Faculty of Computers and Artificial Intelligence

Cairo University

Course Name: Introduction to Software Engineering

Course Instructor: Dr. Mohamed Elramly

Personal Budgeting Software

**** Assignment #1 – SRS ****

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Document Purpose and Audience

Purpose

The Software Requirements Specification (SRS) document serves as a comprehensive description of the intended purpose, functionality, and behavior of a software system. It is a critical artifact in the software development lifecycle and is used to communicate the requirements of the system to all stakeholders, including developers, testers, project managers, and clients.

Audience

- Stakeholders
- Developers
- Testers
- Project managers
- Clients

Introduction

Software Purpose

Budgeting apps are software applications that you can access from most personal devices to manage your personal finances.

The core goal of a personal budgeting app is to help you track the money you have coming in and the money you're spending. In essence, these apps work like a personal financial manager: monitoring and analyzing your transactions to provide helpful insights and keep you on top of your budget.

For an additional fee, some apps offer advanced features tailored to specific financial goals. For example, they can calculate how much money you have allocated to a certain category and track that specific expense. They can also tell you how much you can spend each day while staying within your budget.

Software Scope

This software will include the following components:

Software Requirements Specifications

1. User management features. (Registration, login, identify authorized and unauthorized users).
2. Budget tracking and & Expense management. (The user will be able to add, edit, categorize, and delete incomes and expenses. The user should be able to set a financial goal and track it.)
3. Integration with the bank account.
4. Sensitive financial data will be encrypted.
5. Generating reports that summarize expenses and incomes using graphs –when the user requests.

Definitions, acronyms, and abbreviations

Transactions	any money that moves in or out of your bank account.
Two-Factor Authentication (2FA)	prevents cybercriminals from stealing, destroying, or accessing your internal data records for their own use.
Expense Category	Estimate how much you spend on these each month as Groceries, eating out, gifts, clothes, and gas
Encryption	a way to conceal information by altering it so that it appears to be random data.
License Number	the code you received when you purchased the software or enclosure with the software bundled.

Requirements

Functional Requirements

Requirement ID	Description
FR01	The application shall have a login/sign-up screen as soon as the user opens the application.
FR02	• If the user chooses to log in, the application will provide a text box for them to enter their username and password. • The system should validate if the account exists in the system. If the

Software Requirements Specifications

	account is not found, show an error message: “Invalid username or password. Please try again.” - The system should provide a "Forgot Password" for password recovery via email.
FR03	- If the user chooses to sign up, the system should allow users to create an account using: email & password and license number - The system should validate the email existence before submission. - The system shall check the validity of the license number before completing registration.
FR04	The application should have a panel for user that consists of 1- " Home " tab - Display overview of income, expenses, savings, and budget progress (graphs) 2- " Budget "tab - The system should allow users to create a budget plan by setting spending limits for different categories. - The system should allow users to edit, delete, or add custom categories to their budget plan. - The system should track the user’s actual expenses against their budgeted amounts. **3-** " Transactions " tab - The system should allow users to log income and expenses manually. - The system should allow users to filter and search by date. - The system should support recurring transactions for fixed expenses (e.g., rent, subscriptions). - The system should display transactions in a list format, sorted by most recent. 4- " Goals " tab - The system should allow users to set and track savings goals (e.g.,

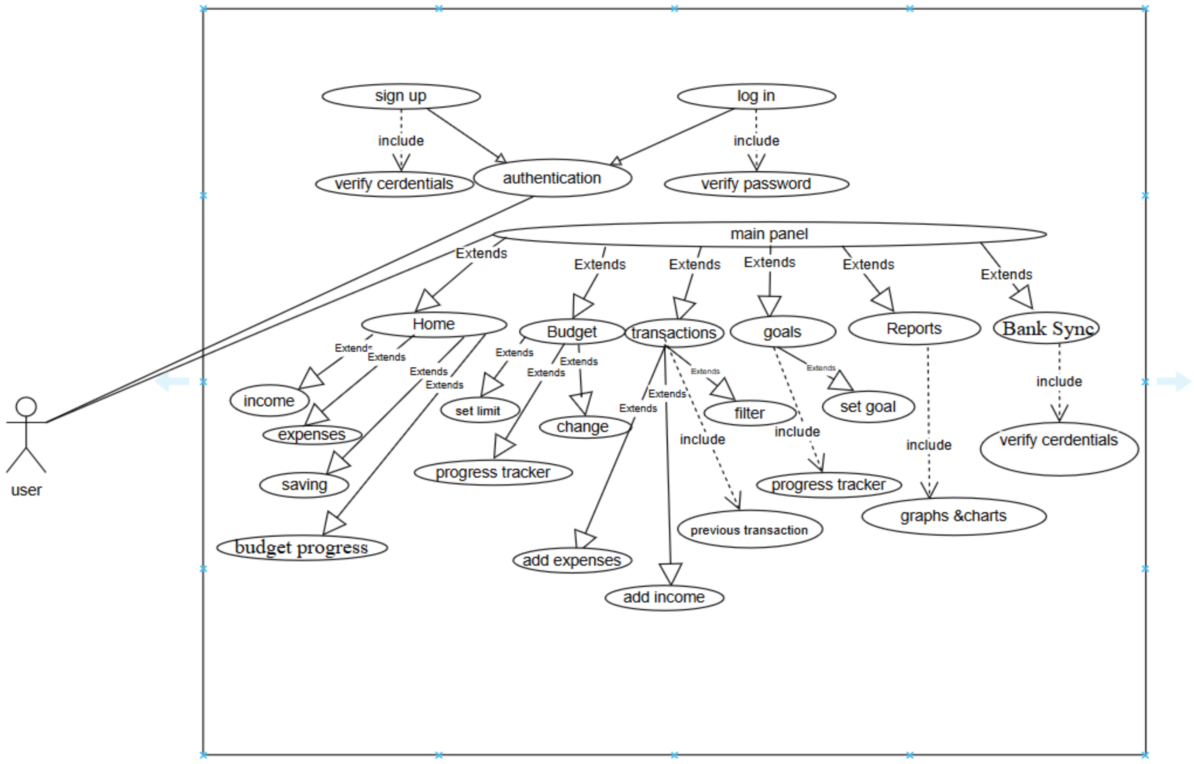
	vacation, emergency fund). • The system should provide a progress tracker that updates as users save money. 5- " Reports & Insights " • The system should generate visual reports (graphs, charts) showing spending trends. 6- " Bank Sync " tab The system shall allow users to sync their bank accounts to automatically import transactions.

Non-Functional Requirements

	Details
Usability	• The product shall be easy to use by people who aren't fluent in English. • The product shall contain Arabic language. • The product shall provide a tutorial after installing the app to guide new users. • The product shall be compatible with various screen sizes.
Performance	• The product shall not take more than 20 seconds for a transaction. • The product shall produce the reports after 3 seconds of the user request.
Maintainability	• The product shall be modified if the bank system has a new update.
Security	• The product shall ensure that only authorized users are able to gain access. • The product shall distinguish between authorized users and non-authorized users. • The product shall encrypt any sensitive financial information related to user's bank account. • The product shall include data backup to prevent data loss.
Scalability	• The product shall be able to handle at least 2000 users at a time.

System Models

Use Case Model



Enriched User Stories

- ### User Story #1

User Story ID	US #1
User Story Name	Account Registration
Actors	New User
Description	As a new user, I want to register with my email and password, so .that I can create a secure personal account
Pre condition	User is on the registration page.

Software Requirements Specifications

Post condition	User account is created, and the user is logged in.
Acceptance Criteria	- The system must validate email format. - The system must enforce password strength. - The system must ensure email uniqueness before creating an account. - The user must be redirected to the dashboard after successful registration.

- **Scenarios**

Normal Scenario

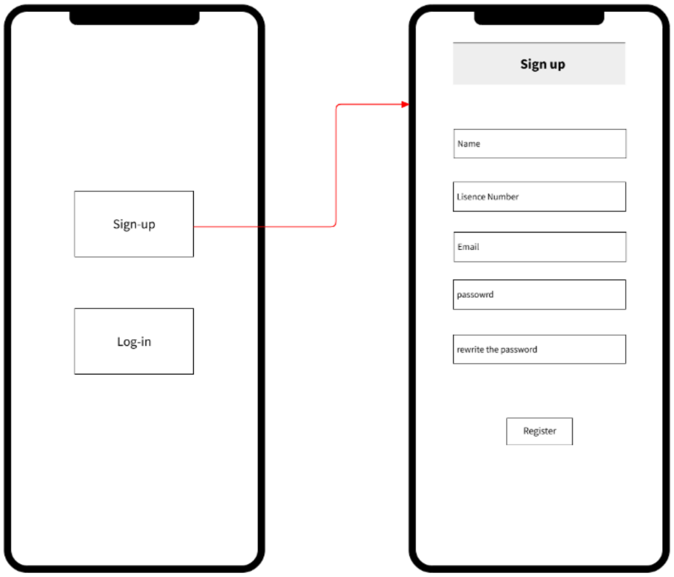
Actor Action	System Response
1. User enters email, password, and confirms password.	
	2. System validates email format and password strength.
3. User clicks "Register."	
	4. System checks if the email is already registered.
	5. System displays a success message and redirects it to the dashboard.

Exceptional Scenario

Actor Action	System Response
1. User enters an invalid email format.	
	2. System displays an error message: "Invalid email format."
3. User enters an email that is already registered.	
	4. System displays an error message: "Email already in use."

Software Requirements Specifications

- **Screen Design**



- **Data Dictionary:**

Element Label	Type/Length	Data Validation / Business Rule
Name	Text<100 chars	Structured text
License Number	Text<100 chars & nums	Structured text
Email	Text <100chars & nums	Structured text
Password	Text < 100 chars& nums	Structured text

- **User Story #2**

User Story ID	US #2
User Story Name	Secure Login & Logout

Software Requirements Specifications

-

Actors	Registered User
Description	As a registered user, I want to log in and log out securely, so that .my financial data remains private and protected
Per condition	User is on the login page.
Post condition	User is logged in or logged out.
Acceptance Criteria	- The system must verify the email and password against the database. - The system must redirect the user to the dashboard after successful login. - The system must clear the session and redirect to the login page after logout.

Scenarios

Normal Scenario

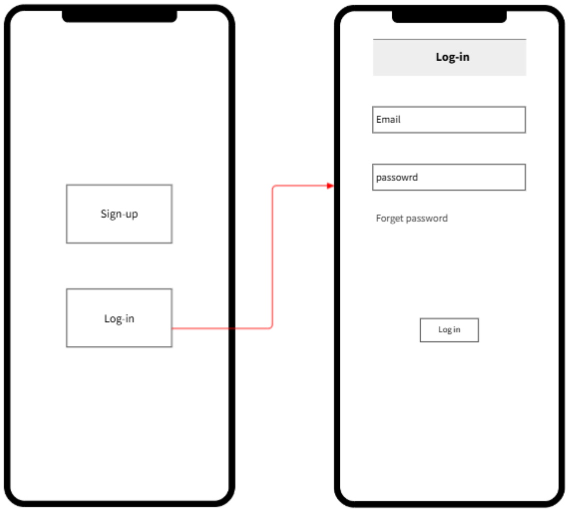
Actor Action	System Response
1. User enters email and password.	
	2. System verifies credentials.
3. User clicks "Login."	
	4. If credentials are correct, the system logs the user in and redirects to the dashboard.
5. User clicks "Logout."	
	6. System logs the user out and redirects to the login page.

Exceptional Scenario

Actor Action	System Response
1. User enters an incorrect email or password.	
	2. System displays an error message:

	"Invalid email or password."
3. User tries to log in with an unregistered email.	
	4. System displays an error message: "Email not found."

- **Screen Design**



- **Data Dictionary:**

Element Label	Type/Length	Data Validation / Business Rule
Email	Text < 100 chars&nums	Structured text
Password	Text < 100 chars&nums	Structured text

- **User Story #3**

Software Requirements Specifications

User Story ID	US #3
User Story Name	Password Recovery
Actors	User
Description	As a user, I want to reset my password via email verification, so .that I can regain access to my account if I forget my password
Per condition	User is on the password recovery page.
Post condition	User receives a password reset link via email.
Acceptance Criteria	- The system must verify the email exists in the database. - The system must send a password reset link to the registered email. - The system must validate the new password - The system must display a success message after the password is updated.

- ## Scenarios

Normal Scenario

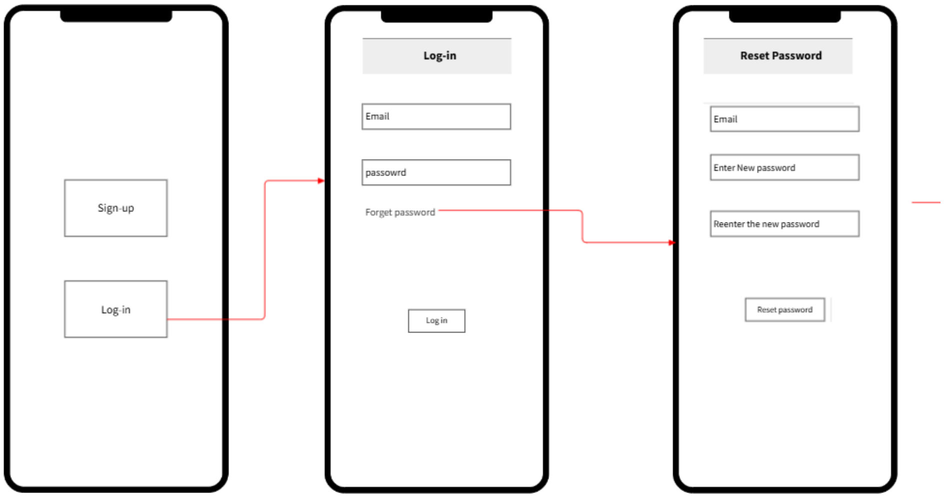
Actor Action	System Response
1. User enters their registered email.	
	2. System verifies if the email exists.
3. User clicks "Reset Password."	
	4. System sends a password reset link to the email.
5. User clicks the link in the email.	
	6. System redirects to the password reset page.
7. User enters a new password and confirms it.	
	8. System updates the password and displays a success message.

Exceptional Scenario

Software Requirements Specifications

Actor Action	System Response
1. User enters an unregistered email.	
	2. System displays an error message: "Email not found."
3. User enters a weak new password.	
	4. System displays an error message: "Password must be at least 8 characters long and include numbers and symbols."

- **Screen Design**



- **Data Dictionary:**

Element Label	Type/Length	Data Validation / Business Rule
Email	Text < 100 chars&nums	Structured text
New password	Text < 100 chars&nums	Structured text
Rewrite password	Text < 100 chars&nums	Structured text

Software Requirements Specifications

- ## User Story #4

User Story ID	US #4
User Story Name	Add Income
Actors	User
Description	I want to record my income sources with details such ,As a user so that I can track my earnings ,as amount and category accurately.
Per condition	User is logged in and on the income tracking page.
Post condition	Income is recorded in the system.
Acceptance Criteria	- The system must validate the amount. - The system must validate the category. - The system must update the dashboard with the new income record.

- ## Scenarios

Normal Scenario

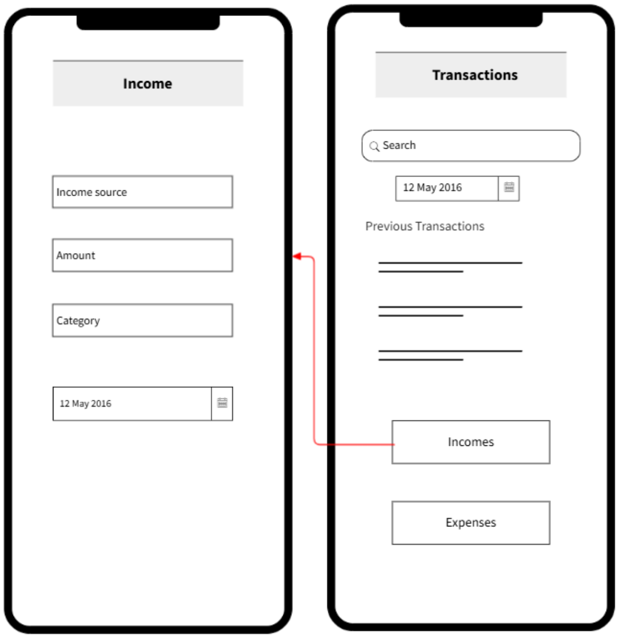
Actor Action	System Response
1. User clicks "Add Income."	
	2. System displays a form for income details.
3. User enters amount, category, and date.	
	4. System validates the input.
5. User clicks "Save."	
	6. System records the income and updates the dashboard.

Exceptional Scenario

Actor Action	System Response
1. User enters a negative amount.	

	2. System displays an error message: "Amount must be a positive number."
3. User leaves the category field empty.	
	4. System displays an error message: "Category is required."

- **Screen Design**



- **Data Dictionary:**

Element Label	Type/Length	Data Validation / Business Rule
Income source	Text < 100 chars	Structured text
Amount	integer	> 0
Category	Text < 100 chars	Structured text
Date	integers	> 0

- **User Story #5**

Software Requirements Specifications

User Story ID	US #5
User Story Name	Add and Categorize Expenses
Actors	User
Description	As a user, I want to record my daily expenses and assign them to categories (e.g., groceries, rent, entertainment), so that I can .monitor my spending habits
Per condition	User is logged in and on the expense tracking page.
Post condition	Expense is recorded and categorized.
Acceptance Criteria	- The system must validate the amount. - The system must validate the category. - The system must update the dashboard with the new expense record.

- **Scenarios**

Normal Scenario

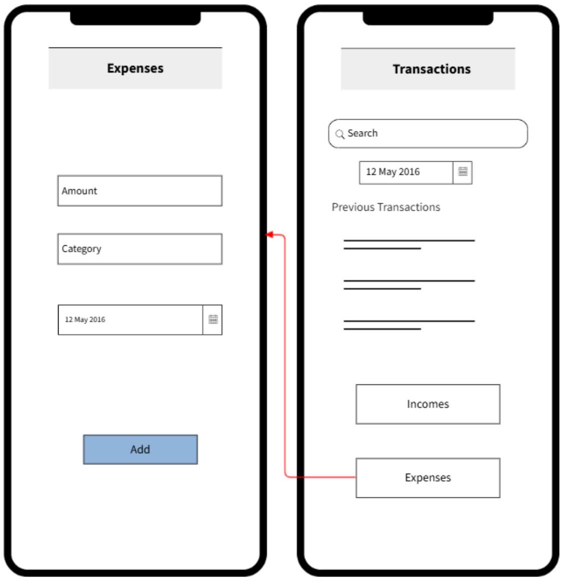
Actor Action	System Response
1. User clicks "Add Expense."	
	2. System displays a form for expense details.
3. User enters amount, category, and date.	
	4. System validates the input.
5. User clicks "Save."	
	6. System records the expense and updates the dashboard.

Exceptional Scenario

Actor Action	System Response
1. User enters a negative amount.	
	2. System displays an error message:

	"Amount must be a positive number."
3. User leaves the category field empty.	
	4. System displays an error message: "Category is required."

- ### Screen Design



- ### Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Amount	integer	> 0
Category	Text < 100 chars	Structured text
Date	integers	> 0

- ### User Story #6

User Story ID	US #6
User Story Name	Edit & Delete Transactions

Software Requirements Specifications

Actors	User
Description	As a user, I want to update or delete my income and expense records, so that I can correct mistakes and keep my financial .data accurate
Per condition	User is logged in and viewing transaction history.
Post condition	Transaction is updated or deleted.
Acceptance Criteria	- The system must allow the user to edit or delete transactions. - The system must validate changes before saving. - The system must refresh the dashboard after updates or deletions.

- **Scenarios**

Normal Scenario

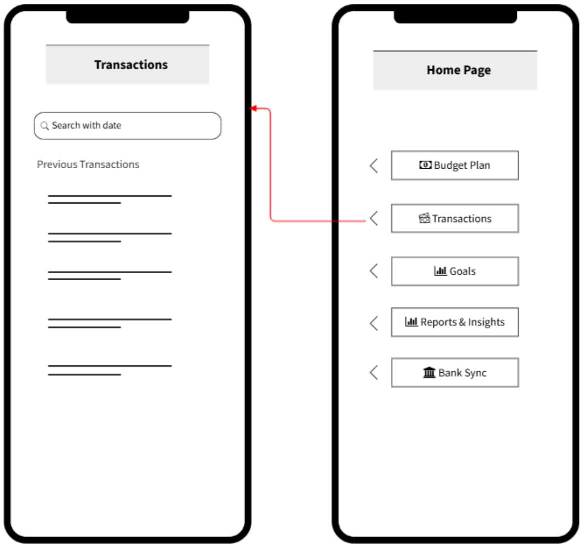
Actor Action	System Response
1. User selects a transaction to edit or delete.	
	2. System displays the transaction details.
3. User updates the details or clicks "Delete."	
	4. System validates the changes or confirms deletion.
5. User clicks "Save" or "Confirm."	
	6. System updates or removes the transaction and refreshes the dashboard.

Exceptional Scenario

Actor Action	System Response
1. User tries to edit a transaction with invalid data.	

	2. System displays an error message: "Invalid data. Please check your input."
3. User tries to delete a non-existent transaction.	
	4. System displays an error message: "Transaction not found."

- **Screen Design**



- **Data Dictionary:**

Element Label	Type/Length	Data Validation / Business Rule
Search	Text < 100 chars	Valid transaction name

- **User Story #7**

User Story ID	US #7
User Story Name	Set Monthly Budget
Actors	User

Software Requirements Specifications

Description	As a user, I want to set a budget limit for different expense categories, so that I can control my spending and avoid .overspending
Per condition	User is logged in and on the budget planning page.
Post condition	Budget limits are set for categories.
Acceptance Criteria	- The system must validate the budget limit. - The system must update the dashboard with the new budget.

- ## Scenarios

Normal Scenario

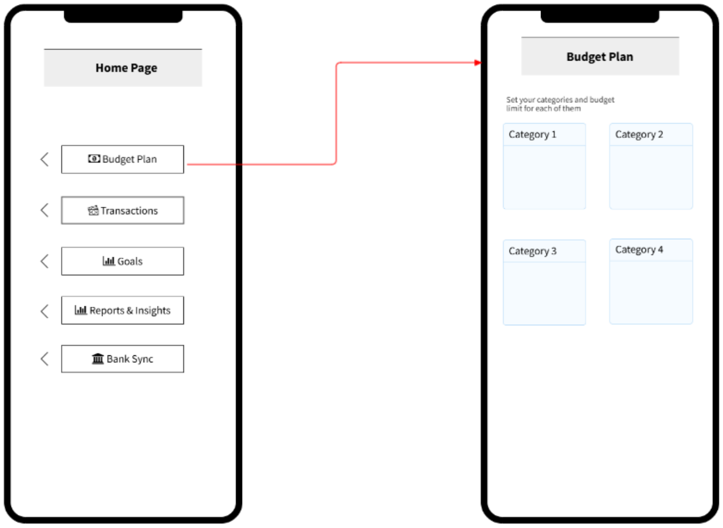
Actor Action	System Response
1. User clicks "Set Budget."	
	2. System displays a form for budget details.
3. User enters category and budget limit.	
	4. System validates the input.
5. User clicks "Save."	
	6. System records the budget and updates the dashboard.

Exceptional Scenario

Actor Action	System Response
1. User enters a negative budget limit.	
	2. System displays an error message: "Budget limit must be a positive number."
3. User leaves the category field empty.	
	4. System displays an error message: "Category is required."

Software Requirements Specifications

- **Screen Design**



- **Data Dictionary:**

Element Label	Type/Length	Data Validation / Business Rule
Category	Text < 1000 chars	Structured text

Software Requirements Specifications

- ## User Story #8

User Story ID	US #8
User Story Name	Track Budget Progress
Actors	User
Description	As a user, I want to see my spending progress against my budget, so that I can adjust my expenses accordingly before .exceeding limits
Per condition	User is logged in and on the budget tracking page.
Post condition	Budget progress is displayed.
Acceptance Criteria	- The system must display accurate spending progress for each category. - The system must update the progress in real-time as expenses are added.

- ## Scenarios

Normal Scenario

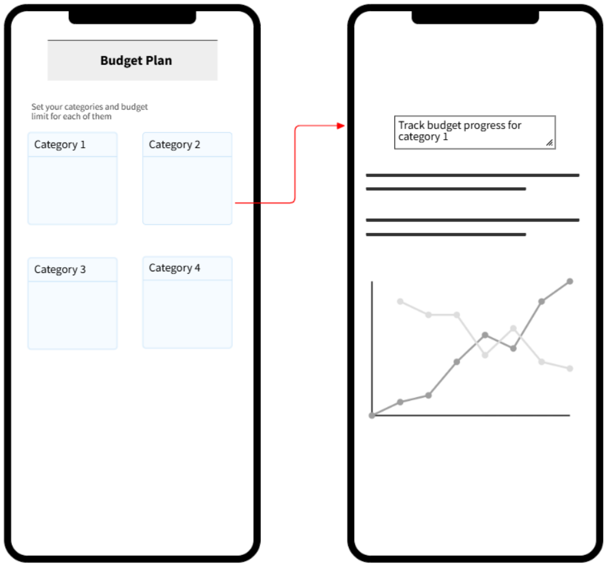
Actor Action	System Response
1. User selects a budget category.	
	2. System retrieves spending data for the category.
	3. System displays a progress bar or chart showing spending vs. budget.

Exceptional Scenario

Actor Action	System Response
1. User selects a category with no budget set.	
	2. System displays a message: "No budget set for this category."

Software Requirements Specifications

- **Screen Design**


Budget Plan
Set your categories and budget limit for each of them
Category 1
Category 2
Category 3
Category 4
Track budget progress for category 1

- **User Story #9**

User Story ID	US #9
User Story Name	Set Savings Goals
Actors	User
Description	As a user, I want to create financial goals with a target amount .and deadline, so that I can plan my savings effectively
Per condition	User is logged in and on the savings goals page.
Post condition	Savings goal is created and tracked.
Acceptance Criteria	- The system must validate the target amount. - The system must validate the deadline. - The system must update the dashboard with the new savings goal.

- **Scenarios**

Software Requirements Specifications

Normal Scenario

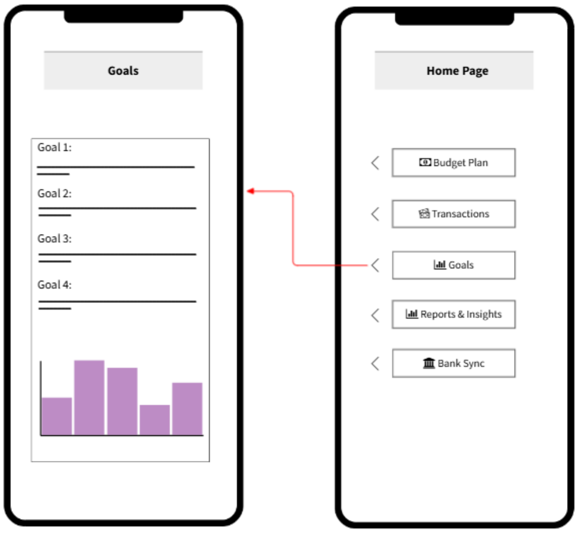
Actor Action	System Response
1. User clicks "Add Savings Goal."	
	2. System displays a form for goal details.
3. User enters goal name, target amount, and deadline.	
	4. System validates the input.
5. User clicks "Save."	
	6. System records the goal and updates the dashboard.

Exceptional Scenario

Actor Action	System Response
1. User enters a negative target amount.	
	2. System displays an error message: "Target amount must be a positive number."
3. User enters a past deadline.	
	4. System displays an error message: "Deadline must be a future date."

- ## Screen Design

Software Requirements Specifications



- ## Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Goal	Text < 300 chars	Structured text

- ## User Story #10

User Story ID	US #10
User Story Name	View Financial Reports
Actors	User
Description	As a user, I want to generate and view financial reports with visual charts, so that I can analyze my income and expenses .easily
Per condition	User is logged in and on the reports page.
Post condition	Financial report is generated and displayed.
Acceptance Criteria	- The system must generate accurate reports for the selected time period. - The system must display visual charts.

Software Requirements Specifications

- ## Scenarios

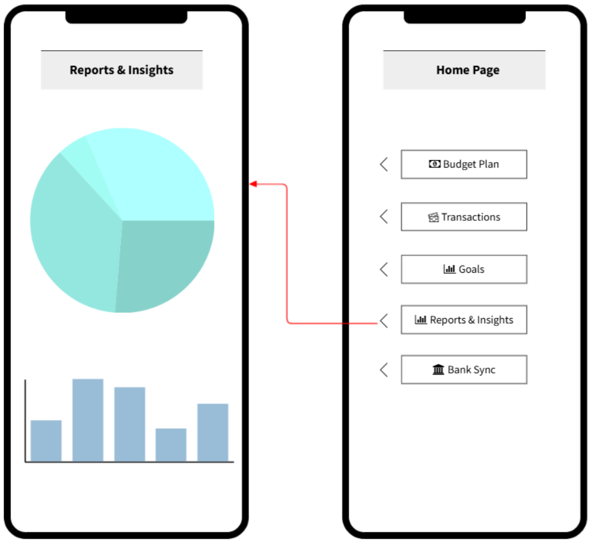
Normal Scenario

Actor Action	System Response
1. User selects a period.	
	2. System retrieves financial data for the selected period.
	3. System generates a report with visual charts and displays it.

Exceptional Scenario

Actor Action	System Response
1. User selects a time period with no data.	
	2. System displays a message: "No data available for the selected period."

- ## Screen Design



Software Requirements Specifications

- ## User Story #11

User Story ID	US #11
User Story Name	Receive Budget Alerts
Actors	User
Description	As a user, I want to receive notifications when I exceed my budget, so that I can control my spending and make better .financial decisions
Per condition	User has set a budget and is logged in.
Post condition	Notification is sent to the user.
Acceptance Criteria	- The system must send a notification when spending exceeds the budget. - The notification must include details about the exceeded category.

- ## Scenarios

Normal Scenario

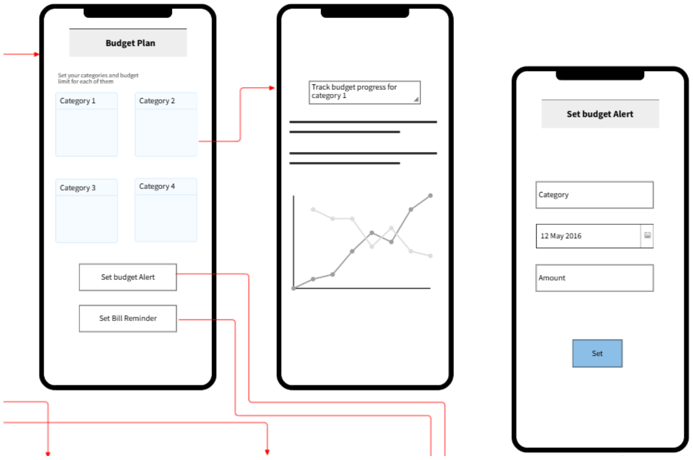
Actor Action	System Response
	1. System monitors spending against the budget.
	2. If spending exceeds the budget, the system sends a notification to the user.

Exceptional Scenario

Actor Action	System Response
1. User has not set a budget for any category.	
	2. System does not send any notifications.

- ## Screen Design

Software Requirements Specifications



- ## Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Category	Text < 100	Structured text
Date	integers	Valid date
Amount	Integer	> 0

- ## User Story #12

User Story ID	US #12
User Story Name	Get Bill Reminders
Actors	User
Description	As a user, I want to receive alerts for upcoming bill payments, so .that I can pay them on time and avoid penalties
Per condition	User has added bills to the system and is logged in.
Post condition	Reminder is sent to the user.
Acceptance Criteria	- The system must send reminders for bills due within a specified time frame. - The reminder must include the bill name, amount, and due date.

Software Requirements Specifications

- ## Scenarios

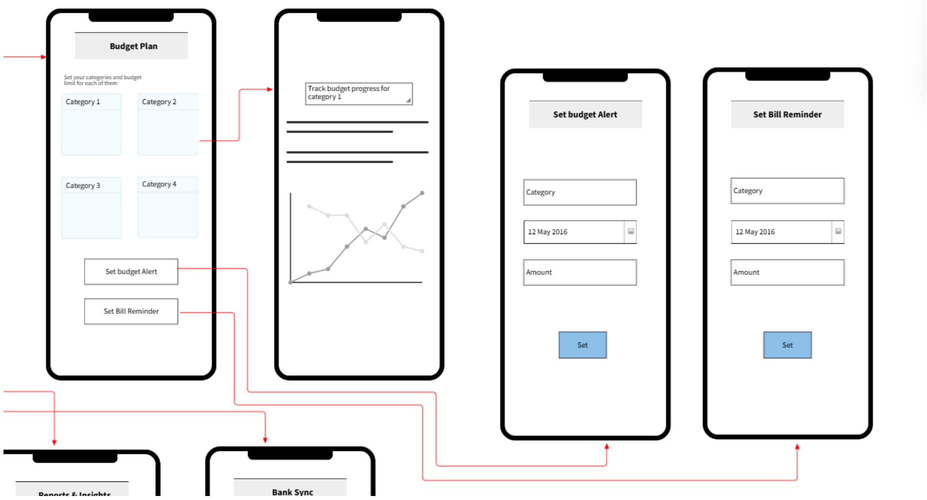
Normal Scenario

Actor Action	System Response
	1. System checks for upcoming bill due dates.
	2. If a bill is due soon, the system sends a reminder notification to the user.

Exceptional Scenario

Actor Action	System Response
1. User has not added any bills.	
	2. System does not send any reminders.

- ## Screen Design



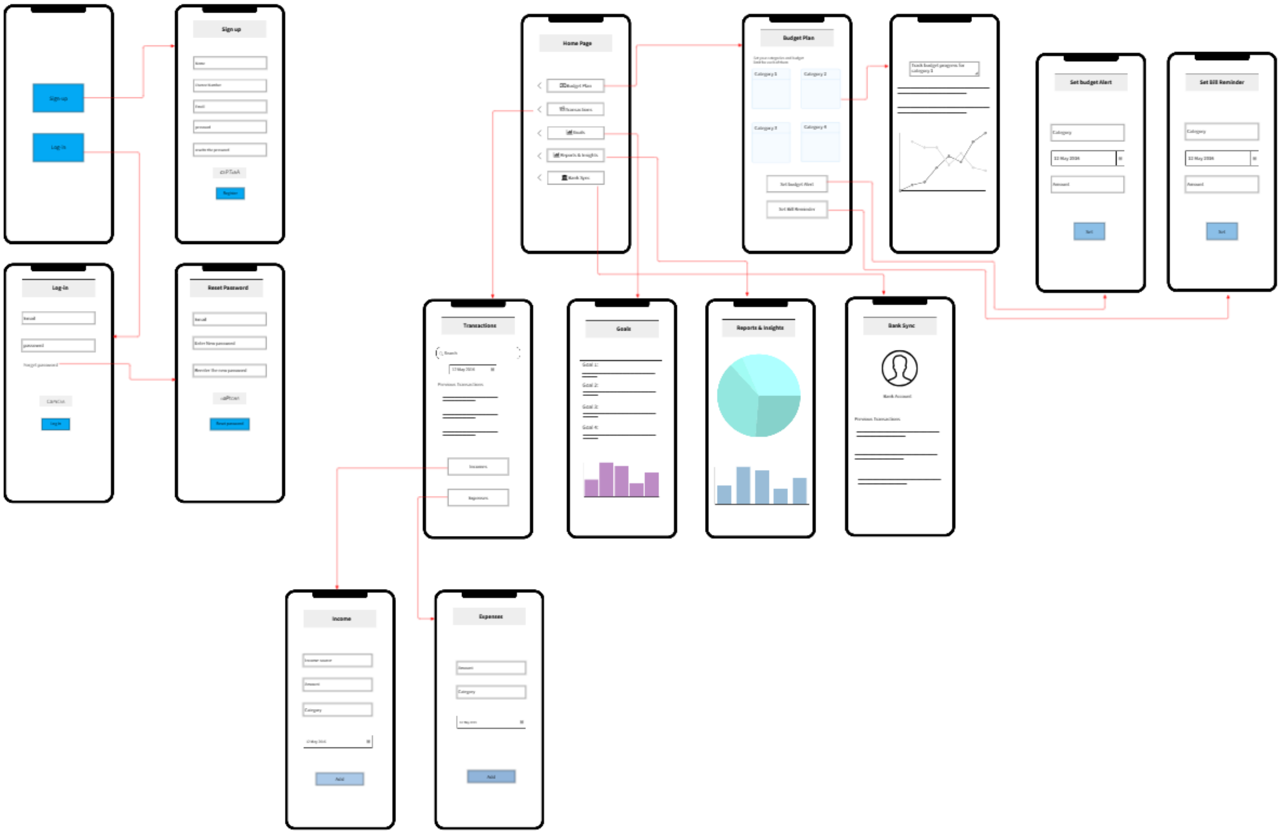
- ## Data Dictionary:

Element Label	Type/Length	Data Validation / Business Rule
Category	Text < 100	Structured text
Date	integers	Valid date

Software Requirements Specifications

Element Label	Type/Length	Data Validation / Business Rule
Amount	Integer	> 0

System Navigation Map



Tools

- Draw.io
- https://app.mockflow.com

Software Requirements Specifications

Ownership Report

Student	Items he created
Mariam Refaay	Purpose, Audience, Software purpose, Enriched user stories.
Ola Ghoneim	Definitions, Functional Requirements, Use Case Model
Salsabil Bahaa Eldin	Software scope, non-functional requirements, System navigation map.