**SPLITWISE APP**  
  
**Requirements Gathering:**

Actions:

* We can Add Friends
* We can Create Groups
* Split Types:
  + Equal Splits
  + Un-Equal Splits
  + % wise Split
* Balance Sheet of Each User

**Object Identification/Core Components:**

**User Management:** Handles user sign-up, sign-in, profile management, etc.

**Friendship Management:** Manages the connections between users, including sending friend requests, accepting requests, and listing friends.

**Group Management:** Allows users to create groups, add or remove members, and manage group settings.

**Expense Management:** Manages expenses within groups or between individual friends. This includes adding expenses, specifying the split type (equal, non-equal, percentage-wise), and tracking who owes whom.

**Notification System:** Sends notifications for important events, such as new expenses added, friend requests, or payments made.

**Key Classes and Interfaces**

**User**: Represents a user in the system with attributes like ID, name, email, etc.

**Group**: Represents a group of users with attributes like ID, name, members, etc.

**Expense**: Abstract class that represents an expense. It will have derived classes such as *EqualExpense*, *NonEqualExpense*, and *PercentageExpense* to handle different types of expense splits.

**ExpenseManager**: Handles the creation of expenses, splitting according to the specified type, and updating user balances.

**FriendshipManager**: Manages friend relationships between users.

**GroupManager**: Manages operations related to groups.

**NotificationManager**: Manages the sending of notifications to users.

**Relationships**

* A **User** can have many Friends (another User).
* A **Group** contains multiple Users.
* An **Expense** is associated with either a Group or a pair of Users (in the case of individual expenses) and has one or more Users as payees.

**Operations:**

**User Management**:

* SignUp
* SignIn
* UpdateProfile
* AddFriend
* AcceptFriendRequest

**Group Management**:

* CreateGroup
* AddMember
* RemoveMember
* ListGroups

**Expense Management**:

* AddExpense
* SplitExpense

**UML**

