PES UNIVERSITY

Department of Computer Science and Engineering

Project Plan Document

for

Chat Application

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1: Identify the lifecycle to be followed for the execution of your project and justify why you have chosen the model.

We have chosen the Agile methodology for the execution of our project. Agile is a very realistic approach, which promotes teamwork and cross-training.

Our project will span over a period of 2 months. Using the Agile approach, the resource requirements are minimum and the functionalities can be developed and demonstrated rapidly.

Agile emphasises on teamwork and collaboration by encouraging frequent communication(meetings) to keep a track on the work being done and ensure everyone are working towards a common goal.

The reasons why we prefer Agile over other SDLC models is:

- The Waterfall and V models assume that the requirements are frozen. They are difficult to change and are sequential in nature.
- The Prototype model requires that the entire system prototype be built to understand the requirements. This may increase the complexity.
- The Incremental model which involves successive release of functionalities could also be used as our approach. However, the drawback is that it is hard to identify common functionalities across increments. Also, once an increment is released, it cannot be reverted back for any changes.
- The Iterative model is rigid, involves continual rework that may cause the project to get extended.

Our main objective while choosing this methodology is to ensure the efficient usage of resources while keeping in mind the available amount of time to complete the project.

2: Identify the tools which you want to use throughout the lifecycle like planning tool, design tool, version control, development tool, bug tracking, testing tool.

- Planning tool – Microsoft Excel
- Design tool – Lucid, Microsoft Word, Figma
- Version Control – Git, GitHub
- Development tool – Golang, Redis, ReactJS, NodeJS, VSCode
- Bug tracking – Bugzilla
- Testing tool – Selenium

3: Determine all the deliverables and categorize them as reuse/build components and justify the same.

- User Registration
- User Authentication
- Real time chat interface
- Message handling
- Group chat
- Search users
- Group Creation

Reuse Components

- User Registration: The User Registration module serves as a foundational element common to various applications. Leveraging this pre-existing component can yield substantial reductions in both costs and development time.
- User Authentication: The User Authentication system is an essential security feature prevalent in chat applications. Utilizing a well-established authentication module can ensure robust security measures across the platform

- Real time chat interface: The development of a real-time chat interface is a resource-intensive endeavor. Given its consistent functionality across multiple applications, it is prudent to leverage this component to enhance overall efficiency.

Build Components

- Message handling: The Message Handling component is inherently distinctive to each application. Therefore, its development is imperative to tailor it according to the specific requirements of our application.
- Group chat: The intricacies of Group Chat functionalities can vary significantly depending on the application's unique needs. Consequently, a bespoke module is essential for its implementation.
- Search users: The Search Users module's functionality is contingent on the database structure and organization specific to our application. Hence, its development is imperative to ensure seamless user search capabilities.
- Group creation: Similar to Group Chat, the Group Creation component is subject to considerable variability based on the application's specific requirements. Consequently, it necessitates a custom-built approach for optimal functionality.

4: Create a WBS for the entire functionalities in detail.
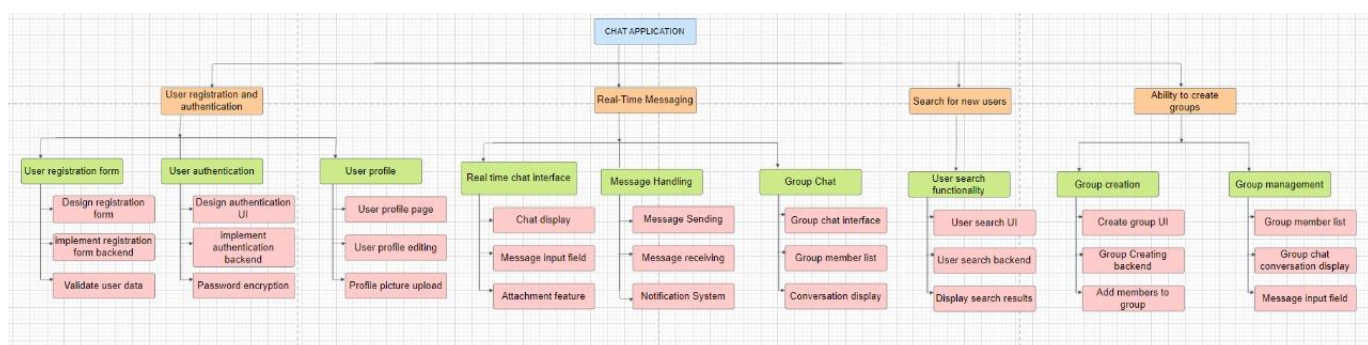
5: Do a rough estimate of effort required to accomplish each task in terms of person months.

Since we have a small team size, we are using the Organic CoCoMo model for calculating the rough estimate of the effort and time required to carry out the tasks in the WBS. The project has a maximum duration of 3 months (September to November).

Parameters in Organic CoCoMo: a=2.4 b=1.05 c=2.5 d=0.38

- User registration and authentication – 2KLOC

- Real-time messaging – 2.5KLOC

- Search for new users – 1KLOC

- Ability to create groups – 1.5KLOC

Calculating the effort and time for each of the task:

1. User registration and authentication:

   Efforts (E) = $2.4*(2^{1.05})$ = 4.96 person-months

   Time (T) = $2.5*(Efforts^{0.38})$ = 4.59 months

2. Real-time messaging:

   Efforts (E) = $2.4*(2.5^{1.05})$ = 6.28 person-months

   Time (T) = $2.5*(Efforts^{0.38})$ = 5.02 months

3. Search for new users:

   Efforts (E) = $2.4*(1^{1.05})$ = 2.4 person-months

   Time (T) = $2.5*(Efforts^{0.38})$ = 3.48 months

4. Ability to create groups:

   Efforts (E) = $2.4*(1.5^{1.05})$ = 3.67 person-months

   Time (T) = $2.5*(Efforts^{0.38})$ = 4.09 months

6: Create the Gantt Chart for scheduling using any tool.
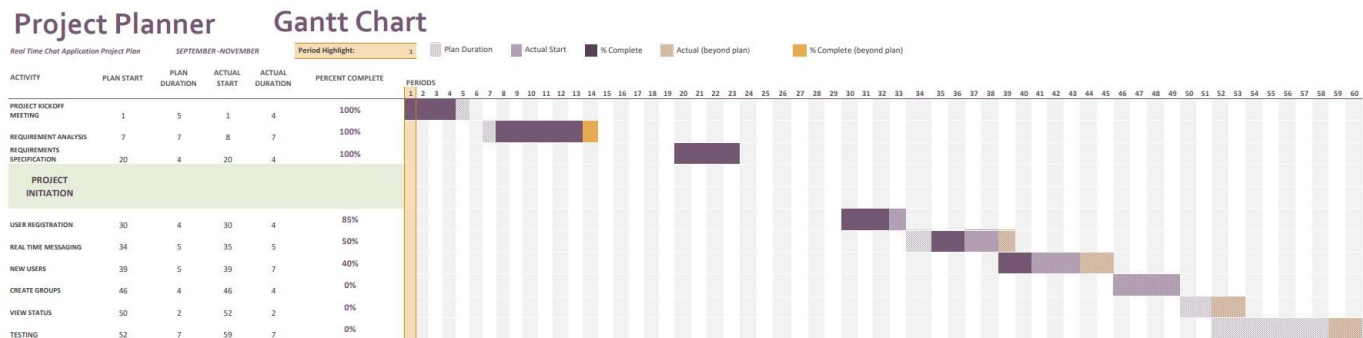
- MS Excel is the tool used to create the Gantt Chart.

- The Project Kick-off Meeting, Requirement Analysis and Software Requirement Specification are the tasks that are 100% completed.

- The remaining software components are in the stage of progress, which will be accomplished in the given duration of time.

The purpose of a Gantt chart in scheduling is to help project managers plan, track, and communicate the project schedule. Gantt charts are visual representations of project schedules, and they can be used to:

● Identify and manage task dependencies: Gantt charts show how tasks are related to each other, which can help project managers to identify and manage dependencies. This is important because some tasks cannot start until other tasks are finished.

● Estimate the project duration: Gantt charts can be used to estimate the total duration of a project by adding up the duration of all of the tasks. This can help project managers to set realistic deadlines and track progress towards those deadlines.

● Communicate the project schedule to stakeholders: Gantt charts are a clear and concise way to communicate the project schedule to

stakeholders. Stakeholders can use Gantt charts to see what tasks are being worked on, when those tasks are scheduled to be completed, and how the project is progressing overall.