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6CS007

Project and Professionalism

Project Proposal Report - React & Rise

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# Statement of the Project Details

## Project Title - React & Rise

### Academic Question

* How can the combination of React, Django, and Chakra UI be optimized to produce an effective real-time two-way communication solution that meets the specific needs of the presenter and participants?
* What effect does the adoption of a two-way communication application have on participant engagement and learning outcomes in an educational system?

## Aims

* The goal of React & Rise is to create a unique two-way communication tool that solves the changing demands of presenters and participants in diverse interactive contexts.
* Building a platform that combines Django, Chakra UI, and React will enable the project to offer a dynamic and user-friendly setting for real-time conversations.
* By constructing a platform that integrates Chakra UI, React, and Django, the project will be able to provide a dynamic and user-friendly environment for real-time conversations.

## Objectives

The main objective of the "React & Rise" project is to provide a useful, user-centered application that tackles the needs and difficulties in two-way communication that have been identified. The goal of the project is to:

* Establish a Safe Platform: Install robust security measures to guarantee application communication integrity and confidentiality.
* Optimize User Experience: Build an aesthetically beautiful and user-friendly interface with a focus on accessibility and user engagement using Chakra UI.
* Implement Real-time Features: Take advantage of the advantages that React and Django offer to facilitate smooth real-time communication between participants and presenters.
* Present Include functionalities like question prioritization through upvoting to set "React & Rise" apart from other tools.

## Problem Statement

One of the primary issues raised in the original problem statement was the lack of flexible and interesting two-way communication tools, especially in online environments. Expectations regarding security, user experience, and participant question prioritization were often not met by existing solutions. A platform was required to tackle these shortcomings and offer a complete solution for presenters seeking to communicate effectively with their audience.

## My Project as Solution

"React & Rise" provides a solution by bringing together the strengths of React, Django, and Chakra UI to create a secure, user-friendly, and feature-rich two-way communication application. The integration of these technologies addresses the flaws in existing solutions. The real-time features allow for immediate interaction, while the upvoting system prioritizes participant questions, increasing engagement. The application's architecture prioritizes security, ensuring discussion confidentiality. "React & Rise" aims to go beyond current limitations by providing presenters and participants with an innovative and efficient communication platform tailored to their specific needs.

# Project Proposal

## Introduction

The dynamic nature of digital communication demands flexible and captivating platforms that go beyond traditional limits to enable smooth communication between speakers and listeners. The way that technology is influencing our connections and communication is driving up demand for creative solutions that tackle the challenges of real-time interaction.

In this context, the proposed project, "React & Rise," stands out as a brilliant example with the potential to completely change the landscape of two-way communication applications. The project aims to build an advanced platform using Django for the backend, Chakra UI for design, and React for the frontend using a combination of cutting-edge technologies. This combination aims to outperform current solutions and set a new standard for interactive communication tools. It's a beautiful synergy.

"React & Rise" is a response to the increasing need for flexible tools that empower participants as well as presenters; it is more than just a technical project. The application wants to be more than just a channel for information sharing; it wants to be a living, breathing ecosystem where communication is key, ideas are exchanged freely, and participation is valued highly.

Essentially, the goal of this project is to provide presenters with a versatile set of tools for creating dynamic virtual spaces, or rooms, that are not constrained by physical boundaries. These spaces are transformed into lively debate arenas where attendees actively participate in a group idea exploration rather than simply passing through.

It is impossible to exaggerate the significance of clear and compelling communication as we negotiate the challenges of the digital age. In a world where meaningful and dynamic interaction is just as important as information exchange, "React & Rise" is positioned to be more than just a tool. It is an embodiment of the evolving needs of presenters and participants. This project seeks to provide a transformative experience that goes beyond the conventional bounds of virtual engagement in order to carve out a niche in the landscape of digital communication.

## Initial research into similar application

### Mentimeter (Web Application)

### Description:

Mentimeter is a dynamic cloud-based presentation platform designed to increase audience interaction. Its simple interface allows presenters to easily incorporate interactive elements, live polls, and quizzes into their slides, transforming dull presentations into engaging dialogues. Participants and presenters can engage in real-time feedback, anonymous replies, and dynamic visualizations such as word clouds and live charts thanks to Mentimeter's ease of use. Mentimeter is a versatile tool that enhances presentations by encouraging audience participation, capturing their attention, and assisting them in remembering the material—whether given in corporate boardrooms or classrooms. (Emilia, 2023)

A group of people sitting at a table

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Figure Mentimeter

## Artifact (proposed)

1. Project Initiation

- Define Project Objectives

- Establish Project Scope

- Identify Stakeholders

2. Planning and Design

- Research and Requirement Analysis

- Define Technical Stack

- Choose Frontend Technologies (React)

- Choose Backend Technologies (Django)

- Choose UI Design Framework (Chakra UI)

- Develop Project Schedule

- Create Project Budget

3. Frontend Development

- Set Up React Environment

- Design User Interface (Chakra UI)

- Implement Room Creation Functionality

- Develop Participant Access Management

4. Backend Development

- Set Up Django Backend

- Implement Room Generation and Access Control

- Integrate Real-time Features

- Implement Security Measures

5. Integration

- Integrate Frontend and Backend Components

- Test Interoperability

- Debug and Resolve Integration Issues

6. Feature Implementation

- Implement Real-time Communication Features

- Real-time Messaging

- Live Updates for Questions and Answers

- Develop Upvoting System

- Implement Anonymous Question Submission

7. User Testing and Quality Assurance

- Conduct Functional Testing

- Perform Usability Testing

- Address and Fix Identified Issues

- Ensure Cross-browser Compatibility

8. Deployment

- Prepare for Production Deployment

- Deploy Application to Hosting Environment

- Configure and Optimize Production Environment

9. Documentation

- Create User Manuals

- Document Codebase and Architecture

- Prepare Technical Documentation

10. Training and Support

- Develop Training Materials

- Conduct Training Sessions

- Provide Ongoing Support

11. Project Closure

- Evaluate Project Success

- Gather Feedback from Users

- Document Lessons Learned

- Archive Project Documentation

### Justification of Software development Methodology

Software development methodology is an organized process used throughout the software development life cycle to guarantee the successful creation, deployment, and maintenance of a software product. It offers a framework for organizing, directing, and planning the creation of information systems. Selecting an appropriate methodology is essential for project success as it affects the project's control, speed, and ability to adjust to changing needs. (SImplilearn, 2023)

* Scrum:

Scrum, an agile project management framework, uses an iterative and collaborative approach to revolutionize software development. The Product Owner, Scrum Master, and Development Team work together to navigate the Product and Sprint Backlogs to deliver increments of a potentially shippable product within short, fixed time frames known as sprints. Daily Scrum meetings ensure real-time synchronization, and Sprint Reviews and Retrospectives help with continuous improvement. Scrum's adaptability, transparency, and emphasis on teamwork make it a versatile and widely used methodology, allowing teams to respond to changing requirements effectively, improve collaboration, and deliver high-quality software. (Scrum.org, 2024)

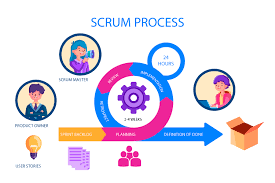


Figure Scrum Methodology

### Tools and Technology

* React (Frontend Framework):

Facebook created React, a JavaScript library for creating user interfaces. It enables developers to create reusable UI components that respond quickly to data changes, resulting in fast and interactive user experiences. The declarative syntax and virtual DOM of React make it easier to create complex, dynamic interfaces.

* Django (Backend Framework):

Django is a high-level Python web framework that is known for its ease of use and scalability. It adheres to the Model-View-Controller (MVC) architectural pattern and includes a database interaction system called Object-Relational Mapping (ORM). Django simplifies backend development by including robust features such as authentication, URL routing, and template engines, allowing developers to create scalable and maintainable web applications.

* Chakra UI (UI Component Library):

Chakra UI is a React component library that is simple and modular. It provides a collection of customizable and accessible user interface components that adhere to design principles. Chakra UI makes it easier to create visually appealing and responsive user interfaces by providing a consistent design system that improves the overall user experience.

* MongoDB (Database):

MongoDB is a NoSQL database that stores data in the BSON format, which is a flexible, JSON-like format. It is ideal for projects with rapidly changing requirements and large amounts of unstructured data. MongoDB is a popular choice for applications that require a dynamic and scalable database due to its scalability and ease of integration with Node.js (which can be used with React).

* Socket.io (Real-time Communication):

Socket.IO is a real-time web application library. It allows for bidirectional communication between clients and servers, allowing for real-time data exchange. Socket.IO can be used in the context of React and Rise to implement real-time features, ensuring that changes in the application are immediately reflected for all users, creating a dynamic and interactive environment.

* React-Redux (State Management):

Redux is a JavaScript state container with predictable state. It provides a centralized store for managing an application's state, making it easier to manage and update data across various components. Redux can improve state management in React and Rise by ensuring a consistent and efficient flow of data between components, especially when dealing with complex interactions and real-time updates.

* Formik (Form Management and Authentication):

Formik is a well-known form management library for React apps. It streamlines the form-handling process by managing form state, validation, and submission. Formik's declarative approach and built-in validation utilities make it easier to create complex forms, resulting in a more seamless user experience. Formik can be used in React and Rise to manage participant inputs efficiently, ensuring a smooth and error-free form submission process.

* GitHub (Version Control):

GitHub is a web-based platform that serves as a repository for version control and a platform for collaboration on software development projects. It tracks changes in source code during development using Git, a distributed version control system. GitHub provides a centralized location for hosting code repositories, allowing developers to collaborate on projects. It makes branching, pull requests, and issue tracking easier, promoting efficient collaboration, code review, and project management. GitHub can be used in the context of React & Rise to manage and track changes in the codebase, allowing multiple developers to work on the project concurrently while maintaining version history and facilitating seamless collaboration.

### Testing

* Jest (React testing library):

For unit and integration testing of individual React components and their interactions, use Jest in conjunction with the React Testing Library. Jest includes a test runner, assertion library, and mocking tools, whereas React Testing Library encourages testing components from the perspective of the user, ensuring that they behave as expected in various scenarios.

* s (End-to-End Testing):

Cypress is an excellent choice for end-to-end testing because it allows you to simulate user interactions and test the entire application workflow. You can use Cypress to write tests that cover multiple components and ensure that the frontend and backend work in tandem. Cypress provides real-time feedback, making it useful for identifying and correcting problems early in the development process.

* Postman (Api Testing):

Use Postman for API testing to ensure that your backend APIs work properly and respond appropriately to various requests. Postman has an easy-to-use interface for sending requests, inspecting responses, and automating API testing workflows. This ensures that data is exchanged correctly between your application's frontend and backend components.

# Plan/Schedule

## Gantt Chart

It is a project management visualization tool that displays tasks, activities, and their associated timelines in the form of a horizontal bar chart. It gives a brief and direct explanation of the project's timeline, including the start and end dates of each task. As well as their interconnection. It helps with planning, organization, and monitoring. Progress by enabling the identification of critical activities and the efficient distribution of resources as well as effective project time management.

A screenshot of a computer

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Figure Gantt Chart

# References

Emilia. (2023, November 04). *Mentimeter*. From Mentimeter: https://www.mentimeter.com/blog/mentimeter-company-culture/from-stockholm-to-sydney-moving-with-mentimeter

Scrum.org. (2024, May 03). *Scrum.org*. From Scrum.org: https://www.scrum.org/resources/what-scrum-module

SImplilearn. (2023, January 3). *SImplilearn*. From SImplilearn: https://www.simplilearn.com/software-development-methodologies-article