

# Winter Assignment Development

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## Information Management Group

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# The Royal *Split* of Spain

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## Overview

The college years are the best years of your life (or so they say). These 'best' years teach many responsibilities, one of them being financial responsibility. The first step towards it is monitoring your expenses, keeping track of how much you owe others and how much you are owed. Us being engineers and not accountants, despite already having apps for this purpose, we are more interested in building one than using it :P.

As you might have guessed by now, we would like you to build a *web application* to track your expenses and split payments between your friends, and consequently, be able to settle them up. Refer to the objectives mentioned below for a detailed description of the problem statement!

# Objectives

Please do not feel overwhelmed, we have only tried to break the problem down for you to prevent any confusion from arising. So, take a deep breath, and dive in!

**Essential Features** - Your application **MUST** contain these features.

## 1. Authentication

Users can sign-up/log in using either of the following methods:

- a. A unique username and password login.

During sign-up, users may upload a profile picture, or opt for a default picture.

## 2. Dashboard

After logging in, the user lands on a dashboard to see an overview of his/her expenses.

Specifically, the dashboard would show the user:

- a. A card that shows some of the groups that the user belongs to.
- b. A list of recent transactions (In group, or independently).
- c. A menu containing tabs to Groups, Friends, Profile Page.

## 3. Profile Tab

A page to give the user data about his/her spendings, and manage their account.

- a. Users must be able to change their profile picture.

## 4. Groups Tab

This tab shows activity of the groups that the user belongs to. Users should be able to create groups by providing the following mandatory details:

- a. Name
- b. Group image
- c. Add group members

Clicking on a group will open the group detail panel. This panel should show:

- a. How much money other members of the group owe you / you owe them, if any.
- b. A button to add an expense to the group, which takes:
  - i. Amount.
  - ii. Phrase to describe the transaction.

- iii. Is the debt owed by you or to you? (To be used in the debt normalisation algorithm described below)

👑 After a payment / expenditure is added in a group, an algorithm must normalise the debts between the members, and updated debts should be displayed to the group members. Unnecessary payments must be avoided. To help you understand what we mean, take the following (crude) example:

*Person A* → ₹100 → *Person B*

Person A owes Person B ₹100

*Person B* → ₹100 → *Person C*


Person B adds a payment of ₹100 to Person C

*Person A* → ₹100 → *Person C*

The above 2 debts are condensed to the Person A owing Person C ₹100

**NOTE:** *There are several interesting ways to implement the payment normalisation algorithm, and we encourage you to put your thinking caps on, and wrack your brains out in making it as clean, concise and complete as you can!*

**A good payment splitting algorithm is essential to the application, and heavy weightage will be placed on it while evaluating your submission!**

 **Bonus Features** - Your application may or may not contain these features, but implementing them will help your project stand out!

1. Hosting - Hosting your application on a server, allowing the public to access it with a URL.
2. Authentication - Instead of plain vanilla username and password, authentication may also be implemented in these alternative ways:
  - a. Channeli OAuth.
  - b. Email/phone number and password authentication, where email/phone is verified through OTP.
3. Dashboard - In the dashboard, you may also show these:
  - a. Net amount that everyone owes to you, or you owe to others.
  - b. Visual statistics on:
    - i. Monthly expenditures
    - ii. Distribution of your expenditures across your groups
    - iii. Categorize expenditures by type (for eg. Food, Arcade, Shopping, etc)
    - iv. Monthly goals (limits) for spending of each type
4. Profile Tab - Personalise the app further for the user by including
  - a. Personal expenses (To track their monthly expenditures)
  - b. Recurring expenses (for eg electricity bills) that get automatically generated periodically at a set time interval.

## Frequently Asked Questions

1. **Is this an individual or group project?**

This is an individual project, and submission is limited to one per person :)

2. **Should the web application facilitate payments?**

No payments should take place in the app itself! Such apps will not be tested.

3. **Is hosting necessary?**

Brownie points for hosting, but be sure to include your app setup instructions in the README file of your GitHub repository!

4. **What tech stack can I use?**

You are free to use anything and everything to build your web application!

5. **Can I follow online tutorials?**

Yes, of course! However, we do not encourage direct copies. We expect you to understand and take inspiration from tutorials, but the core effort should be your own.

## Still, have a Question? Ask us!

We at IMG are here for your help throughout your development from a learner to a web developer. Just ping us at any point if you are stuck, we surely like to stick to the motto, "Help will always be provided to those who ask for it."

**Remark:** Post your queries on the [discord server](#). We would be really happy to see your progress. Even if you are not able to reach the end, what is more important, that you learned something new and that is all that matters to us. We look for talented developers/designers like yourselves who have a constant desire to learn and grow, so submit your code to us via GitHub link for a public repository and if your hard work reflects in your code, you may get a chance to directly appear for the interviews in the recruitment. We will release the submission form on our recruitment site and social pages soon. Keep following.

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