

Development

Winter Assignment

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BATTLE OF NEW YORK

LAST DATE OF SUBMISSION: Mar 12, 2023

Overview

Following the win over Loki, the Avengers decided to go on a vacation to give themselves a much-needed break. However, as all of them belong to different planets, and some from different times, Captain America is having difficulty planning the vacation. He and Tony Stark sought your help in developing an 'Avengers Event Manager'.

The Event Manager will allow them to manage various events with sub-sections that include different tasks and schedules. It will also have an integrated utility, similar to Splitwise, and a community chat.



Objectives

Please don't feel overwhelmed; we have simplified the problem statement for you in order to avoid any confusion.

So, take a deep breath, and dive in!

Essential Features - Your web application **MUST** contain these features:

1. Authentication

Sign-up or log in with a unique username and password is possible for users. When signing up, they have the option to either upload a profile picture or choose a default one.

2. Dashboard

After logging in, the user lands on a dashboard where they can view all the events in which they are involved.

The dashboard should include:

- a. Cards to show all the events of the user.
- b. A menu containing tabs for Profile Page and Community chat.
- c. An option to create an event by providing the following details -
 - i. Name of the event.
 - ii. Display picture
 - iii. Add members

3. Profile

- a. The user should be able to see their personal information, like name, and profile photo, along with the option to edit the information.
- b. A tab containing information about pending transactions from every event, and statistics about the user's monthly expenses (explained below) should be included.

4. Event Screen

Here, the users can view the details of the event, including the schedule and plans.

This view must include sub-sections containing the status of every task involved in organizing the event, like contacting the concerned people. It may also include details of each subtask, for example, the scheduled time and location.

5. Expense tab

Every event screen must include an expense tab. The tab 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 normalization algorithm described below)


After a payment / expenditure is added in a group, an algorithm must normalize 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 normalization 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!

6. Chat Box

- a. Each event must have a chat box where users can communicate and discuss the tasks related to the event.
- b. Ensure that the chat is real time.

Brownie Points

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

1. **Authentication** - Instead of using plain vanilla username and password, you can implement the authentication in these alternative ways:
 - a. Channeli OAuth.
 - b. Email/phone-number and password authentication, where email/phone is verified through OTP.
 - c. Google OAuth
2. **Chat** -
 - a. Implement a one-to-one chat feature.
 - b. Add end-to-end encryption to the chat.
3. **Hosting** - Deploy the application on a server to enable public access through a URL.
4. Incorporate a search function when adding members to an event.

Frequently Asked Questions

1. Is this an individual or group project?

This is a group project for 1st year students, each consisting of 3-4 members. You can include a designer as well in the team. For the 2nd year students this will be an individual project.

2. Is hosting necessary?

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

3. What tech stack can I use?

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

4. 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.

5. Can I submit another project?

Feel free to work on anything of your choice and send in your best submissions when the deadline approaches.

Still, have a Question? Ask Us!

We at IMG are here to 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: Please post your queries on the discord server. We would be delighted to see your progress. Even if you don't reach the end, what's most important is that you learned something new. That's all that matters to us. We're always looking for talented developers and designers who have a constant desire to learn and grow. So, please submit your code to us via a GitHub link for a public repository. If your hard work is reflected in your code, you may even get a chance to directly appear for recruitment interviews.

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All the best!

Stay tuned, as we will soon release the submission form on our recruitment site and social media pages. Keep following us for updates.

