Title: Task Scheduling & Cost Estimation

Final Project Report

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Submitted to

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Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

1. Introduction:

1.1 Objective:

DotManage is a software for task scheduling & cost estimation which aims to make the process of task management easier. Our software has the following objectives:

a. Make the process of task scheduling easier
b. Provide support for cost estimation based on various parameters
c. Make creating & maintaining teams easier
d. Provide support for collaboration among team members

Thus we aim to provide people with easier ways for task scheduling, tracking, collaboration & cost estimation.

1.2 Motivation:

Today task scheduling which includes, scheduling & managing tasks has become very important for many companies big or small. Thus team & task management has become very essential for huge projects to be organized & get completed easily.
Thus with the aim & motivation to simplify this process, we decided to create a product that would make this easier.
DotManage simply aims to create a user friendly application for this task that can be really helpful for not only individuals but also for companies.

1.3 Background:

Primary focus: As stated, the software focuses on addressing the solution to task scheduling and cost estimation activities in project management.

Need of task scheduling: Tracking, reporting, and communicating progress are very much important in project management. It ensures everyone is on the same page with tasks, dependencies, and deadlines and highlights issues and concerns

Need of cost estimation: Cost estimation is important because improper/misplanning of this can lead an ongoing project to failure because of wrong estimates and mismanagement or miscommunication between the parties.

These issues are prevalent in the industry and we decided to work on our part to best solve these issues through the software which we create.

This project aims at providing solutions to the stated problems in our best possible way by implementing the software engineering knowledge we possess and carrying out activities accordingly.

2. Project Description and Goals

We hereby are developing scheduling and cost estimation software. The software will provide various options for letting the collaborators know about the work completed by other teammates. This will help all the collaborators to view and understand the project progress without having any issues related to coordination.

This will help to get a clear picture of the percentage of work completed related to a project simultaneously while being able to make changes to the same. In addition to being able to schedule the project, the tool we are proposing will have options for the cost estimation of software projects. For any new software project, it is necessary to know how much it will cost to develop and how much development time it will take.

We intend to implement the cost estimation system based on the COCOMO model. COCOMO (Constructive Cost Model) is a regression model based on LOC, i.e number of Lines of Code. It is a procedural cost estimate model for software projects and is often used as a process of reliably predicting the various parameters associated with making a project such as size, effort, cost, time, and quality.

Project Descriptions:

StakeHolders:

Stakeholder refers to, "an individual, group, or organization, who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project." So the stakeholders of our project are as follows:

Software developers:
These are the project team members who will build the software taking into consideration all the requirements and constraints and provide the result.

Product user group:
These are the companies that would use the software for the purpose of task scheduling and cost estimation.

Clients from the product user group:
They would indirectly be involved as the task scheduling is done for their corresponding activities and projects.

Project testers:
They would be evaluating the software with the help of test cases. In this case, the software developers would be executing the role of project testers.

Process Model : This software will be developed using Exploratory Development under the Evolutionary Process model.

Why use Evolutionary Process Model? As mentioned above, this software includes features like Task Scheduling and Cost Estimation using a specific Cost estimation model (COCOMO). All possible features under Task Scheduling are not known yet there can be a case of adding a new feature later

Why not Incremental Development?
Reason: Since this software is not to be divided into increments and it is not developed for immediate use of some specific features and it will be released with both scheduling and cost estimation features at a time

Why not Spiral Development?
Reason: Since this software is not unique to its kind and there are available papers and models that are used and more accurate in the field of cost estimation, and hence it has very little chance to fail, that's the reason why this software comes with less risk and does not need Spiral Development.

Why not Waterfall Model?
Reason: Using the waterfall model all features and requirements should be known and fixed before working on the software and all the requirements are not mentioned.

Why not Rapid Application Development?
Reason: There is plenty of time to work on this software and no need to hurry up the process of developing the software.
Control Model :
Here we have used an Event-Driven Control model. Under Event-Driven we have used an Interrupt Driven Control Model. Since any action by the user affects only a single subsystem

Work BreakDown Structure:

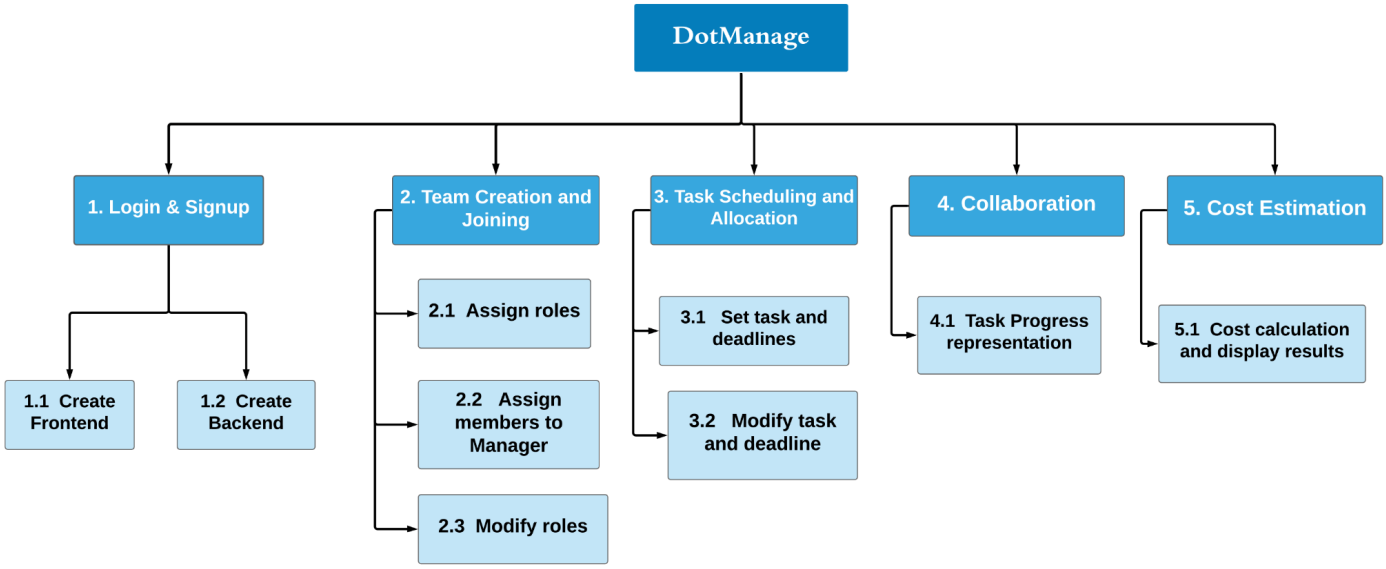

Fig 1. Work Breakdown structure

UseCase Diagram:

Fig 2 Use case diagram

Data Flow Diagram:

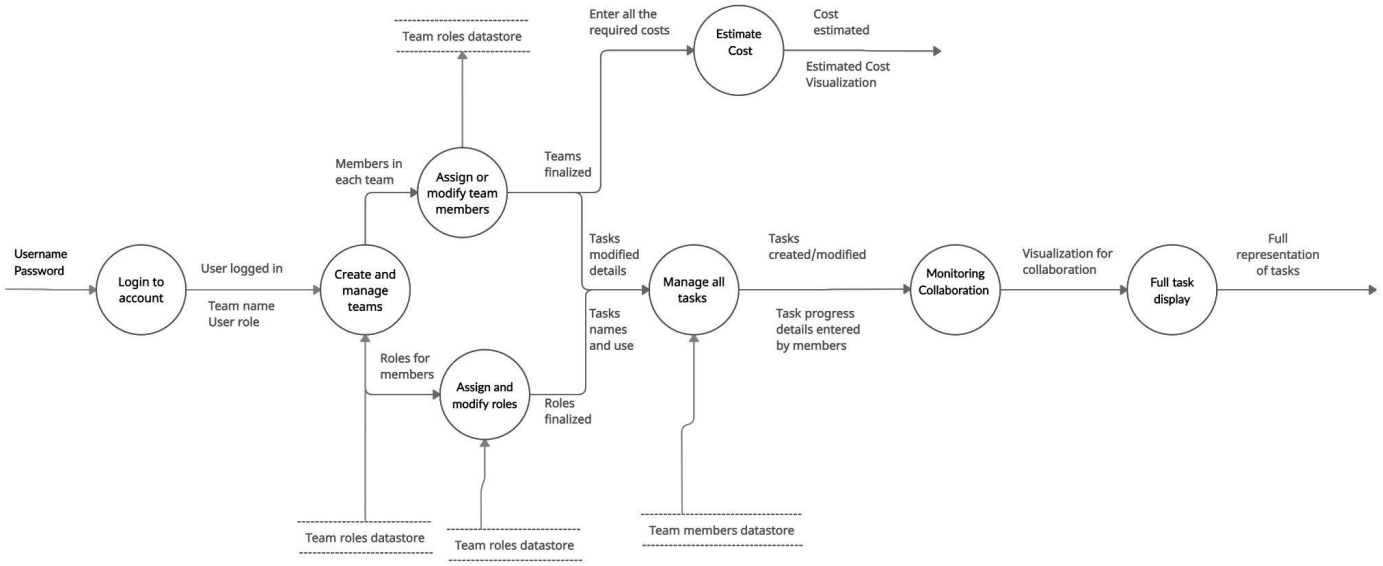

Fig 3 Data flow diagram

State Transition Diagram:

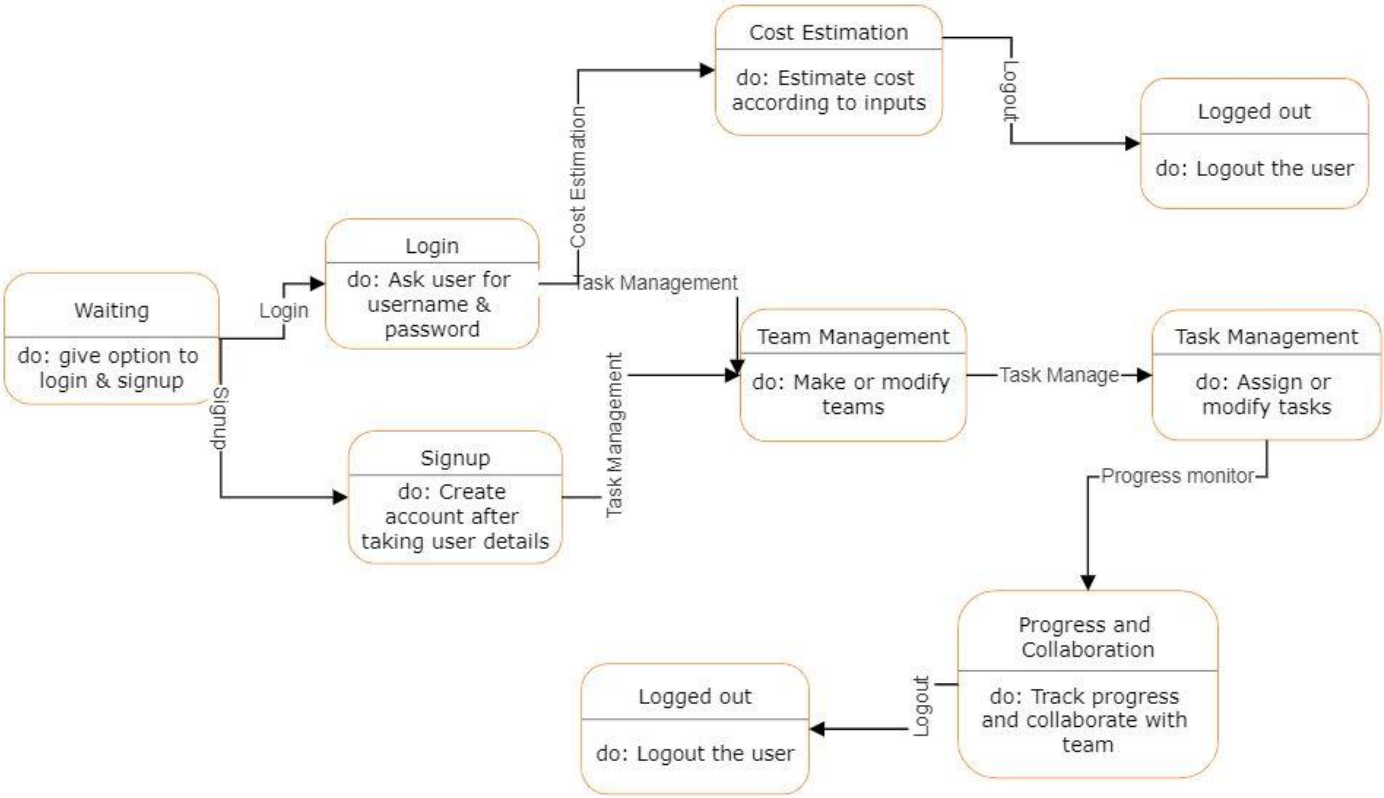

Fig 4 State Transition Diagram

Activity Diagrams: 1. Team Management

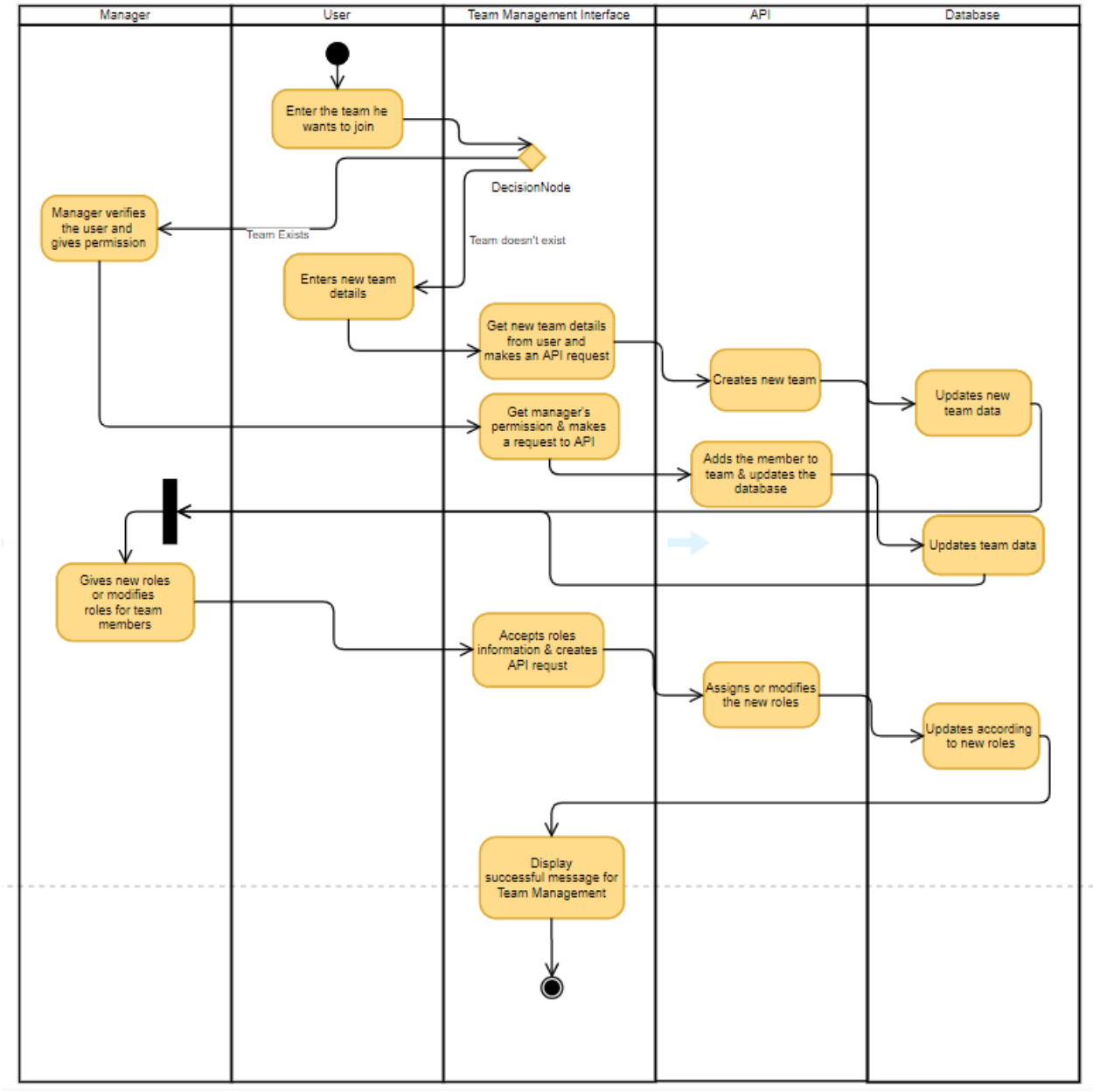

Fig 5 Team Management

2. Task Scheduling

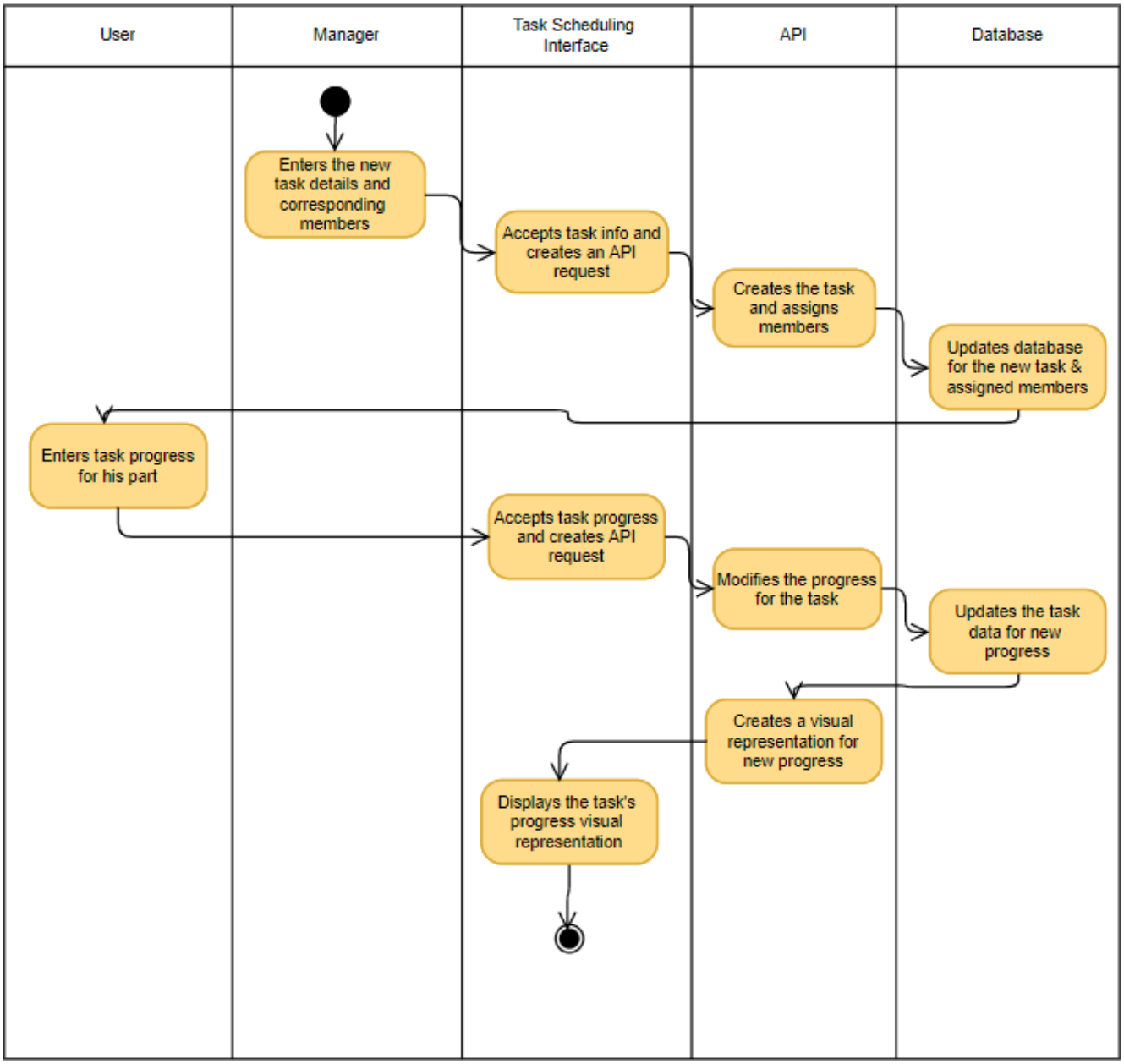

Fig 6 Task Scheduling

Project Manual:

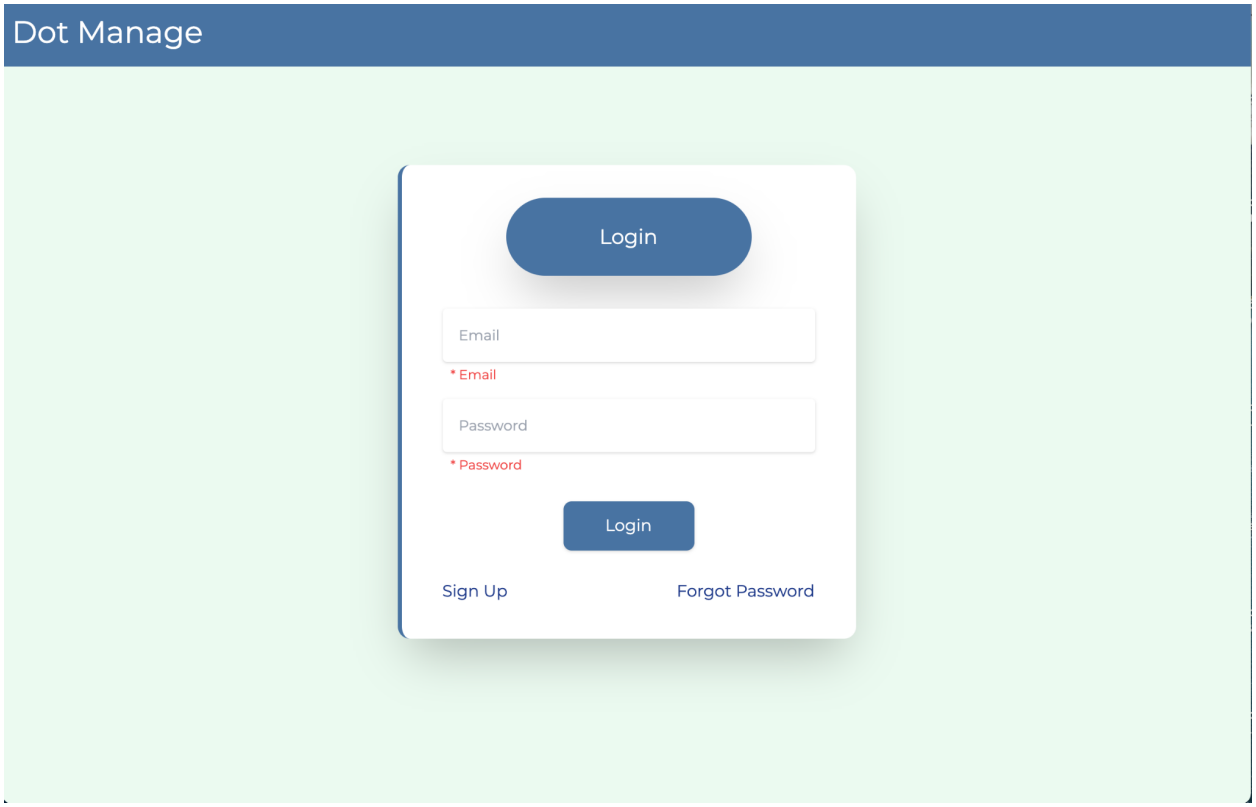

Fig 7 Login page

A user can write his correct credentials for the app and press login for a successful login to the software incase of wrong credentials the user cannot login into the system and an error will be displayed.

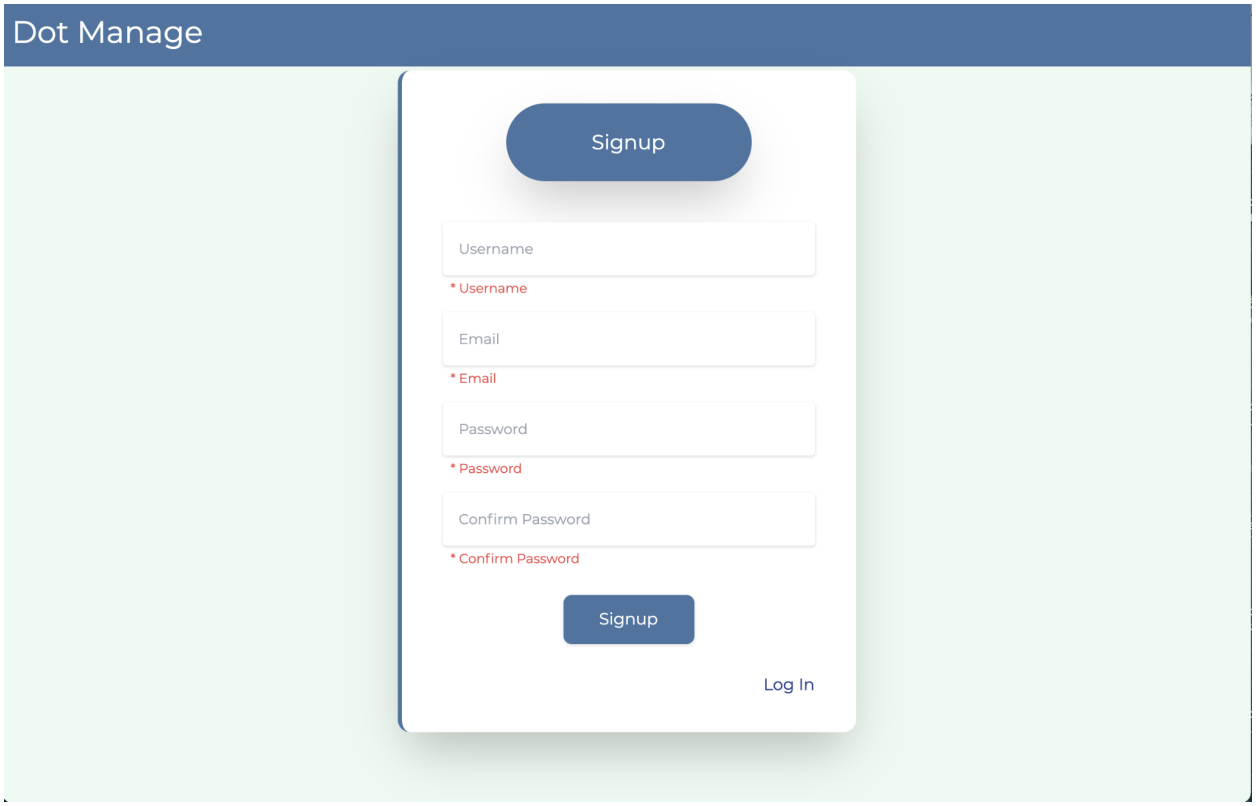

Fig 8 Sign up page

A user can fill the following and press the signup button to create a new account.

There are certain checks in place to ensure error free Signup.

1. A username cannot be reused by another user
2. Two users cannot have the same username
3. If a user tries to Login with a new email id, they will be redirected to the Sign in page.
4. Password must contain at least 1 Capital letter, 1 Small letter, 1 Special symbol and 1 number and at least 8 characters long.

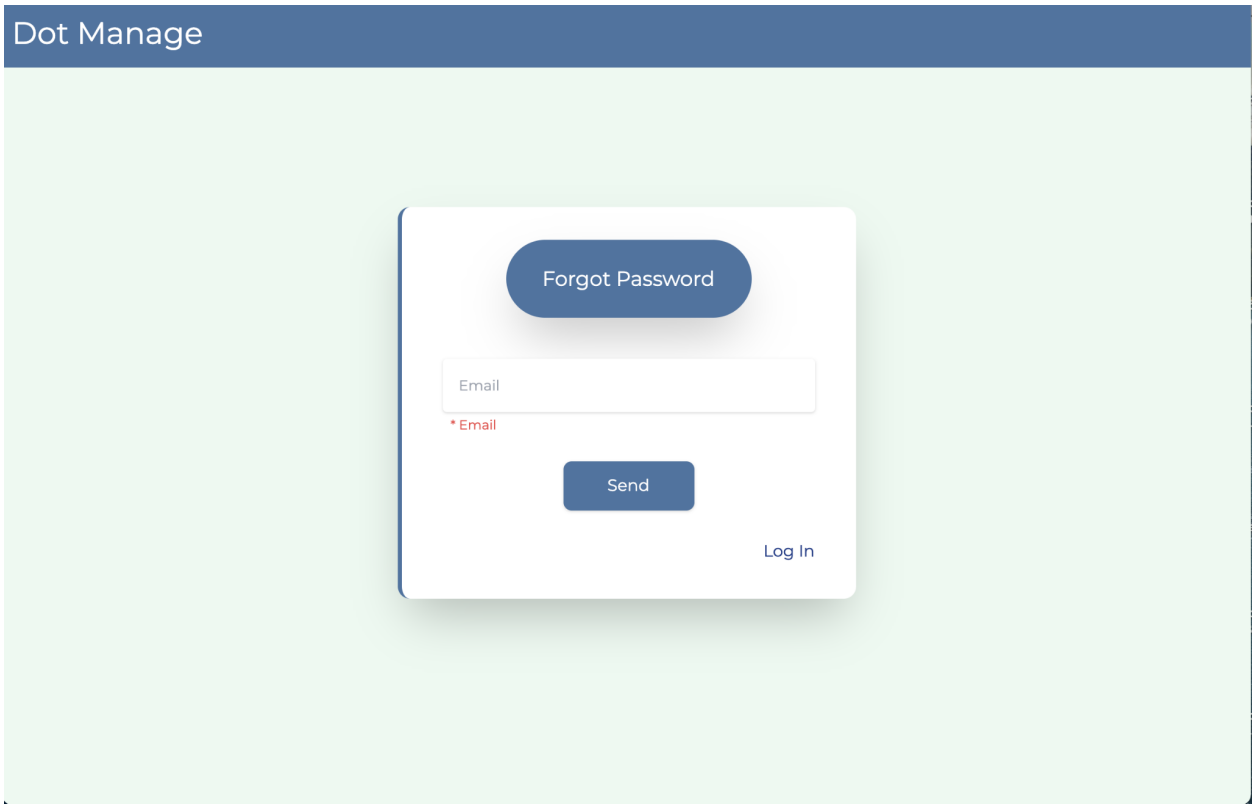

Fig 9 Forgot password page

In case a user forgets their password, they can reset their password. On clicking “forgot password” , the user will be redirected to a page where they will be prompted to enter their email id.

An email would be sent to the user’s email id with a link to rest their password.

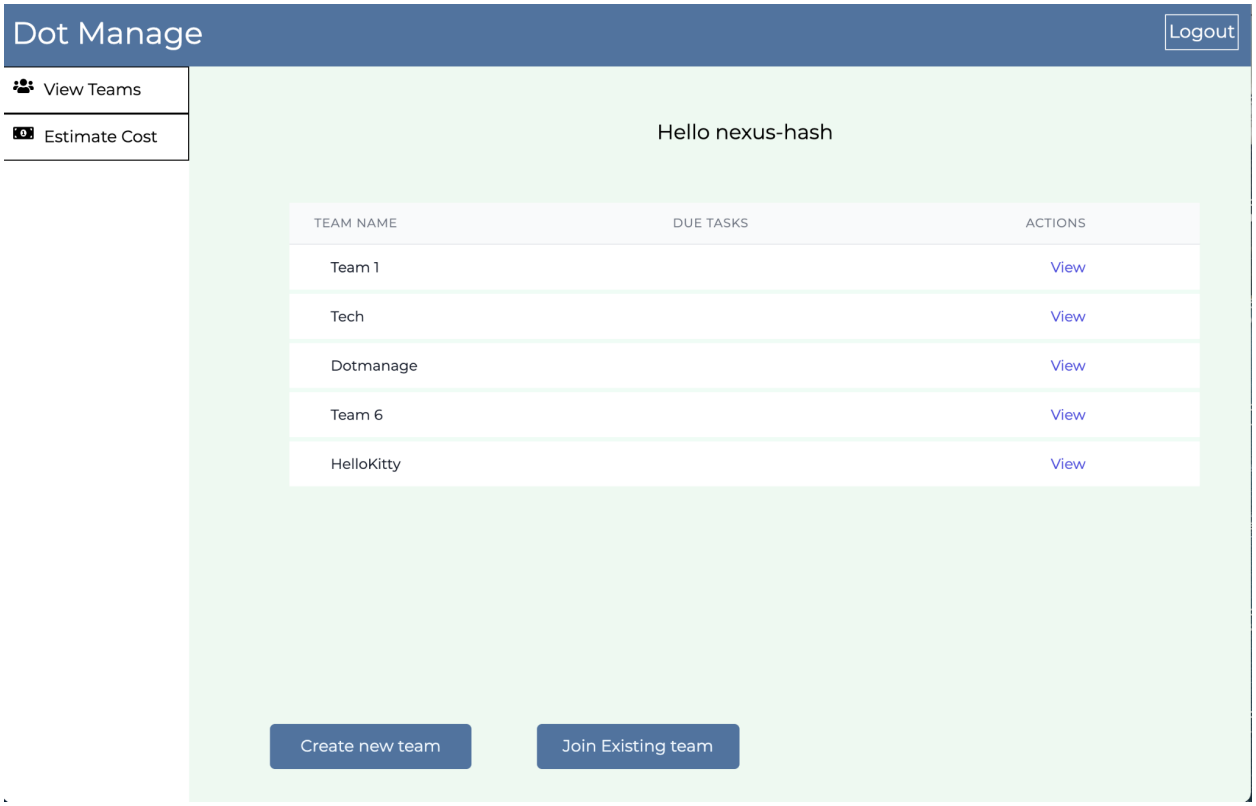

Fig 10 User Dashboard

Click on “Create new team” and the user will be taken to the Team **creation page.**

This page allows the “team owner” to set tasks and assign these tasks to team members. The team members can see these tasks on their dashboard.

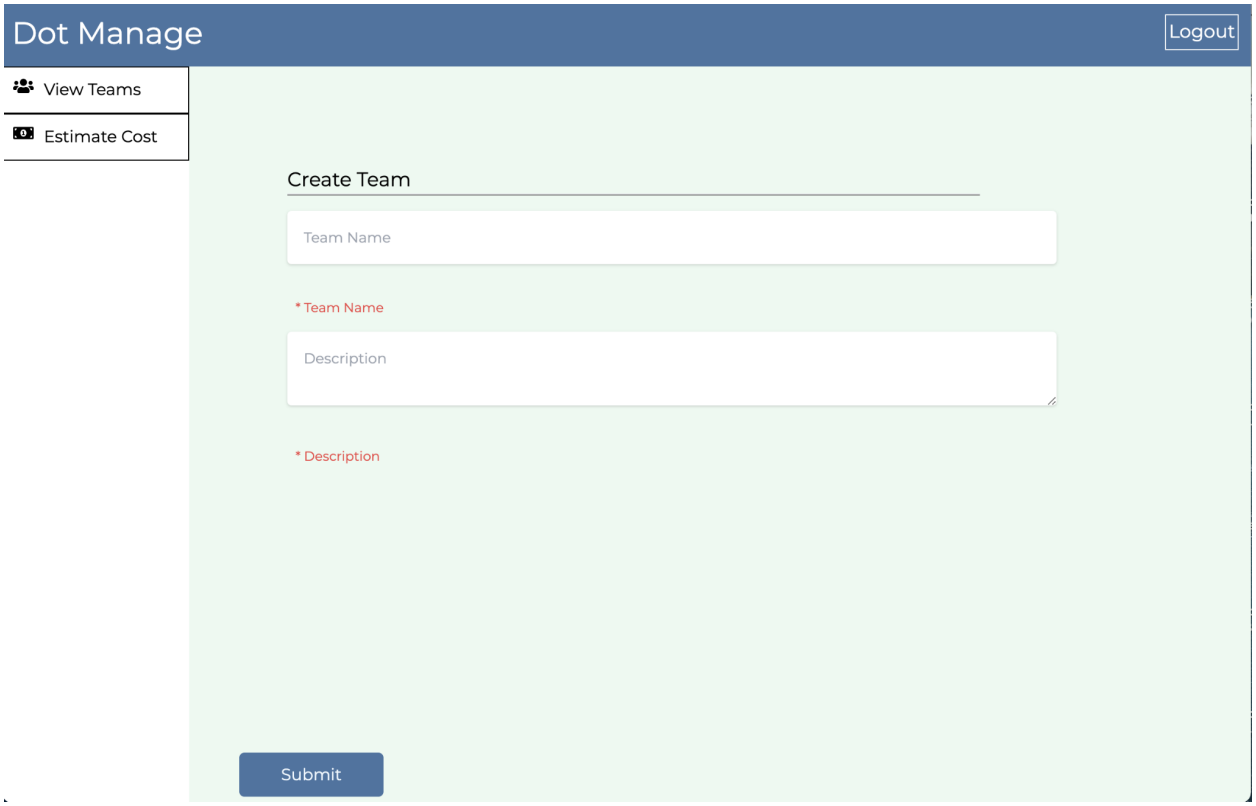

Fig 11 Create team Page

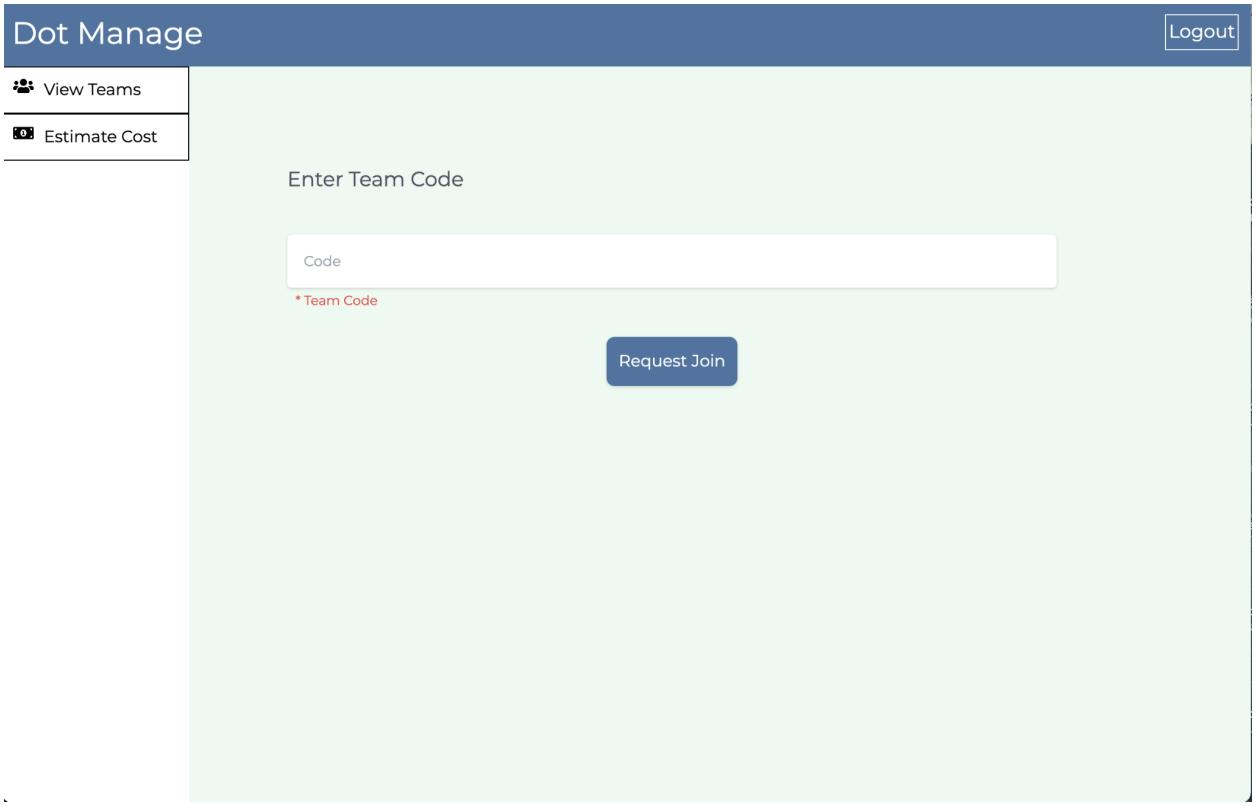

Fig 12 Join existing team page

Click on “Join Existing team” and the user will be taken to the **join existing team page.**

The team code will be provided by the manager. The manager can get the team code from team settings page

Only the team managers have access to the team code.

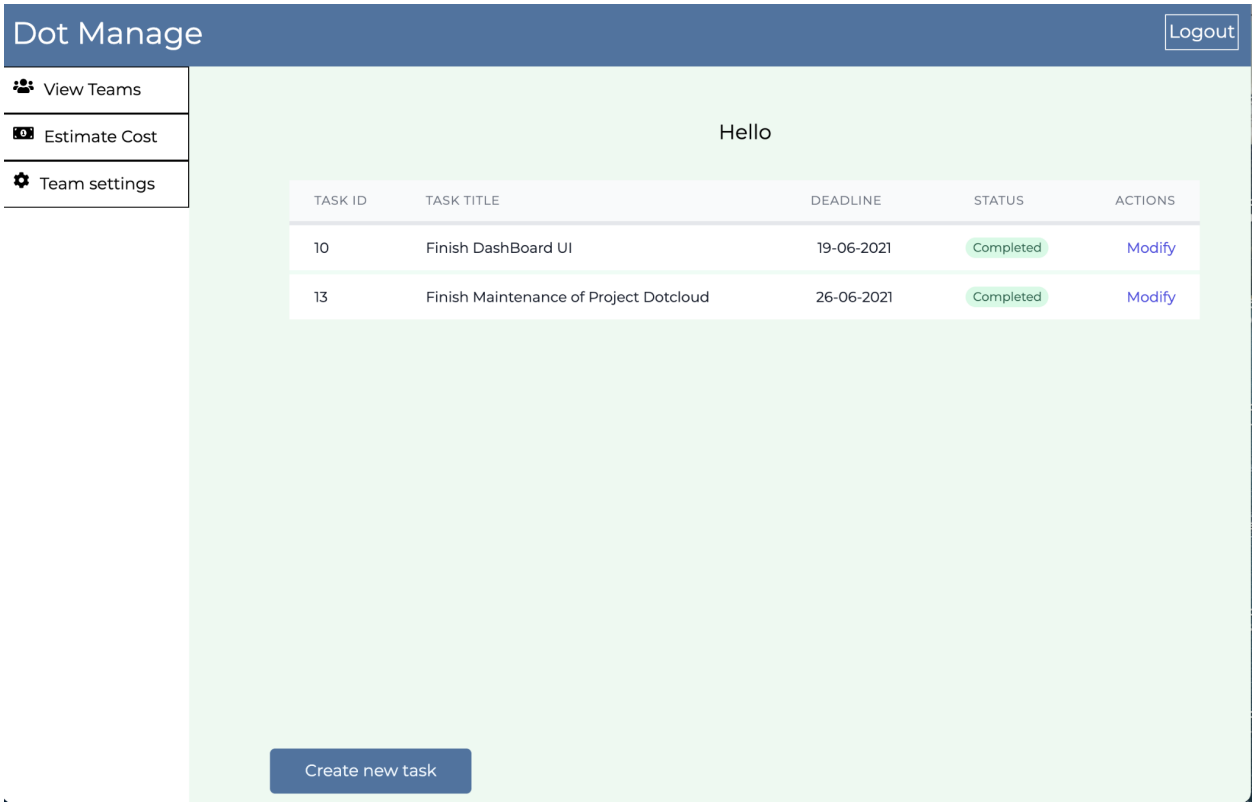

Fig 13 Team Dashboard

A user can view the tasks of their team by clicking “view” option on the teams in their dashboard which takes us into the team dashboard.

The tasks are arranged in an ascending order with the earliest task displayed first and tasks to be completed at a later stage towards the bottom.

The deadline and status of the task (Ongoing, Completed, Past Due) are shown.

Only a team manager can add new tasks.

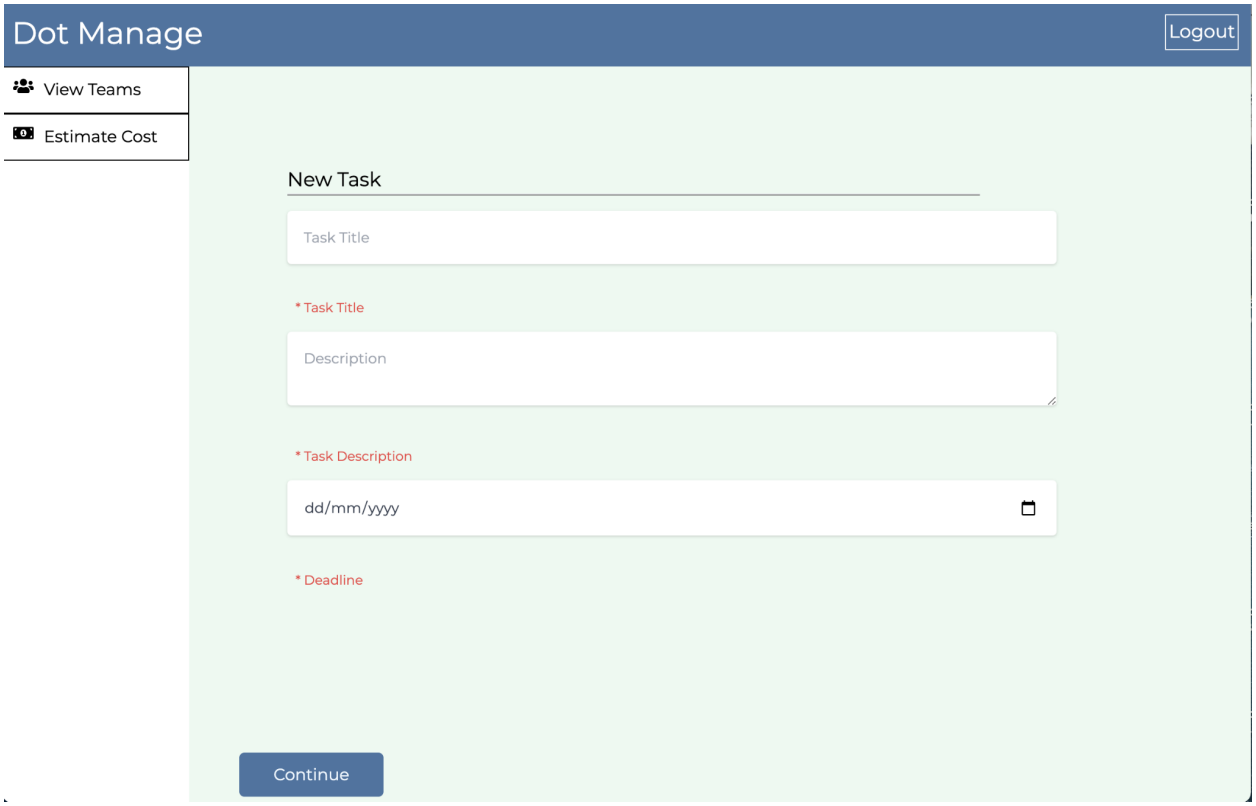

Fig 14 New task creation page

Only the manager has permission to add new tasks.

In order to create a new task, details such as task title, task description and task deadline are required.

On clicking continue, the manager can choose the team member to assign these tasks to.

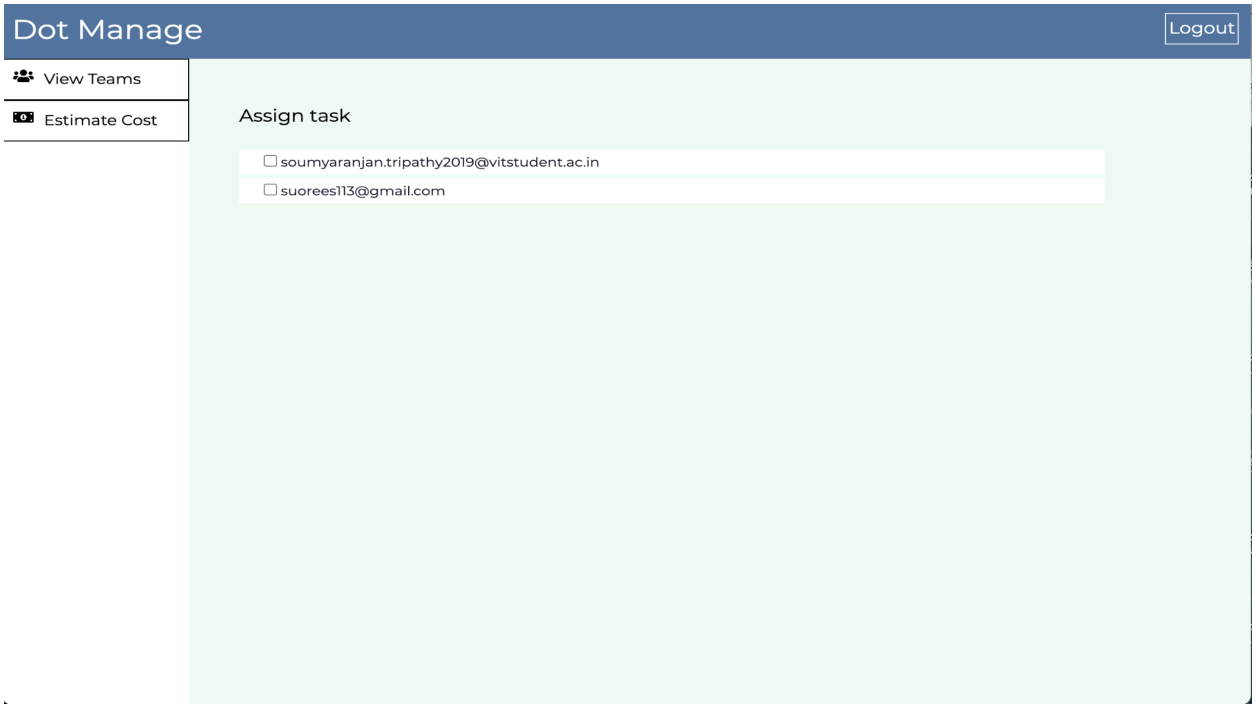

Fig 15 Assign task page

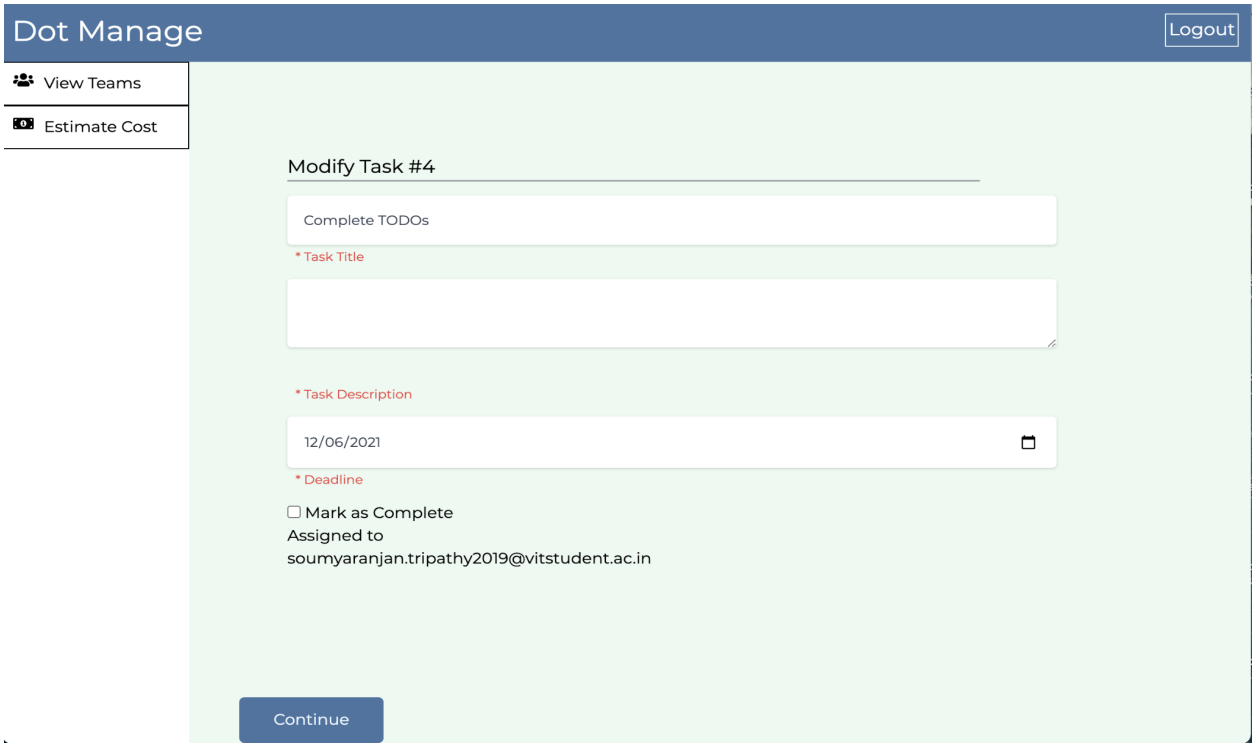

Fig 16 Modify Task page

The manager of the team can also modify tasks. The manager has the privilege to modify task name, task description and also the task deadline.

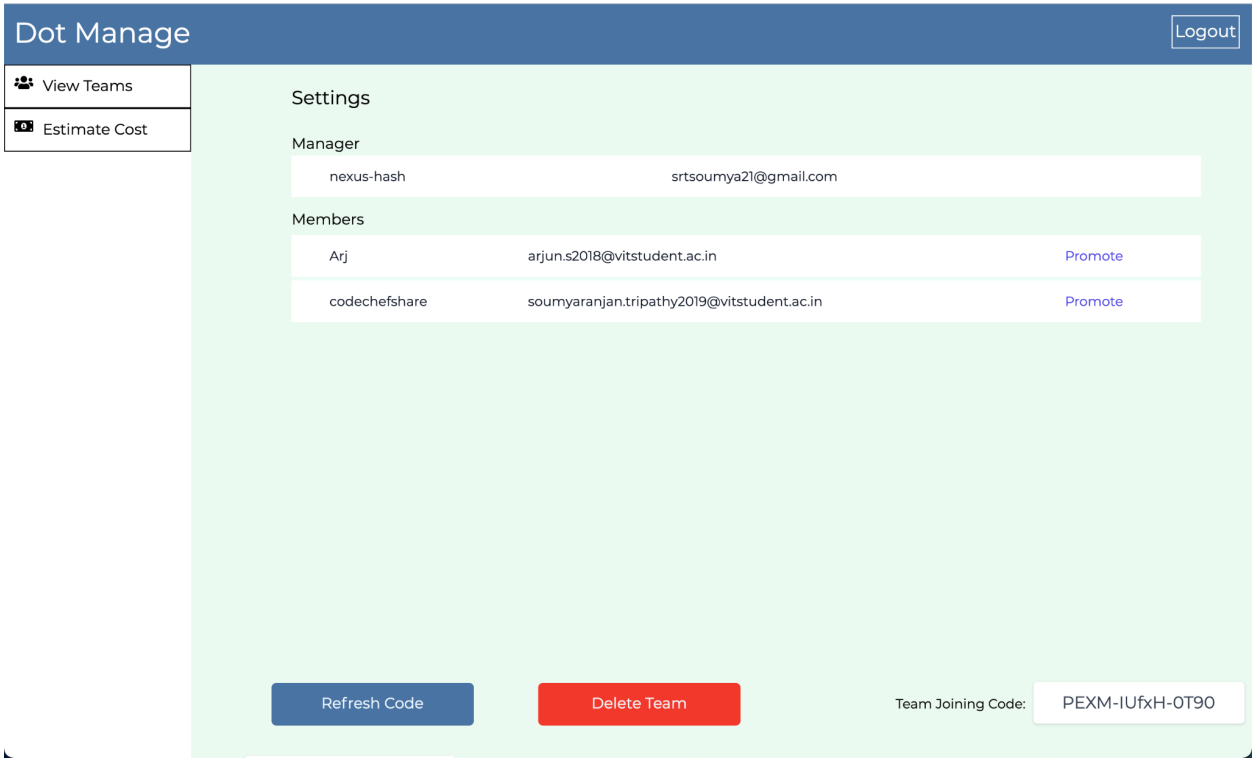

Fig 17 Team Settings page

Another action the manager has control over is setting the privilege of members.
The manager can promote team member to a manager giving him access to all the manager functions.

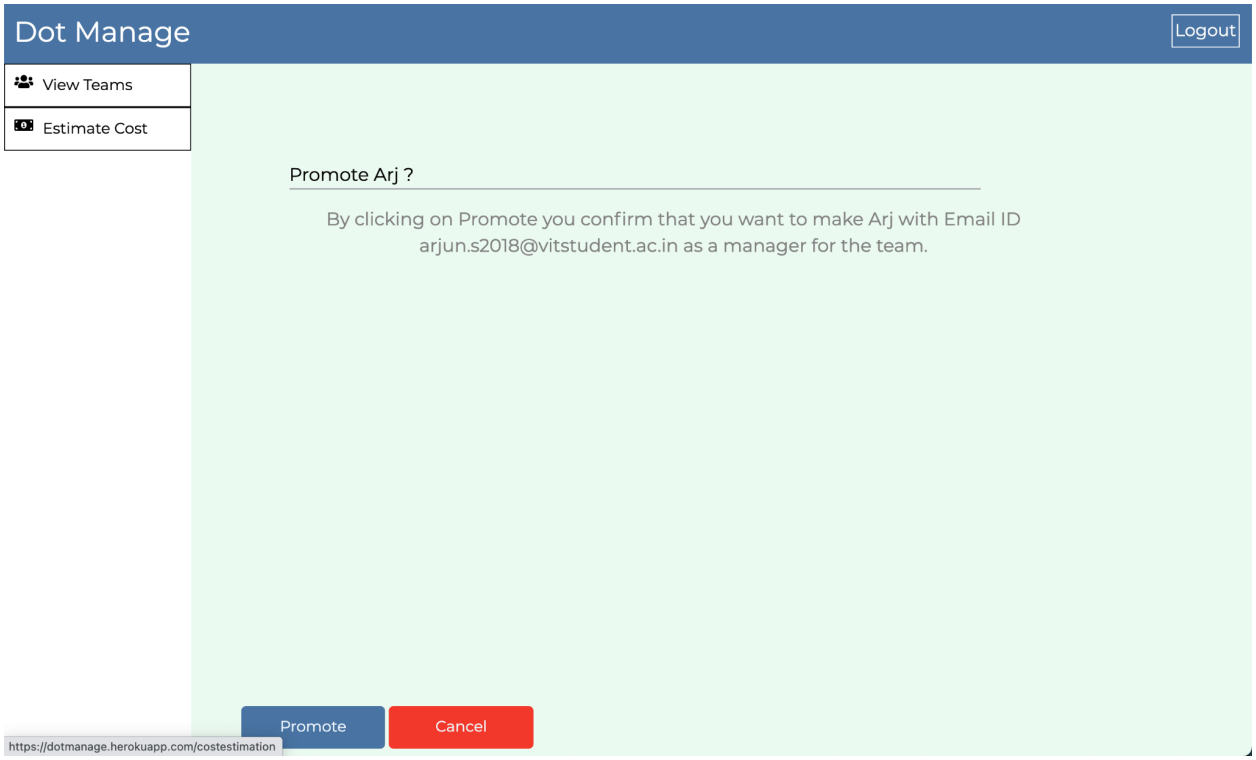

Fig 18 Promote user confirmation page

Then the manager can confirm the Promotion by clicking on the Promote button in the above Page view.

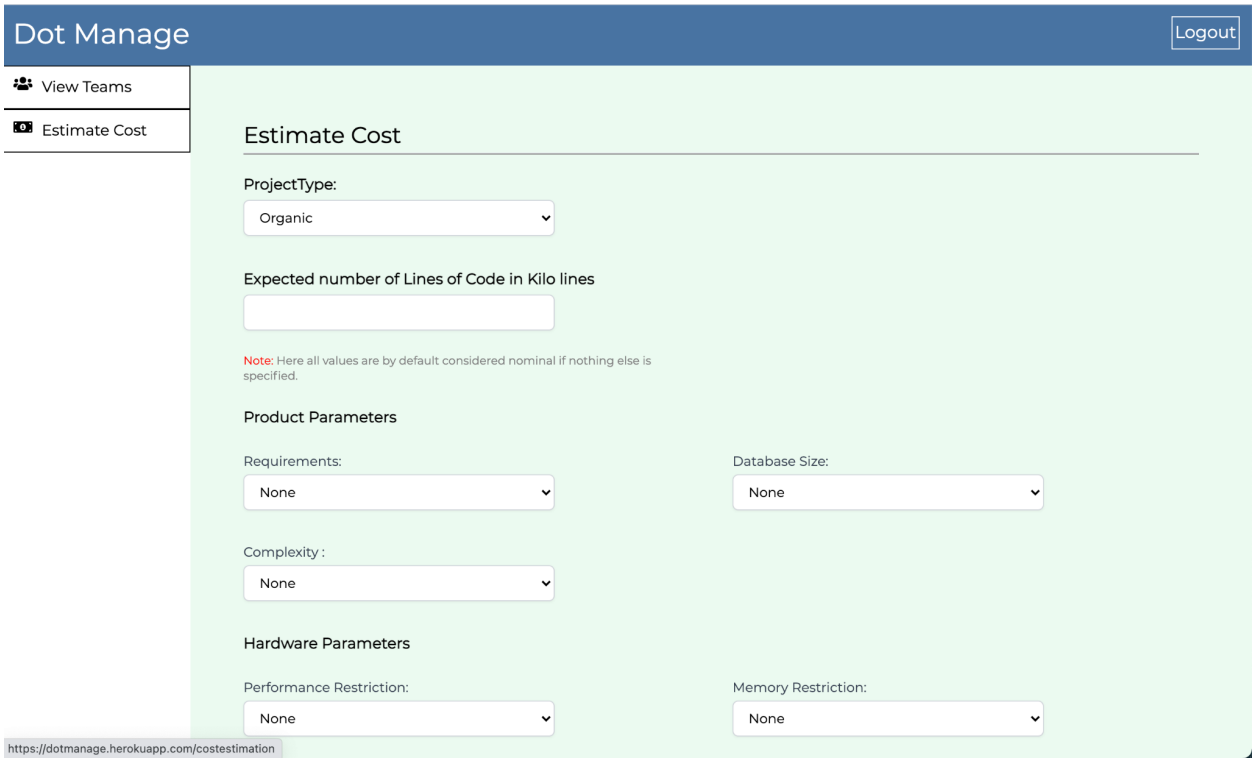

Fig 19 Cost Estimation page

The cost estimation page shows option for calculating the cost of a software project.

The user can choose value of different metrics based on his software.

Upon filling the appropriate data, the estimated software cost will be displayed.

Fig 20 Cost Estimation Result page

Conclusions and Future Work

The software was completed and tested within the scheduled time and met its standards as planned in the beginning.

This software is deployed on heroku hosting platform at url :

https://dotmanage.herokuapp.com

Future work for this software includes addition of a calender to display user specific timeline. Improve progress tracing features, make team joining a more secure process.

Github Repo Link

https://github.com/nexus-hash/Software-Engineering-Project-

Source Code Of the Software can be Found Here

https://github.com/nexus-hash/DotManage