occur (Limits loss of information).

EXPECTATIONS 1.6

Tim expects the solutions to be less time consuming and more accurate than manually tracking expenses. In addition, he wants the UI to be clear and easy to understand as he needs to communicate with a relatively large group (five people) and wants to prevent further conflict.

COMPUTER SELF-EFFICACY 1.7

Tim is confident when performing a task on a new platform, often exploring technological solutions for his problems, but is less inclined to invest in time-consuming processes as he is a bit impatient. Tim will likely move onto a new solution that better meets his needs if something goes wrong. Currently, Tim uses split-wise but is unhappy with the solution as it does not offer personal finance management.

AMELIA WALDORF 2.0**Age:** 22**Gender:** Female**Occupation:** Graduate architect**Location:** Wellington**Nationality:** New Zealander

Amelia Waldorf grew up in Nelson and moved to Wellington in 2018 to study at Victoria University of Wellington (VUW). She has recently finished her studies and has found a graduate role at a Wellington Architecture firm. She has a busy schedule and is often found at a local restaurant or bar after a long workday. She lives with a couple of friends in Thorndon - however, she is hardly home.

GOALS 2.1

- >Expand her social circles and grow her connections.
- >Move to Auckland in the next three years.
- >Maintain positive work-life balance.

CHALLENGES 2.2

Amelia has an active lifestyle. As a result, Amelia has found it hard to keep track of what is going on in her flat, resulting in her missing payments and being charged for communal expenses she had not agreed to/are aware of. Amelia would like a solution that would allow her to maintain her daily schedule without worrying about tracking expenses related to her flat.

MOTIVATION 2.3

Amelia wants to maintain a positive relationship with her flatmates as she strongly values her relationships. Therefore if a solution is present which allows her to manage her communal finances easily, she would actively pursue it. Additionally, she would like to move to Auckland in the future - having positive references from landlords for timely payment is also important to support this goal.

FRUSTRATIONS 2.4

- >Existing solutions do not offer the ability to view historical transactions easily.
- >Existing solutions do not allow for balances to be settled within the solution.

NEEDS 2.5

- >A solution that tracks expenses as they incur clearly and concisely with the ability to observe historical transactions.
- >A solution that allows for outstanding balances to be quickly observed and paid.
- >A solution that works on multiple types of the platform (laptop and phone) so she can track expenses when she is in the office and out socialising.

EXPECTATIONS 2.6

Amelia expects that the solution will keep her up to date with expenses and allow her to observe past expenses. In addition, she wants the solution to save time either by allowing her to settle balances directly within the app or to observe a user's bank account number without manually having to request it.

COMPUTER SELF-EFFICACY 2.7

Amelia is more comfortable using her mobile phone to access solutions either on a website or through an application but is open to using her laptop. She does not actively seek solutions and has not tried to manage her finance through a solution; instead, she pays for amounts requested by her flatmates on their group chat. However, she wants a more organised approach, so she does not mind tinkering with a solution to get familiar with it.

SARAH YU 3.0**Age:** 21**Gender:** Female**Occupation:** Victoria University of Wellington (VUW) student**Location:** Wellington**Nationality:** Taiwanese

Sarah has recently moved to New Zealand. She is currently living in an un-catered hall of residence. She is finishing her Bachelor of Commerce, majoring in Economics. Previously, she lived in Taiwan and shared a small apartment with her friends, so living independently has been a significant change for her. She is excited to explore Wellington, make new friends and discover new opportunities in New Zealand.

GOALS 3.1

- >Improve her English language skills.
- >Finish her degree and return to Taiwan to help manage her family business.

CHALLENGES 3.2

Most of Sarah's living expenses are fixed (Rent, Electricity and Wifi); however, she is not familiar with her everyday expense (food, transport, clothes). Her parents send her a monthly sum at the start of each month, but she has found that she has gone over budget frequently and has to request more money which incurs an exchange fee. She would like something that she can easily track her living expense with to prevent incurring unnecessary costs.

MOTIVATION 3.3

Sarah appreciates everything her family has done to support her studies and wants to reduce any financial strain they may have. She is motivated to find a solution to ensure that the money she receives is being used towards her studies instead of careless fees.

FRUSTRATIONS 3.4

- >Existing solutions tend to depend on a lot of text that can be confusing and hard to use.
- >Existing solutions do not tend to report where expenses were allocated, which means expenses have to be categorised and added together manually.

NEEDS 3.5

- >A UI that is more visual (image/icon) than textual (text).
- >A graph or report on the category of where expenses were located and total monthly expenditure.
- >A solution that allows her to track her spending easily without being dependent on long and wordy instructions (limited language skills).

EXPECTATIONS 3.6

Sarah expects the solution to help her keep track of her spending, see where she is spending the most money and provide an appropriate budget for her parents. This should be easy to do without frustration or significant time consumption.

COMPUTER SELF-EFFICACY 3.7

Sarah likes solutions to be in the form of a website as her phone can sometimes be a bit unreliable. Sarah has tried to keep track of her finances using an excel sheet in the past but found it hard to keep up with and felt that the process was a bit confusing. Sarah enjoys aesthetic interfaces and is more likely to persist with complex solutions if they are organised and clean. However, she does not want to deal with solutions that are too wordy due to her limited English.

JACK APPERLY 4.0**Age:** 19**Gender:** Male**Occupation:** Victoria University of Wellington (VUW) student**Location:** Wellington**Nationality:** New Zealander

Jack is a first-year student embarking on his academic journey at Victoria University of Wellington. He is pursuing a Bachelor's in Law. Jack grew up in Hawks bay - a smaller, more rural town than Wellington - therefore, he decided to live in a catered hall to meet new friends. He is looking forward to trying out the various restaurants and pubs as he is a 'foodie' and runs a food review blog on Instagram.

GOALS 4.1

- >Grow his food review Instagram account and become a micro-influencer.

- >Finish his Law degree with honours.

CHALLENGES 4.2

Jack is living in a catered Hall of residence. This means that most of his expenses were paid for in a lump sum. As a result, he only deals with shared expenses (food/drinks/activities) within his group of friends. These expenses occur frequently and are of a low monetary value; therefore, he has not tried to track them. He believes most solutions require a lot of work and does not want to bother his friends by frequently asking for small reimbursements (nonchalant about finance management).

MOTIVATION 4.3

Jack wants to grow his Instagram and part of this is creating content. Jack typically post content about outings with his friends and does this at least three times a week. This process is becoming costly as Jack does not want to follow up for payments from his friends. Therefore, he is spending more than he can afford with the allowance his parents provide. Jack does not want to pick up a part-time job as he is worried it will affect his studies.

FRUSTRATIONS 4.4

- >Existing solutions tend to have a lengthy setup process.

- >Existing solutions do not have a recurring reminder option - users have to request payments to each user with outstanding balances.

NEEDS 4.5

- >A solution that allows him to quickly add expenses quickly and easily without a lengthy setup process.

- >A solution that allows him to track outstanding balances, so he does not have to request a transfer after each transaction.

- >A solution that allows him to request payments (reminders) through the application - reduce the possibility of conflict and awkwardness.

EXPECTATIONS 4.6

Jack expects the solution to be easy to set up and use. The solution must have the ability to accumulate multiple transactions (show outstanding balances). Additionally, He wants to minimise interactions about settling balances outside of the app and instead wants the ability to set reoccurring reminders within the solution.

COMPUTER SELF-EFFICACY 4.7

Jack has a laid back attitude - he is happy to try whatever as long as it works and is quick. He is proficient with both a computer and a mobile phone. If Jack encounters a problem, he is likely to give up on it instead of persisting with finding a solution.

Part 3: Scenarios, Usecases and Journey

SCENARIO AND USECASES 1.0

Creating an expense 1.1

User: Timothy, Amelia, Sarah, Jack Activity Level: Very High (daily use)

All personas will do this. It is part of tracking both personal and communal expenditure.

Users will select the relevant account (personal/group) when an expense occurs and fill out the relevant section to record the expense.

USER	SYSTEM
Choose add expense	
	Displays required information
User select relevant group (personal/communal), enters expense title, category, amount, relevant users and how expense is split (ratio, equal, specified amount)	
	Register expense
	Save it to relevant group financial records
	Notify relevant users of new expenses
	Display financial overview with new expense

Managing historical transaction (expense overview) 1.2

User: Timothy, Amelia, Sarah, Jack Activity Level: High (weekly use)

All personas will do this. It is part of tracking both personal and communal expenditure.

When users want to see the timeline of an account's financial history, modify a transaction or see upcoming expenses, they will view it in the solution.

USER	SYSTEM
Choose a account to interact with (group/personal)	
	Present available functions associated with account (group/personal)
Choose to view expense overview	
	Get detail of account expenses
	Display past/upcoming expenses
	Display option to modify transactions

Settle/Manage outstanding balance 1.3**User: Timothy, Amelia, Jack Activity Level: High (weekly use)**

All personas' who use the solution to manage communal expenses in a group will use this. When users want to observe outstanding balances and settle debts, they will view it in the solution.

USER	SYSTEM
Choose a account to interact with (group)	
	Present available functions associated with account (group/personal)
Choose to view outstanding balance for each user in group	
	Display amount owed to/by each user in the group
	Display button next to each user balance to settle amount
	Display button next to each user to send out reminder
User press settle button next to relevant user account	
	Register amount settled
	Save it to relevant group financial records
	Notify relevant users that balance was settled
	Display financial overview with new expense

Register/Login 1.4**User: Timothy, Amelia, Sarah, Jack Activity Level: Very High (daily use)**

All persona's first impression of the application. Used to access solution features and data associated with a user.

USER	SYSTEM
Navigate to account management page	
	Display option to login/register
User select relevant option	
	Display required information
User fills in required info (dependent on login/registration)	
	Finish login/registration
	Display login/registration successful

View spending summary 1.5**User: Timothy, Sarah Activity Level: Moderate (weekly/monthly use)**

Persona's tracking their spending to budget their expenditure will use this. When users want to observe the expenditure of a group/personal account during a time period in an organised format (categories), they will view it in the solution.

USER	SYSTEM
Choose a account to interact with (group/personal)	
	Present available functions associated with account (group/personal)
Choose to view spending summary	
	Display spending summary on a month basis
	Display total of expense category
	Display graph of spending summary

Set payment reminders 1.6**User: Timothy, Jack Activity Level: Moderate (weekly/monthly use)**

Activity levels depend on whether users intend to send manual or automatic reminders. Persona's who require payments in a timely matter will use this. When a user wants to send out reminders formally, this will implement this function in the solution.

USER	SYSTEM
Choose a account to interact with (group)	
	Present available functions associated with account
Choose to view outstanding balance for each user in group	
	Display amount owed to/by each user in the group
	Display button next to each user balance to settle amount
	Display button next to each user to send out reminder
Select reminder button	
	Display option to send one off reminder/set reoccurring
Select relevant option (one off/reoccurring)	
	Display required information
User fills in required information	
	Finish payment reminder
	Display reminder successful
	Notify relevant users of outstanding expense

Create/access Group account 1.7**User: Timothy, Amelia, Jack Activity Level: Low (monthly/annual use)**

Persona's who use the solution to track communal expense will use this. Users tend to create groups upon account generation. Additional groups may be added when users change flats or become part of new social groups in the solution.

USER	SYSTEM
Navigate to group account page	
	Display option to manage existing groups
	Display option to add new group
Select add new group	
	Display required information
Enter group name and group members	
	Finish group setup
	Send invitation to relevant users
	Display group creation successful

Create/access Personal account 1.8**User: Timothy, Sarah Activity Level: Low (annual use)**

Persona's who use the solution to track personal expenses will use this. Users tend to create a personal account tracker upon account generation but is not mandatory. It can be later added if they decide they want to manage their personal expenses in the solution.

USER	SYSTEM
Navigate to personal account page	
	Display option to create account to track personal expenses
Select create	
	Finish personal account setup
	Display personal account creation successful

JOURNEY 2.0**Scenario: Creating an expense 2.1****Persona: Jack Expectation: Straight forward process with minimal textual fields**

	Phase 1	Phase 2	Phase 3	Phase 4
Doing	Received wifi bill. He opens the finance management solution.	Navigate to add expense page in solution and adds a new expense.	See that an expense was successfully entered and users have been notified.	Checks to make sure that the expense has been recorded correctly in the expense overview page.
Thinking	How do I let everyone know how much I am owed? How do I keep track of balances which have already been paid?	I hope I am doing this right. Will my flatmates get notified about this expense? I don't want to use money from my savings again.	Great, I know that everyone's been reminded of the expense.	I see the expense recorded. It's of the correct amount and is distributed to relevant users.
Feeling	Worried his flatmate will not pay on time / see his message in the group chat about the expense.	Anxious about if he is correctly entering an expense.	Satisfied about notifying his friends about the expense without extensive calculation.	Reassured that the expense was recorded correctly.

Insights: Adding an expense is the most fundamental function of the solution. It must be accessible for all users - accomodating all levels of financial/technical experience.

Ownership: Designers must ensure that the UI/UX is clean - dependant on icons and dropbox over textual inputs - this ensures its easily consumable. Marketers must communicate ease of use.

Scenario: View past/future expense overview 2.2**Persona: Amelia Expectation: Can modify expense from a month ago**

	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Doing	Returned an item purchased by her group - she's received a partial refund. She opens the finance management solution.	Navigate to the expense overview page.	Finds original expense, select option to modify the expense.	See that the expense was successfully modify, the historical value and the modify value is recorded and users have been notified.	Checks to make sure the balance was correctly updated in the settle balance page.
Thinking	How do I let everyone know how much I owe them? Can I modify a past expense to reflect this refund?	Will the original transaction be here? Has it kept a record of all transactions?	Am I doing this right? What if I ruin the accuracy of the account?	That was pretty easy, I'm glad the process was easy to understand.	Wow, it did all the calculations for me. I can quickly find out how much I owe/am owed.
Feeling	Concerned her flatmates will not receive the correct amount owed to them.	Confused and a bit overwhelmed, she is worried locating the transaction may be complex.	Nervous, she is worried incorrect changes cannot/be difficult to remedy.	Proud that she was able to manage her finances herself.	Confident about her ability to take control of her finances.

Insights: Observing and modifying past/future transactions reassure and empower users to be confident with contributing to managing their finances. A clear overview limits potential user frustrations.

Ownership: Designers must ensure that the UI/UX is easy to navigate and transactions can be easily located. Marketers must communicate that errors are easily remedied - users can make mistakes without ramification.

Scenario: View spending summary 2.3**Persona: Sarah****Expectation: Summary of spending which is easy to understand**

	Phase 1	Phase 2	Phase 3
Doing	It's nearly the end of the month, Sarah has to plan how much she will need to request from her parents. she opens the finance management solution.	Navigate to spending summary page from personal account.	Uses information to prepare a budget to present to her parents.
Thinking	This is so overwhelming - there's so many transactions - how do I categorise all of my expenses? This will take forever.	I can see how much I have spent in total and that sub total for each expense category.	This is so convenient - I'm more confident about my spending predictions because they are based on my past transactions.
Feeling	Stressed that she has to go through and calculate so many transactions.	Relived - having this calculated for me means it's a lot easier to budget for next month.	Happy that I am able to save my parents money from multiple currency exchange fees.

Insights: Having expenses summarised allows users to easily budget and modify spending behaviour to align with their goals. It must be easy to consume for a range of users integrating both financial and visual components.

Ownership: Designers must ensure that the UI/UX is organised to easily understand financial calculations and visual components (graphs) should be used to supplement user understanding. Marketers should communicate this feature as a supplement to better financial literacy for budgeters.

Scenario: Send balance payment reminder 2.4**Persona: Jack****Expectation: Quick and formal process**

	Phase 1	Phase 2	Phase 3
Doing	It's the end of the week and Jack's friends haven't transferred him their outstanding balance. He opens the finance management solution.	Navigate to settle balance page and press remind button next to relevant user.	See that reminders are sent out to relevant users.
Thinking	Will it be awkward if I message them to pay me? It's a small amount but we go out every week and it's building up.	If I do this will they be notified? I'm worried I haven't done it right.	Great, I know that everyone's been reminded of the expense.
Feeling	Worried he might upset his new friends - messaging on social media can convey the wrong tone.	Anxious about if he is correctly using the remind button.	Satisfied about notifying his friends about the expense without having to go through a long process of creating a message and individually sending them to each friend.

Insights: Allowing users to remind others to pay outstanding balances allows users to easily manage their finance conveniently and prevents unnecessary misunderstanding (meets solution purpose).

Ownership: Designers must ensure that the ability to send reminders is quicker and more convenient than users sending out notifications through other platforms/solutions. Marketers should communicate the solution's commitment to its purpose with features such as payment reminders.

Part 4: Reflection

PERSONA REFLECTION 1.0

From persona generation, I learned many techniques that helped me understand user groups in more detail. This allowed me to design a comprehensive solution that meets users' needs by fulfilling gaps in functionality and UI of existing solutions. I began this process by talking to peers in various groups I was involved in. Collecting twelve different perspectives, I documented their attitude, experience with finance management, and the pros and cons of their tried solutions. This gave me an idea of the unique characteristics and attributes of these groups.

I then abstracted characteristics and attributes that apply to specific groups, narrowed down the scope of the specific elements that make up these groups of users and summarised them into four personas (Tim, Amelia, Sarah, Jack) that represent the types of users in the market.

To make my personas unique, I created behaviour variables for each user to supplement the reasoning behind their actions which were supported by the traits observed in peers of the same characteristic groups as the persona.

Generating the personas allowed me to step into a different lens when developing and assessing the solution. Prior to this process, I could not see major points of improvements for existing solutions that could generate significant value to users as I generalised the market's needs. However, when I evaluated existing solution from each persona's unique perspective, I found flaws in the UI of existing solutions, which mitigated the business objective of creating a 'convenient and accessible solution' (for example, a complex expense overview resulted in frustration due to unnecessary time consumption which was not identified in my initial analysis as I assumed users had a strong financial understanding) and missing functionalities which are crucial to meet the needs of a significant proportion of the market (for example, allowing for both personal and communal finance to be managed within one application generated a point of difference which was not identified in my initial analysis as I assumed users had experience with personal budget management).

Through this process, I learned to emphasise with users various backgrounds and to understand the value of creating personas to mitigate unconscious generalisation. This helped me develop a solution that better targets specific groups' needs, resolving frustrations that users have experienced with existing solutions to generate a solution with user-orientated UI and functionality.

SCENARIO REFLECTION 2.0

From scenario generation, I learned about the value of system functions and how they can generate significant value for users.

I began this process by generating a hypothesis of a UML to understand the users' interactions with the different functions and the functions with each other. This allowed me to better understand the way each persona would interact based on the functions they require based on their needs/characteristics/behaviours.

I then generated the essential use cases which I created to investigate how scenarios would portray on both the user side and the System side through a visual representation of the user flow alongside this system. This revealed some necessary system functions which I initially overlooked, such as a confirmation when a function was successfully executed.

I did not understand the significance of these small system functions until I generated my user journey map. I took the main operations of the solution and made scenarios that implemented my personas in them. I predicted their actions, thoughts, and feelings to better understand a personas' lens in their interactions with the solution. This revealed how important it was to reassure users when they are operating a new solution as it instils confidence in their ability to execute a solution's function. Using confirmations allowed us to mitigate general nervousness in the persona's feelings when dealing with functions that can influence relationships and expenditure.

After assessing each journey, I also found it extremely valuable to record the insight and ownership. It allowed me to understand how the relationship between system functions generates value for our users and how each team can amplify the solution's success by refining these relationships to user needs.

Through this process, I gained a deeper understanding of the solution's system, the relationship the systems must uphold to meet user needs and ideas for subsequent improvements.