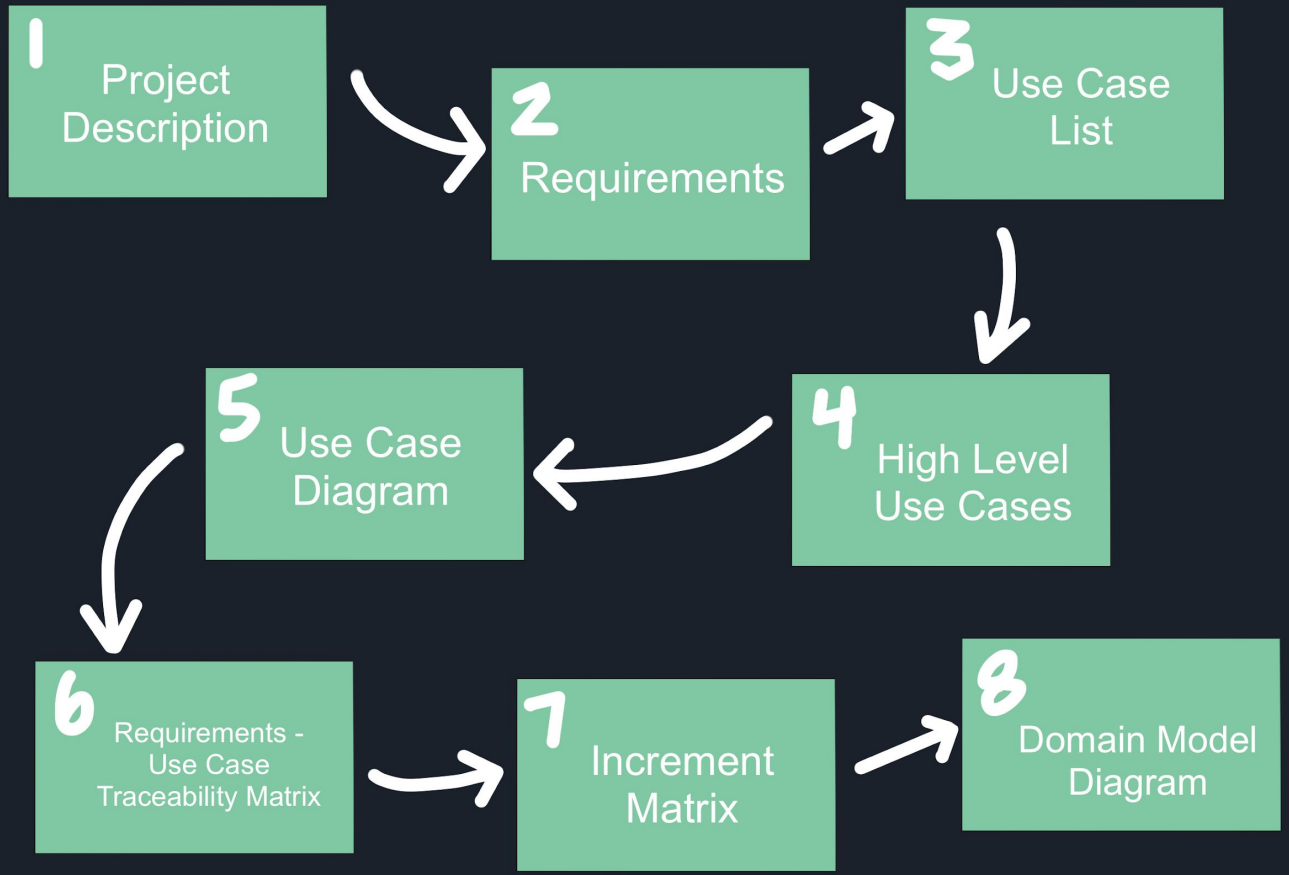
QuickFin

Group 6: Money Masters
CSE 3310-002: Fundamentals of Software Engineering
Iteration 1
Date: 10/07/2024

Dev Patel, Yahia Elsaad, Oreolorun Akani,
Mohamad Nabih Alkhateeb, Jeffery Aguirre

Agenda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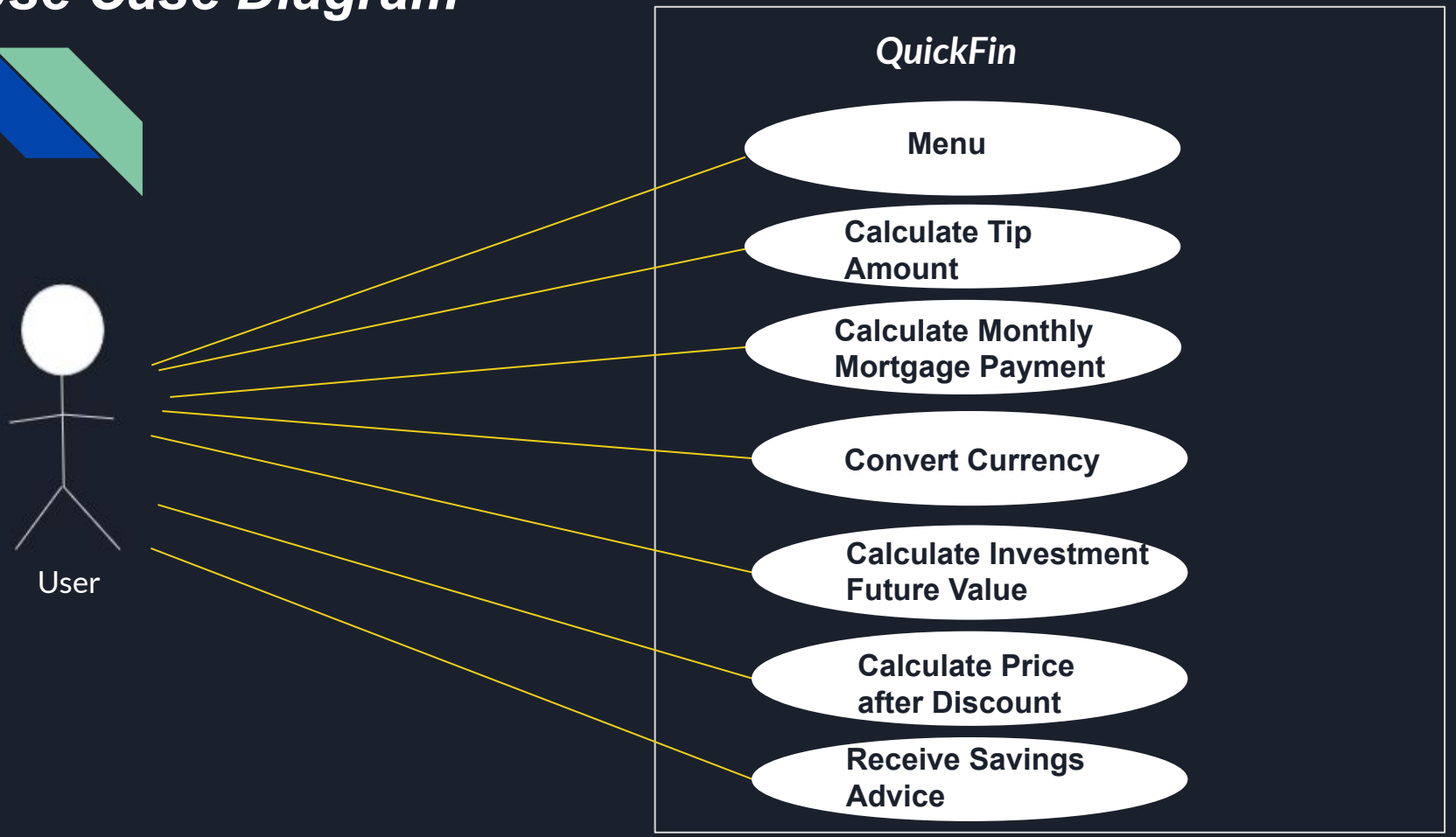
High Level Use Cases

- UC1: Menu
  - TUCBW the user has successfully opened the app.
  - TUCEW the user browses the home menu and clicks a button from main menu.
- UC2: Calculate Tip Amount
  - TUCBW the user clicks the “ Tip Calculator ” button from main menu.
  - TUCEW the app displaying tip amount along with total bill amount with tip included.
- UC3: Calculate Monthly Mortgage Payment
  - TUCBW the user clicks the “ Mortgage Calculator “ button from main menu.
  - TUCEW the app displaying monthly mortgage payment.
- UC4: Convert Currency
  - TUCBW the user clicks the “ Currency Converter “ button from main menu, and selects desired currencies.
  - TUCEW the app displaying the converted amount of user’s desired currency.
- UC5: Calculate Investment Future Value
  - TUCBW the user clicks “Investment Return Calculator” button from main menu.
  - TUCEW the app displaying the investment’s estimated future value.
- UC6: Calculate Price after Discount
  - TUCBW the user clicks the “Discount Calculator ” button from main menu.
  - TUCEW The app displaying the final price after applying the desired discount percentage.
- UC7: Receive Savings Advice
  - TUCBW the user clicks the “ Savings Advisor “ button from main menu.
  - TUCEW the app displaying the final amount saved for the month followed by a message recommending possible reallocations for better finances.

Use Case Diagram



Iteration 2

Group 6: Money Masters
CSE 3310-002: Fundamentals of Software Engineering
Date: 10/30/2024

Dev Patel, Yahia Elsaad, Oreolorun Akani, Mohamad Nabih Alkhateeb, Jeffery Aguirre

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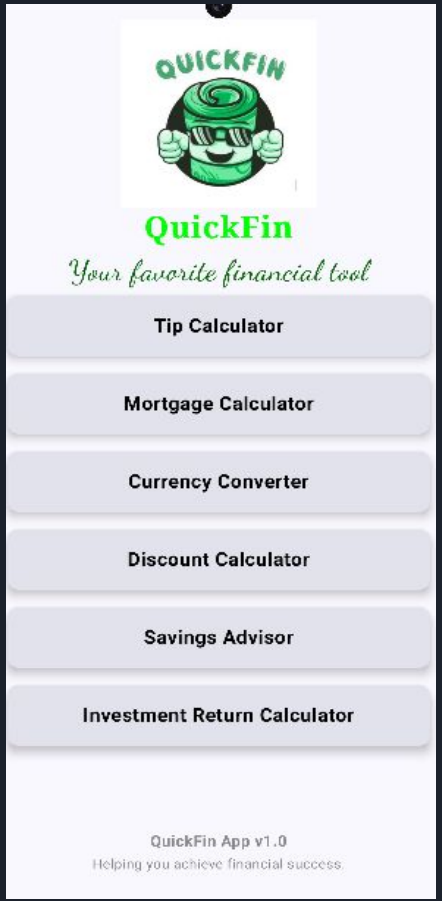
Expanded Use Case #1

EUC 1: Menu

Precondition: *The use case assumes that the user is able to and ready to open the app.*	
Actor: App User	System: QuickFin app
1) **TUCBW** the user has successfully opened the app. 3) **TUCEW** the user clicks one of the six functions from main menu.	0) System is loading the application. 2) System displays the menu interface - 6 buttons, one for each key app function.
Postcondition: *The system navigates to the selected function page and is ready to execute the chosen operation.*	



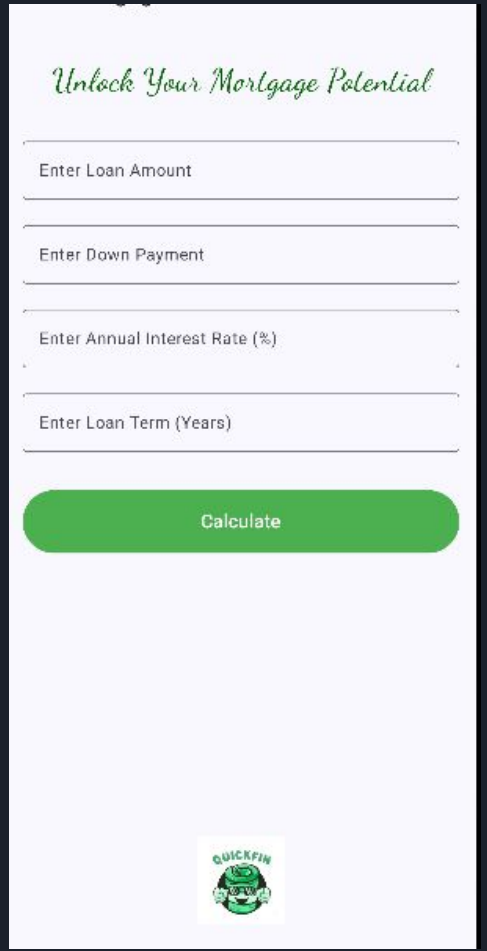
Expanded Use Case #3

EUC 3: Calculate Monthly Mortgage Payment

Precondition: *The use case assumes the user has successfully launched the app which displays the main menu where the "Mortgage Calculator" function is available for selection.*

Actor: App User	System: QuickFin app
1. **TUCBW** the user clicks the "Mortgage Calculator" button from the main menu. 3. The user enters the loan amount and down payment in the input fields. 5. The user enters the annual interest rate (APR) in the input field. 6. The user enters the loan term (in years) in the input field. **8. T**he user clicks the "Calculate" button to process the input.	0) System displays the main menu with available options, including the 'Mortgage Calculator' function - user is now able to select this option to proceed. 2) System displays the Mortgage Calculator function - available input fields for loan amount, down payment, annual interest rate (APR), and loan term, as well as a "Calculate" button. 4. System calculates the total loan amount by subtracting the down payment from the loan amount. 7. System receives and validates the loan amount, down payment, interest rate, and loan term entered by the user. 9. System calculates the monthly payment based on the total loan amount, interest rate, and loan term using the appropriate mortgage payment formula. 10. TUCEW System displaying the calculated monthly mortgage payment.

Postcondition: The system successfully displays the calculated monthly mortgage. The user is able to review or modify the inputs if needed or return to the main menu to select from the six available functions again.



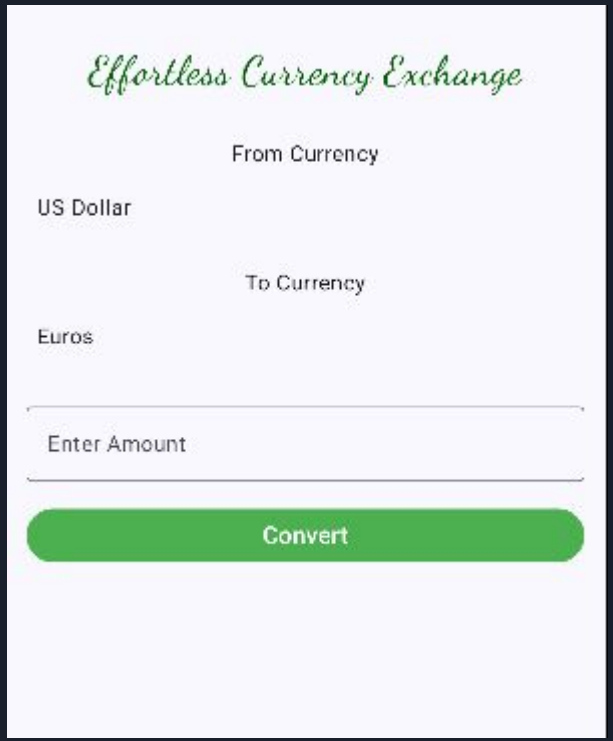
Expanded Use Case #4

EUC 4: Convert Between Two Currencies

Precondition: *This use case assumes that the user has opened the QuickFin app and is seeing the home menu.*

Actor: User	System: QuickFin App
1. **TUCBW** the user clicks the “Currency Converter” button from the main menu.	0. System displays the home menu with various options including the Currency Converter.
.3. The user selects the currency they want to convert from and the currency they want to convert to, and enters the amount.	2. System displays the Currency Converter page with options to choose the currencies and input the amount.
5. TUCEW the user clicks the “Convert” button.	4. System calculates the converted amount based on the real-time exchange rate and displays the result

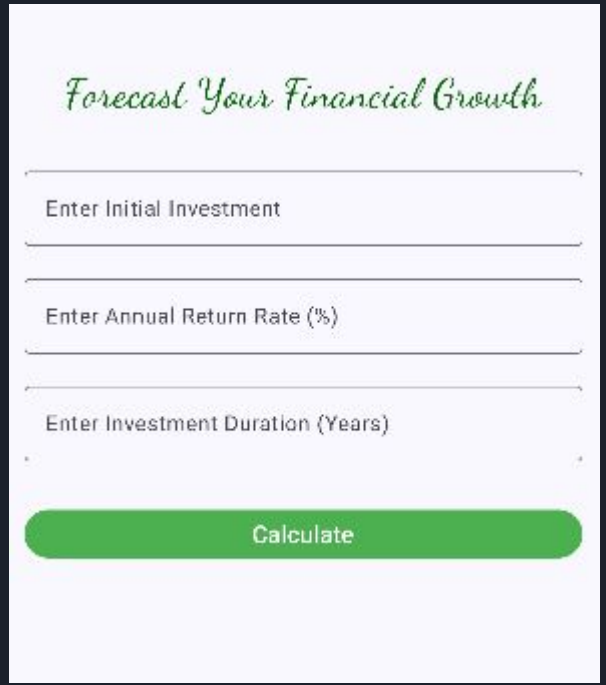
Postcondition: The converted amount is displayed on the screen for the user in the desired currency.



Expanded Use Case #5

EUC 5: Calculate Investment Future Value

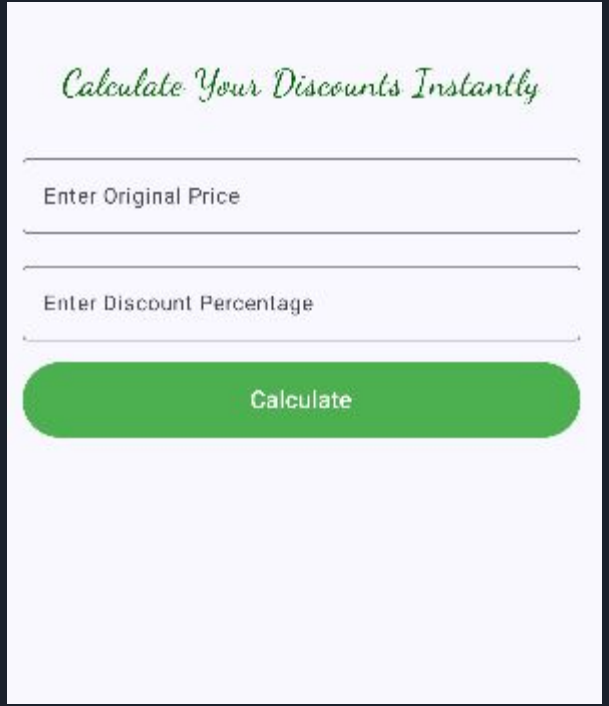
Precondition: *The use case assumes the user has successfully launched the app which displays the main menu where the "Investment Return Calculator" function is available for selection.*	
Actor: User	System: QuickFin app
1. TUCBW the user clicks the “Investment Return Calculator” button from the main menu. 3. The user enters the initial investment amount in the input field. 4. The user enters the expected annual return rate in the input field. 5. The user selects the investment duration (in years) from the available options. 7. The user clicks the "Calculate" button to process the input.	0. System displays the main menu with available options, including the 'Investment Return Calculator' function - user is now able to select this option to proceed. 2) System displays the "Investment Return Calculator" function - with input fields for the initial investment amount, expected annual return rate, and investment duration, along with a "Calculate" button. 6. System receives and validates the inputs for initial investment, annual return rate, and investment duration entered by the user. 8. System applies a general investment formula (such as the compound interest formula) to calculate the future value of the investment. 9. TUCEW system displays the calculated future value of the investment to the user.
Postcondition: The system successfully displays the future value of an investment. The user is able to review or modify the inputs if needed or return to the main menu to select from the six available functions again.	



Expanded Use Case #6

EUC 6: Calculate Price after Discount

Precondition: *The use case assumes the user has successfully launched the app which displays the main menu where the "Discount Calculator" function is available for selection.*	
Actor: User	System: QuickFin App
1. TUCBW the user clicks the “Discount Calculator” button from the main menu. 3. The user enters the original price of the item in the input field. 4. The user enters the discount percentage in the input field. **6.** The user clicks the "Calculate" button to process the input.	0. System displays the main menu with available options, including the 'Investment Discount Calculator' function - user is now able to select this option to proceed. 2. System displays the "Discount Calculator" function with input fields for the original price and discount percentage, as well as a "Calculate" button. 5. System receives and validates the original price and discount percentage entered by the user. 7. System calculates the discount amount based on the original price and the discount percentage provided by the user. 8. System calculates the final price by subtracting the discount amount from the original price. 9. System displays both the discount amount and the final price after the discount to the user.
Postcondition: The system successfully displays the discount amount and the final price after applying the discount. The user is able to review or modify the inputs if needed or return to the main menu to select from the six available functions again.	



Non-Trivial Step

EUC 3: Calculate Monthly Mortgage Payment

- Step 7 - Before this calculation can take place, the system must ensure that the loan amount and down payment are valid (e.g., the down payment should not exceed the loan amount). This necessitates the processing of inputs and might involve checks or interactions with other components or functions that validate or manipulate the data before this step.

Precondition: *The use case assumes the user has successfully launched the app which displays the main menu where the "Mortgage Calculator" function is available for selection.*

Actor: App User	System: QuickFin app
1. **TUCBW** the user clicks the "Mortgage Calculator" button from the main menu. 3. The user enters the loan amount and down payment in the input fields. 5. The user enters the annual interest rate (APR) in the input field. 6. The user enters the loan term (in years) in the input field. **8. T**he user clicks the "Calculate" button to process the input.	0) System displays the main menu with available options, including the 'Mortgage Calculator' function - user is now able to select this option to proceed. 2) System displays the Mortgage Calculator function - available input fields for loan amount, down payment, annual interest rate (APR), and loan term, as well as a "Calculate" button. 4. System calculates the total loan amount by subtracting the down payment from the loan amount. * 7. System receives and validates the loan amount, down payment, interest rate, and loan term entered by the user. 9. System calculates the monthly payment based on the total loan amount, interest rate, and loan term using the appropriate mortgage payment formula. 10. TUCEW System displaying the calculated monthly mortgage payment.

Postcondition: The system successfully displays the calculated monthly mortgage. The user is able to review or modify the inputs if needed or return to the main menu to select from the six available functions again.

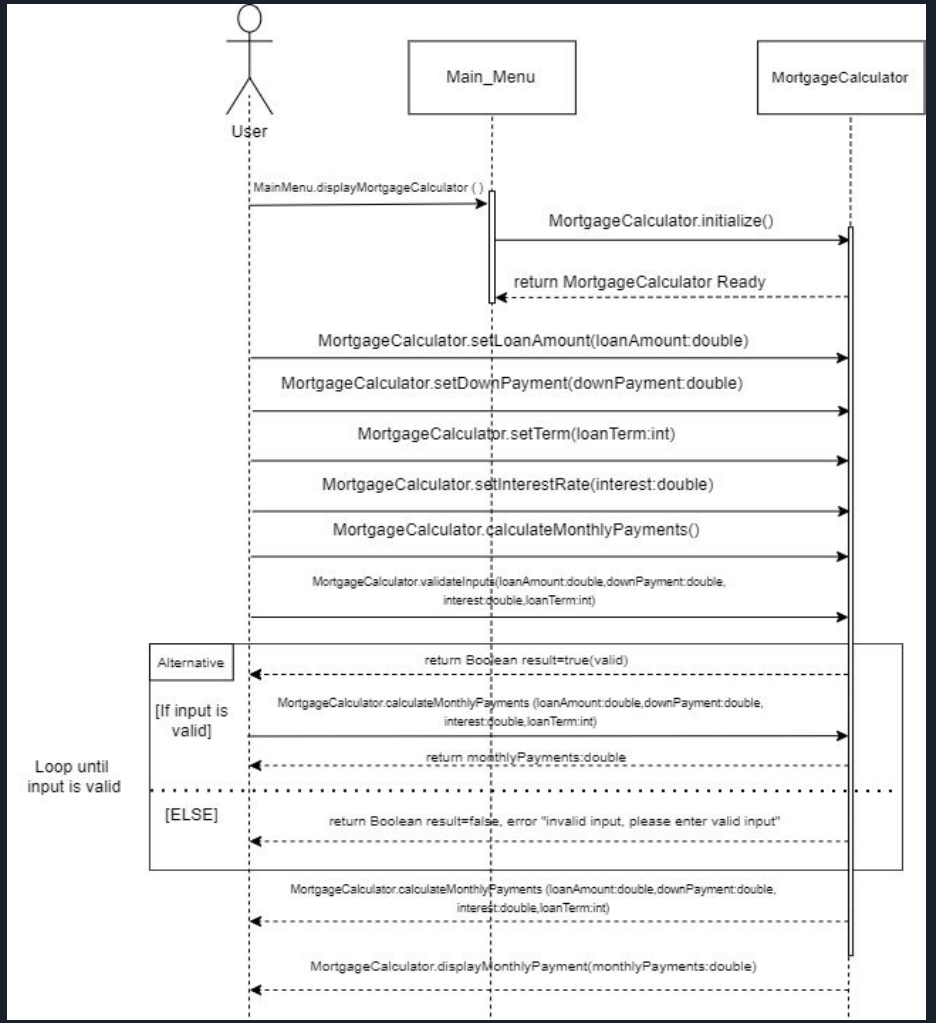
Non-Trivial Step

EUC 4: Convert Between Two Currencies

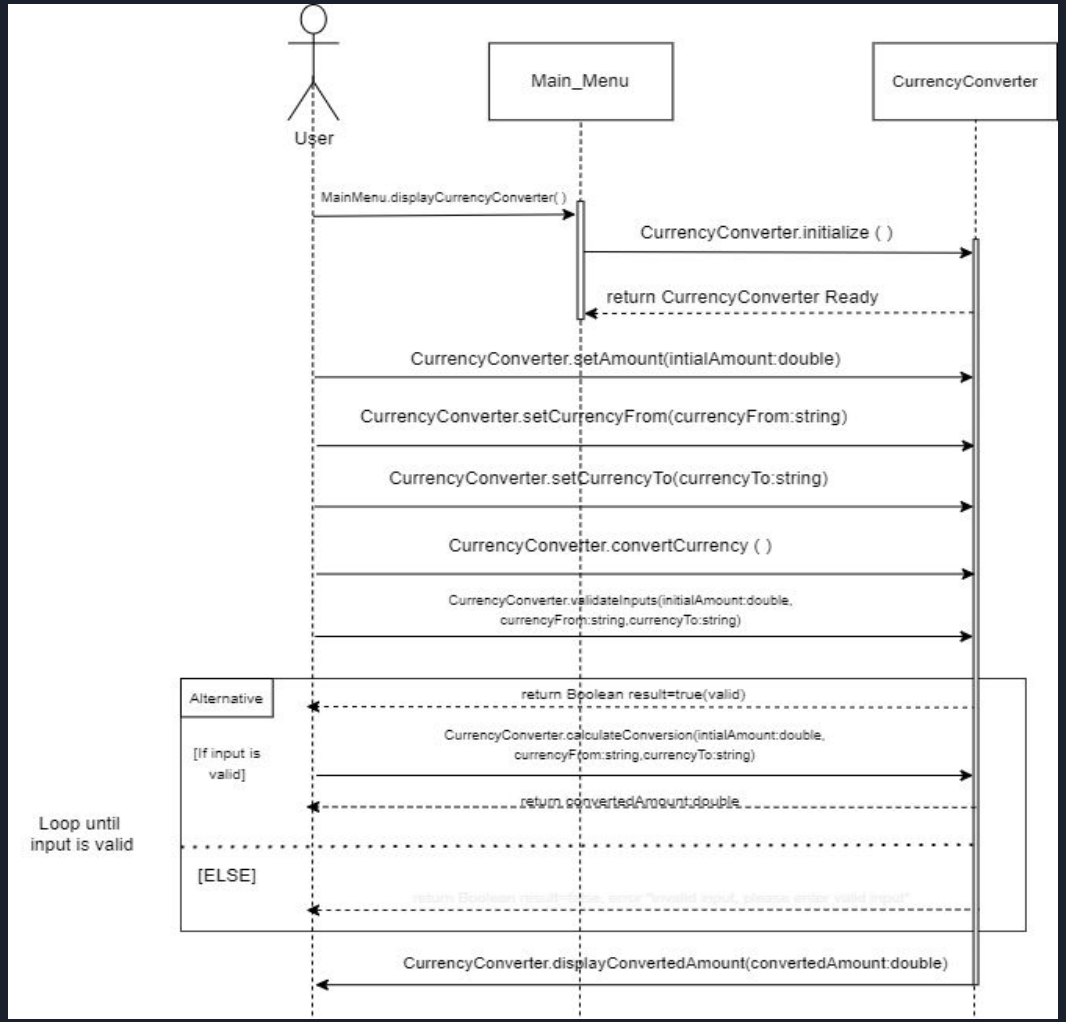
- Step 4 - This step requires background processing to perform calculations and likely involves interaction between the currency conversion module and the user input data. The response could differ based on the currencies selected (e.g., if different conversion rates apply).

Precondition: *This use case assumes that the user has opened the QuickFin app and is seeing the home menu.*	
Actor: User	System: QuickFin App
1. **TUCBW** the user clicks the “Currency Converter” button from the main menu. .3. The user selects the currency they want to convert from and the currency they want to convert to, and enters the amount. **5. TUCEW** the user clicks the “Convert” button.	0. System displays the home menu with various options including the Currency Converter. 2. System displays the Currency Converter page with options to choose the currencies and input the amount. *4. System calculates the converted amount based on the real-time exchange rate and displays the result
Postcondition: The converted amount is displayed on the screen for the user in the desired currency.	

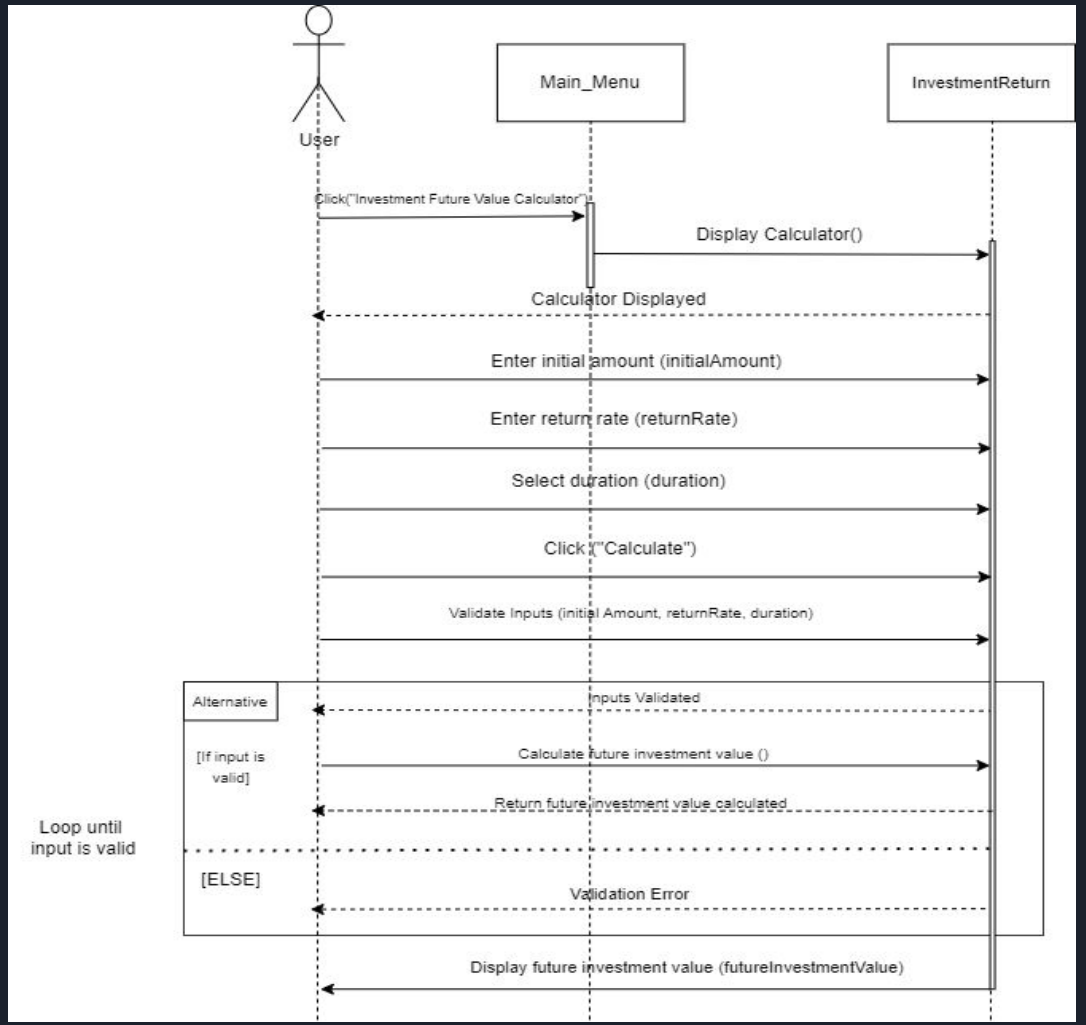
Design Sequence Diagram (UC 3)



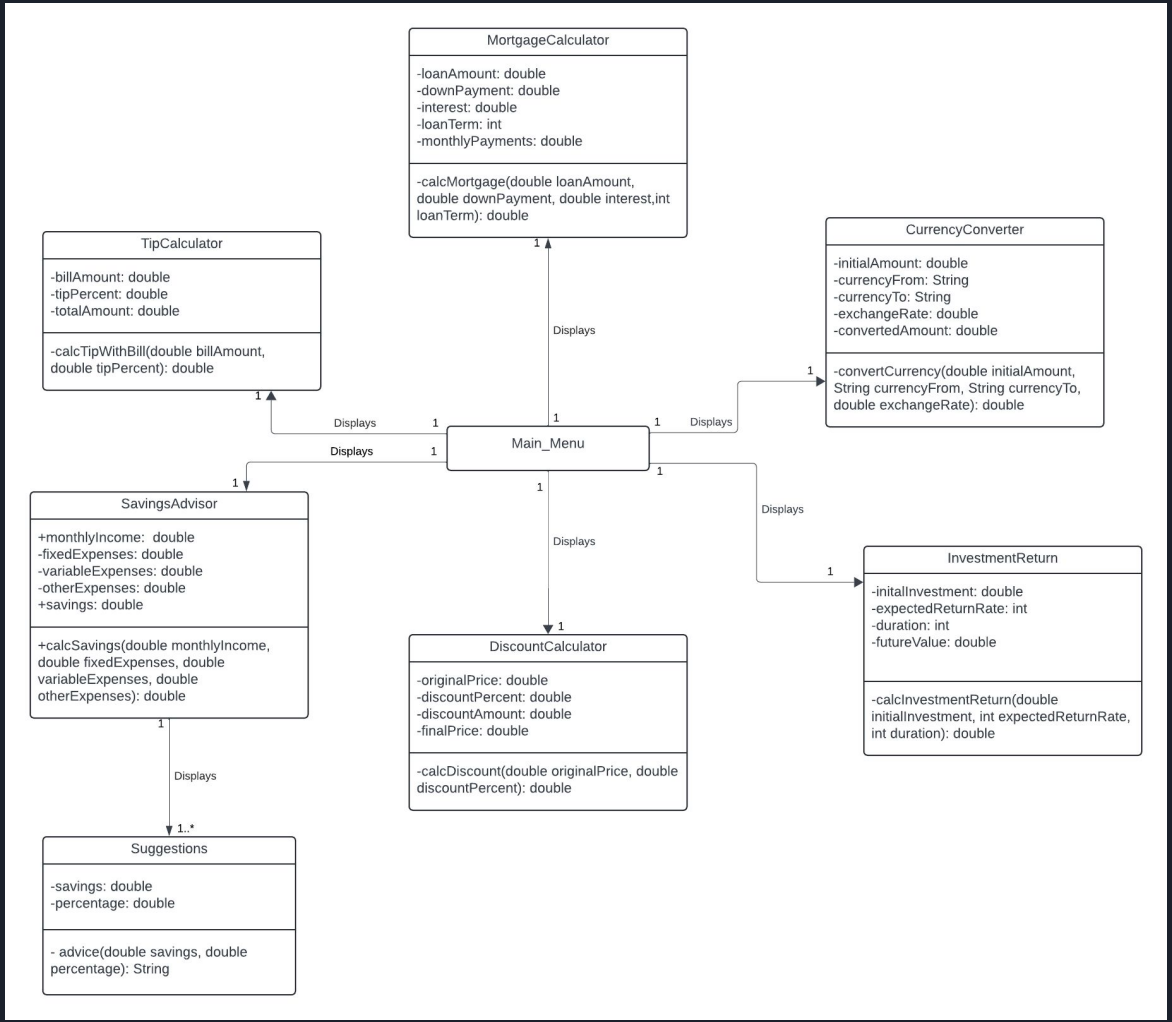
Design Sequence Diagram (**UC 4**)



Analysis Sequence Diagram (UC 5)



Class Diagram



Iteration 3

Group 6: Money Masters
CSE 3310-002: Fundamentals of Software Engineering
Date: 10/30/2024

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Agenda

- Overall Design Approach
- Project Description
- Requirements
- Use Cases
- Domain Diagram
- RUCTM
- Increment Matrix
- Expanded Use Cases
- Sequence Diagram
- DCD
- App Demo
- Summary

Overall Design Approach

Approach: Our overall design approach follows the Agile process, ensuring iterative progress and continuous improvement throughout the project. Each team member is assigned specific tasks to work on individually, contributing to iterative progress. We meet twice a week to collaborate, review completed work, and adjust our plans to maintain alignment and address challenges promptly.

Tools

Project Description

"QuickFin" is your go-to app for tackling everyday financial challenges with ease. Whether you're figuring out how much to tip at dinner, planning your dream home with a mortgage estimate, or checking the latest currency exchange rates, QuickFin has you covered. It’s packed with six easy-to-use tools, including an investment return calculator to help you grow your savings, a discount calculator for getting a better idea of your discount prices, and a saving advisor to guide you toward your financial goals. Designed with simplicity and convenience in mind, QuickFin takes the stress of the daily activities out regarding management of your money, so you can focus on what matters most.

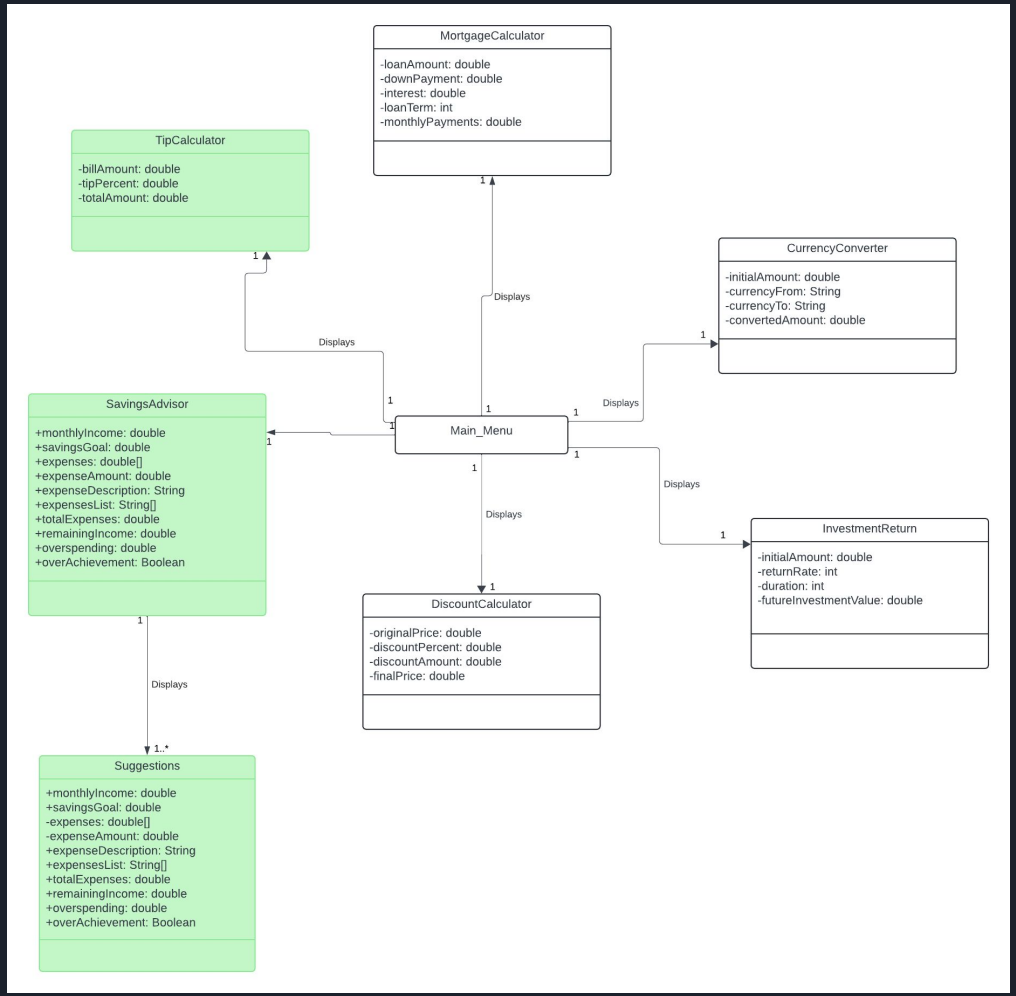
Requirements

Req ID	Requirement Description	Line Number
R1	The app shall allow the user to view the home menu which includes the function home	derived
R2	The app shall allow the user to calculate their tip amount with total bill	1 - 7
R3	The app shall allow user to calculate monthly mortgage payment	8 - 14
R4	The app shall allow the user to convert from one currency to another	15 - 23
R5	The app shall allow the user to calculate their investment future value using compound interest formula	24 - 31
R6	The app shall allow user to determine their final price after discount	32 - 38
R7	The app shall allow user to receive savings advice based on their monthly income and expenses	39 - 49

Use Case List

Use Case #	Use Case Name
UC1	Menu
UC2	Calculate Tip Amount
UC3	Calculate Monthly Mortgage Payment
UC4	Convert Between Two Currencies
UC5	Calculate Investment Future Value
UC6	Calculate Price after Discount
UC7	Receive Savings Advice

Domain Model Diagram



Increment Matrix

Team Members: Yahia E. , Dev P. , Ore A. , Mohamad A., Jeffery A

1 Person-Week = 5 hrs

Use Cases	Priority	Effort (person-weeks)	Depends on	Assigned to	Iteration 1 (10/02/2024)	Iteration 2 (10/30/2024)	Iteration 3 (11/18/2024)
UC1	1	2	None	DP	2		
UC2	2	2	UC1	YE	1	1	
UC3	4	3	UC1	JA,OA	1	1	1
UC4	4	2	UC1	OA, DP		1	1
UC5	3	2	UC1	MA,YE	1		1
UC6	2	2	UC1	MA		1	1
UC7	3	2	UC1	MA,DP,YE		1	2
Total Effort		16			5	5	6

Requirements - Use Case Traceability Matrix

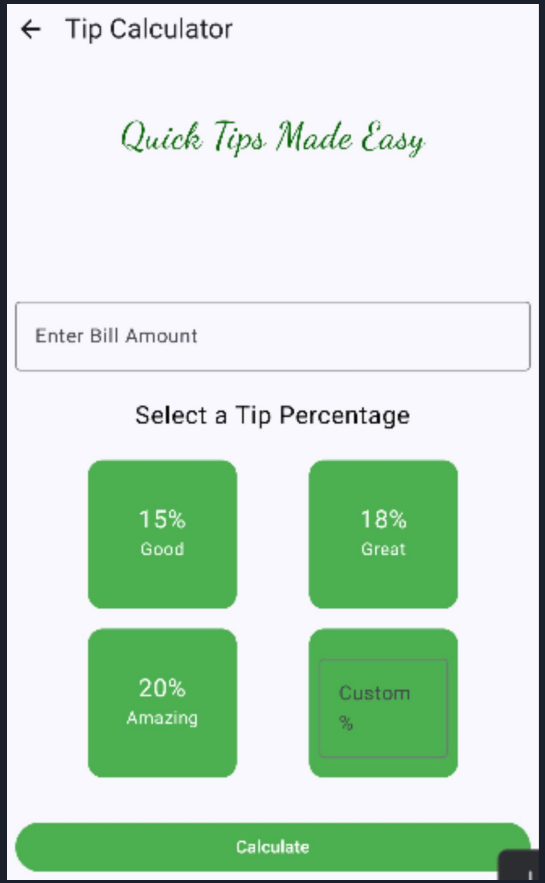
	Priority Weight	UC1	UC2	UC3	UC4	UC5	UC6	UC7
R1	1	X						
R2	2		X					
R3	4			X				
R4	4				X			
R5	3					X		
R6	2						X	
R7	3							X
Score		1	2	4	4	3	2	3

Note: Priority is ranked 1-4 with 1 being the highest priority

Expanded Use Case #2

EUC 2: Calculate Tip Amount

Precondition: This use case assumes that the user has opened the QuickFin app and is seeing the home menu.	
Actor: App User	System: QuickFin app
1. **TUCBW** the user clicks the “Tip Calculator” button from the main menu. 3. The user enters the total bill amount and their specific tip percentage 5. **TUCEW** the user clicks the “Calculate” button and displays the result derived from step 4.	0. System displays the home menu with various options including the Tip Calculator. 2. System displays the Tip Calculator page with 3 recommended tip percentages, and 1 custom percentage button to calculate the bill total and total tip amount. 4. System validates the inputs and calculates the tip and the total bill with the tip included, then displays the result.
Postcondition: The calculated tip and total bill (with tip included) are displayed on the screen for the user.	



Non-Trivial Step

EUC 2: Tip Calculation

- Step 4 - While the step itself may not yield varied responses for different users based solely on the user's role, it's context-sensitive.
  - For example, if the system allows users to set preferences for tip percentages based on past behavior or demographics (e.g., a user who regularly tips more might have that preference saved), then the output could vary based on these settings.
- Depending on the implementation, this could involve background processing (e.g., validating inputs, and handling potential errors like non-numeric values).

Precondition: This use case assumes that the user has opened the QuickFin app and is seeing the home menu.	
Actor: App User	System: QuickFin app
1. **TUCBW** the user clicks the "Tip Calculator" button from the main menu. 3. The user enters the total bill amount and their specific tip percentage 5. **TUCEW** the user clicks the "Calculate" button.	0. System displays the home menu with various options including the Tip Calculator. 2. System displays the Tip Calculator page with 3 recommended tip percentages, and 1 custom percentage button to calculate the bill total and total tip amount. *4. System validates the inputs and calculates the tip and the total bill with the tip included, then displays the result.
Postcondition: The calculated tip and total bill (with tip included) are displayed on the screen for the user.	

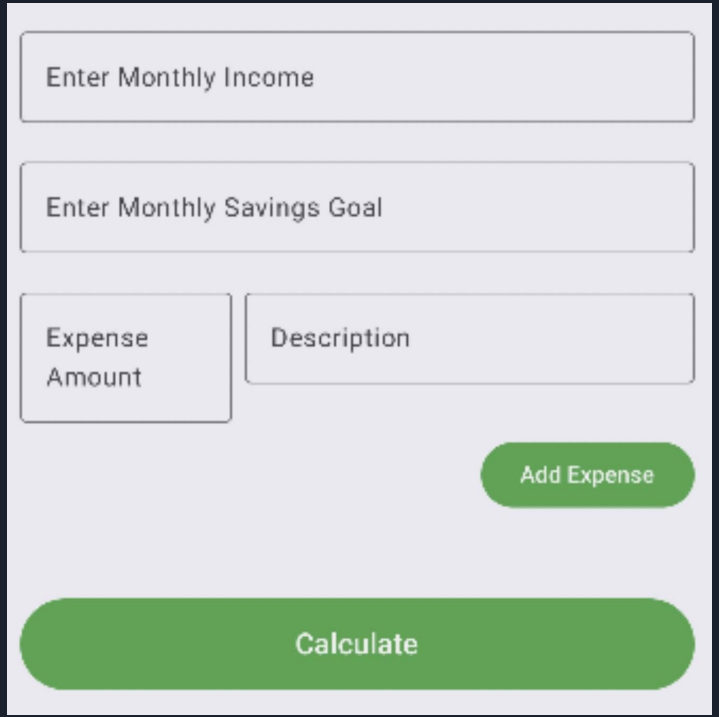
Expanded Use Case #7

EUC 7: Receive Savings Advice

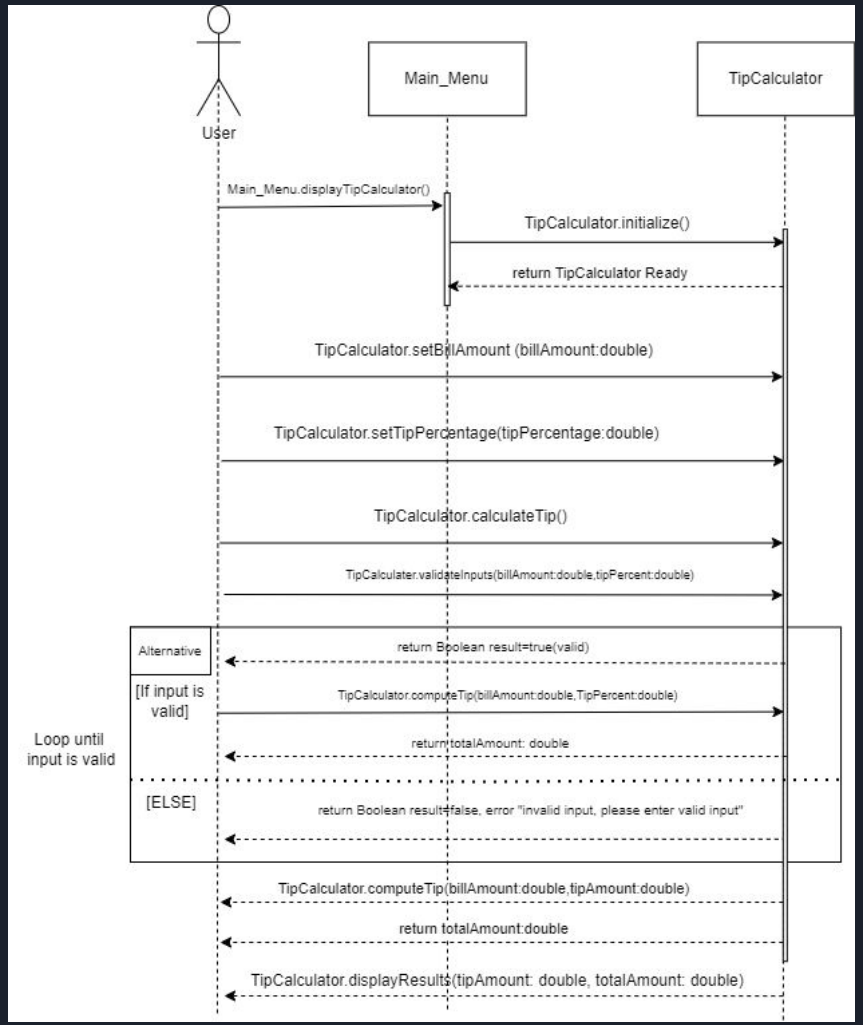
Precondition: The use case assumes the user has successfully launched the app, which displays the main menu where the "Savings Advisor" function is available for selection.

Actor: App User	System: QuickFin App
1. **TUCBW** the user clicks the "Savings Advisor" button from the main menu. 3. The user enters their amounts of monthly income, savings goal, expenses along with their description (e.g., rent, mortgage, insurance) in the input fields. 5. **TUCEW** the user clicks the "Calculate" button to receive savings advice and displays the respective message based off inputs along with the subtracted amount (message and subtracted amount is described in step 4).	0. The system displays the main menu with available options, including the 'Savings Advisor' function - user is now able to select this option to proceed. 2. The system displays the "Savings Advisor" interface with an input field for monthly income, monthly savings goal, and an input for entering expenses as well as a "Calculate" button. 4. The system receives and validates all inputs for income, savings goal, and expenses provided by the user. The system calculates the total expenses by summing all the expenses entered by the user. The system determines whether or not the total expenses the user input exceeds or doesn't exceed the total income subtracted by the monthly savings goal. Based on this number, the system generates a message: - If the total amount of expenses exceeds the total income subtracted by the monthly savings goal: System will print a message printing " Underachieved! Try saving more next time. - If the total amount of expenses doesn't exceed the total income subtracted by the monthly savings goal: System will print a message printing " Well done! You achieved your savings goal! You exceeded your goal by $%d " (%d representing how much money you saved based off your income and savings goal)

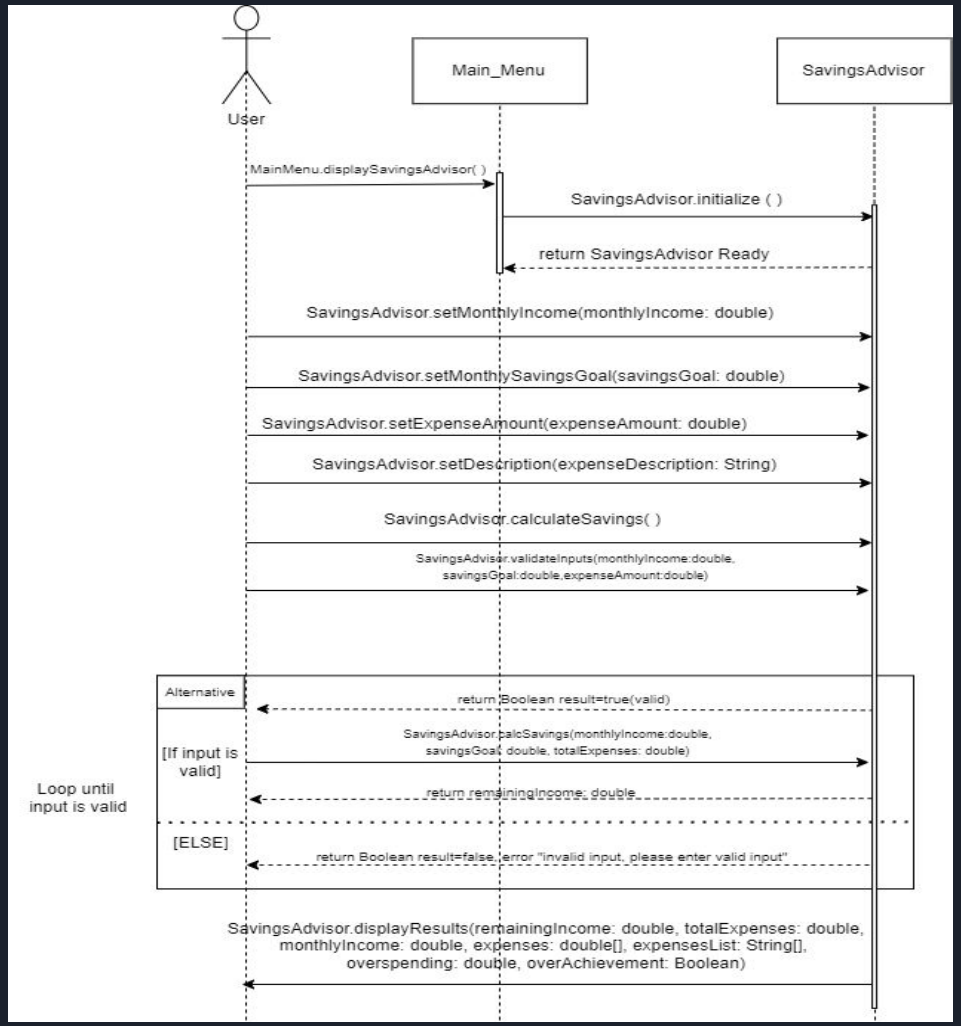
Postcondition: The system successfully displays the calculated monthly savings and provides a message whether you saved enough or not. The user is able to review or modify the inputs if needed or return to the main menu to select from the six available functions again.



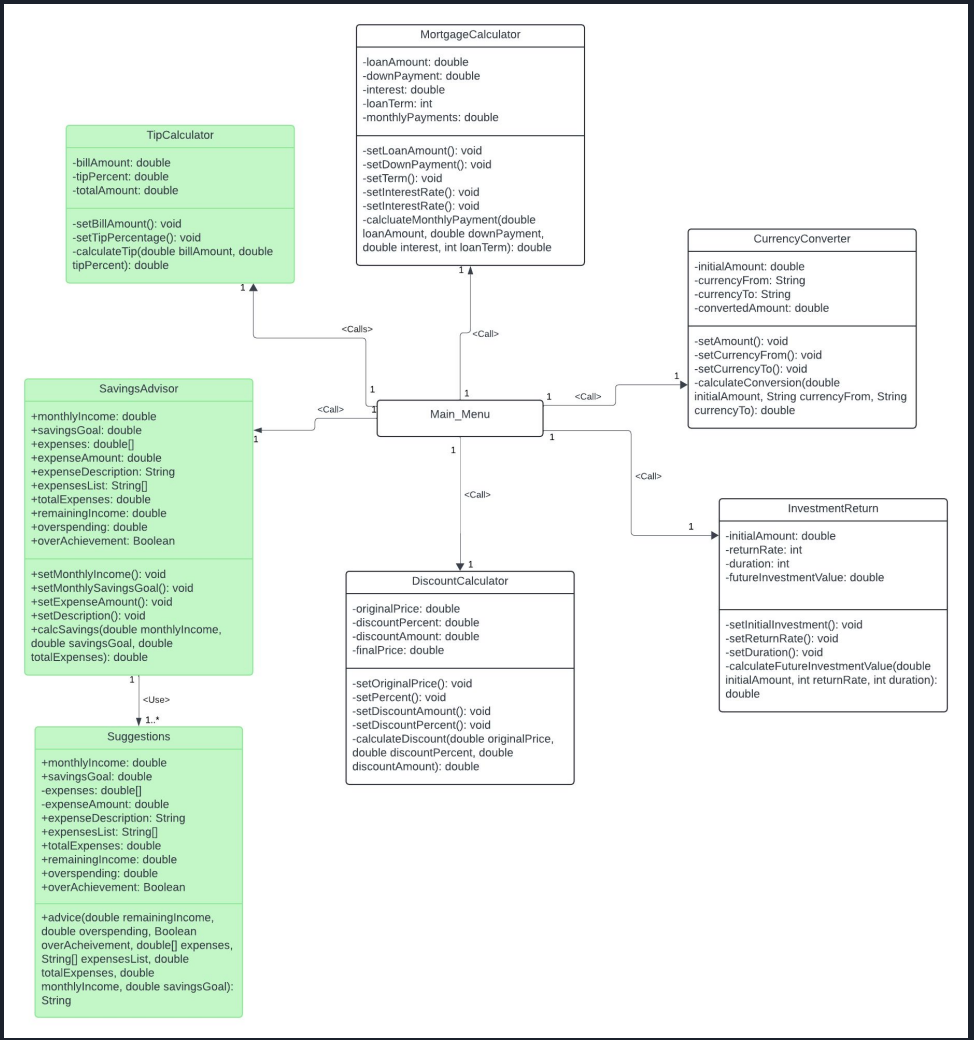
Design Sequence Diagram (UC 2)



Design Sequence Diagram (UC 7)



Domain Class Diagram



App Demo

Summary

Our group developed an app to help manage everyday financial tasks, including tip calculations, mortgage estimations, currency conversions, investment forecasting, discount calculations, and savings advice.

Throughout the development process, the design and appearance of our calculator evolved, yet the core goal remained the same: simplifying financial decision-making. QuickFin enables users to make quick, accurate calculations and addresses the complexities of daily money management with ease and precision.

THANK YOU

ANY QUESTIONS?