Integrated Project - 1 (CS204)

PROJECT REPORT- I

On

Building Virtual Classroom

BATCH-2022

Project Mentor

Ms. Abha Sharma

Student Name & ID

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4.Snehasis Bera (2211981393) (E2)

Sustainable Development Goals:-

Problem Statement:

Many rural areas lack basic educational infrastructure such as well-equipped schools, classrooms, libraries, and laboratories. The absence of proper facilities hampers the learning environment for students. Traditional education faces numerous challenges, including geographical constraints, resource limitations, and unforeseen disruptions, such as pandemics. These challenges highlight the pressing need for the development and implementation of virtual classrooms as a transformative solution to bridge educational gaps and enhance the overall learning experience.

Need Statement:

Inclusive Education: Virtual classrooms contribute to inclusive education by accommodating diverse learning abilities. Accessibility features and adaptive technologies can be integrated to ensure that educational content is accessible to all, irrespective of physical or cognitive differences.

Global Collaboration: Virtual classrooms facilitate global collaboration by connecting students and educators from different parts of the world. This interconnectedness fosters cultural exchange, diverse perspectives, and a more comprehensive understanding of global issues.

Adaptability to Technological Advancements: In an era of rapid technological advancements, traditional educational models risk becoming outdated. Virtual classrooms ensure adaptability to emerging technologies, fostering a dynamic and future-ready educational environment.

Use-Case Diagrams:-

Fig-1

Details of Use-Case Diagram:- **I**n Fig-1 use case diagram is a type of UML diagram that represents the interactions between users (actors) and a system in terms of use cases. In the context of building a virtual classroom, here's a simplified use case diagram: **1. Actor 2.Student Use Cases 3.Instructor Use Cases 4.System Use Cases 5.Administrator Use Cases 6. Relationship 7. System Boundary.**

Class Diagrams:-

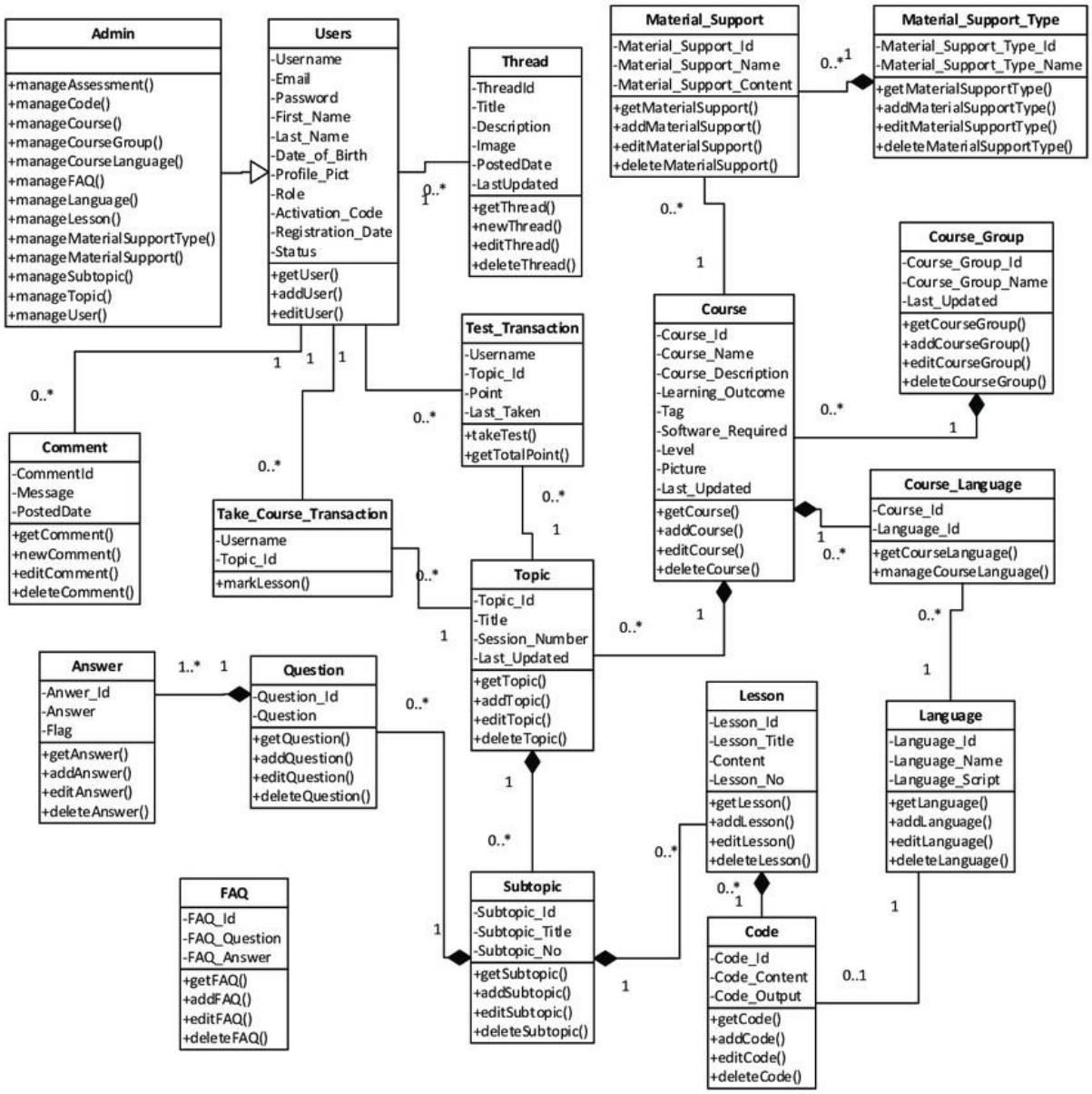


Fig-2

Details of Class Diagram:-

In Fig-2 class diagram is a type of UML (Unified Modeling Language) diagram that represents the structure and relationships of classes within a system. Here's a simplified example of a class diagram for a virtual classroom: **1.User Classes 2.Course Classes 3.Session Classes 4.Communication Classes 5. Resource Classes 6.System Classes**

Sequence Diagrams:-

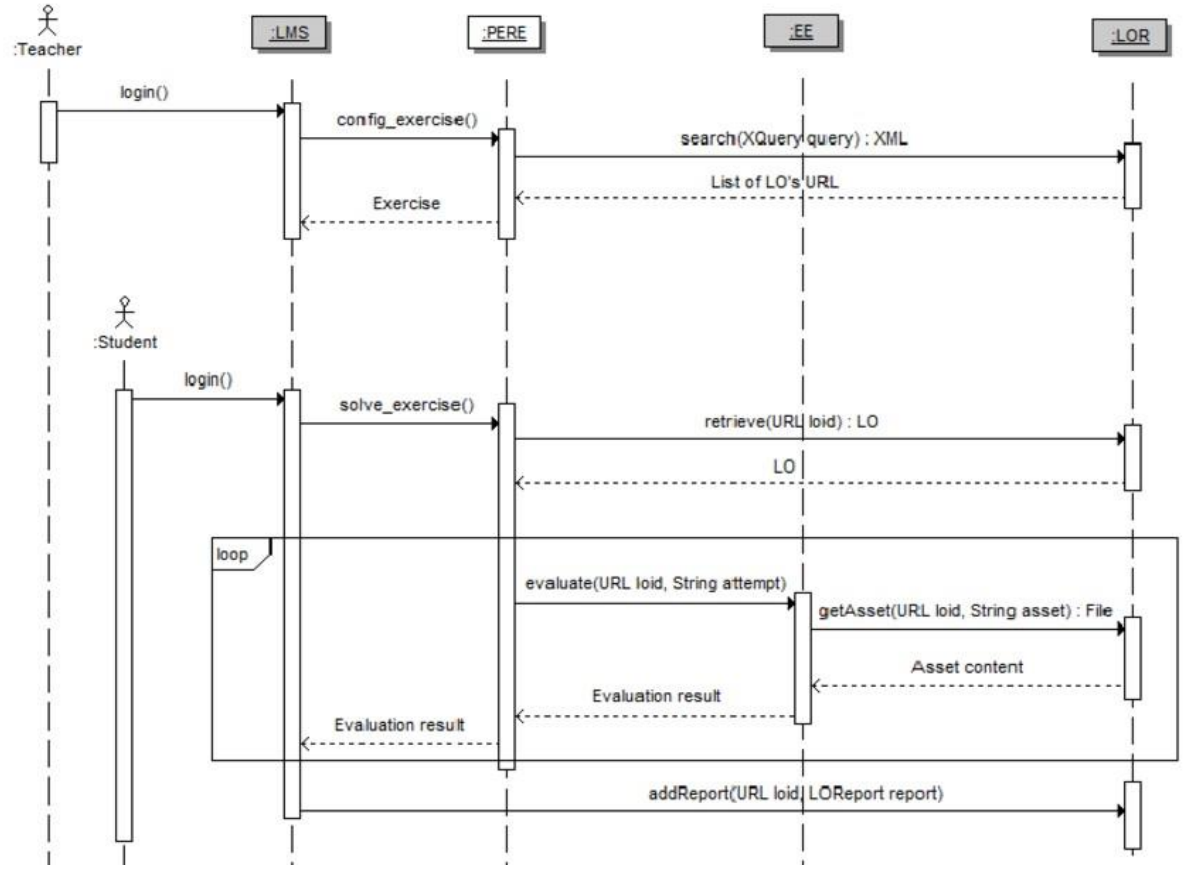


Fig-3

Details of Sequence Diagram:-

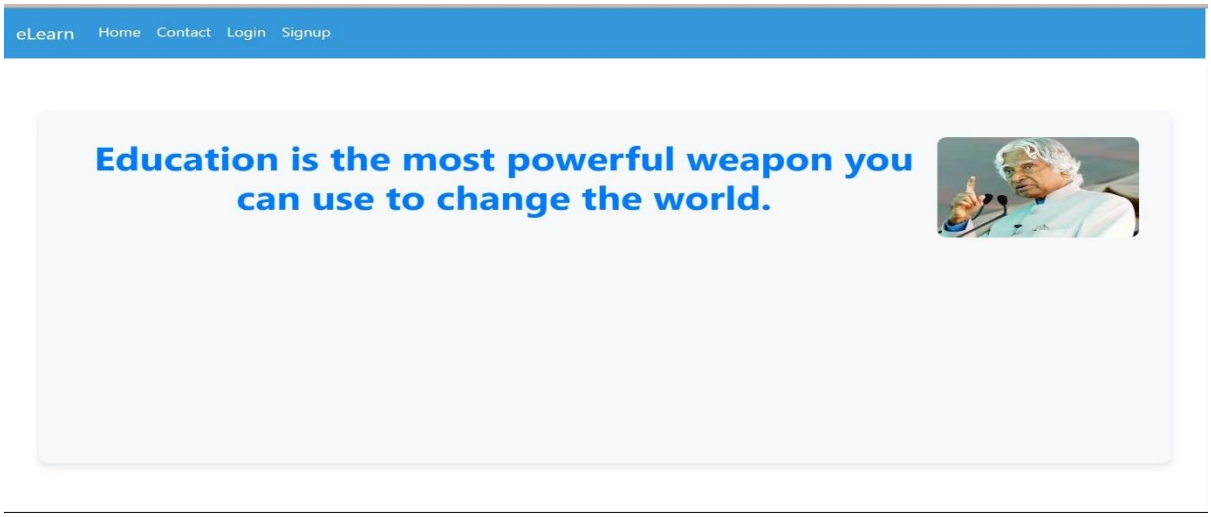
In Fig-3 sequence diagram in UML (Unified Modeling Language) represents the interactions between objects or components in a system over time.Below is a simplified example of a sequence diagram for the process of creating a virtual classroom session:

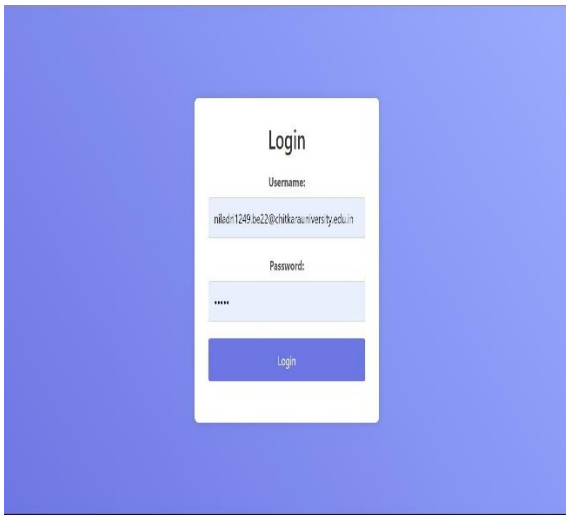
1.Creating a Virtual Classroom Session:

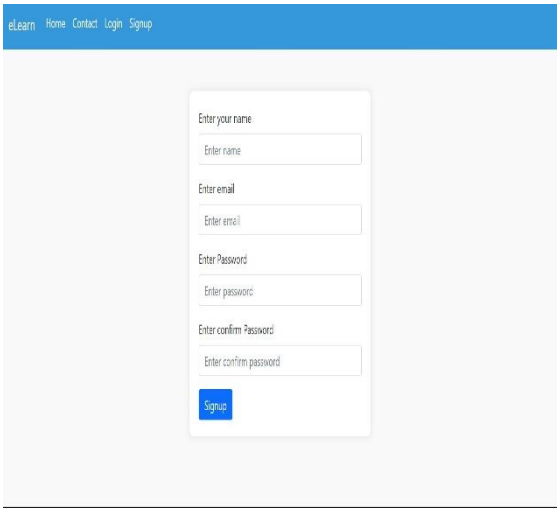
i. **Actor:** User

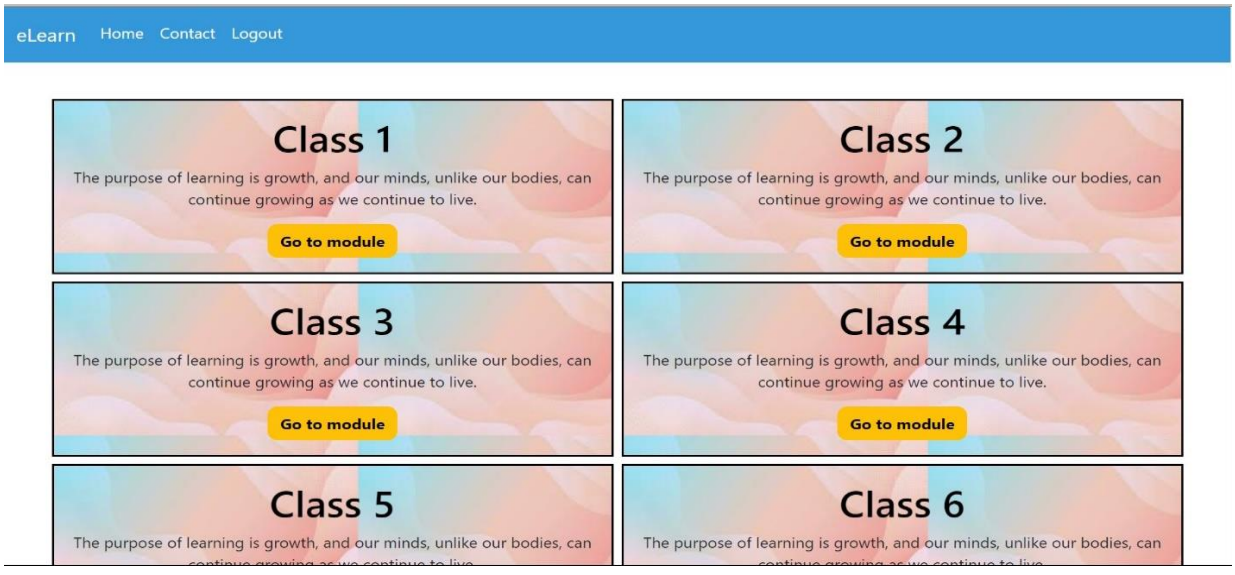
ii. **Objects**: Student, Instructor, VirtualClassroomSystem, Course, VirtualClassroomSession, ChatRoom, VideoConference

Sample of Working Project:



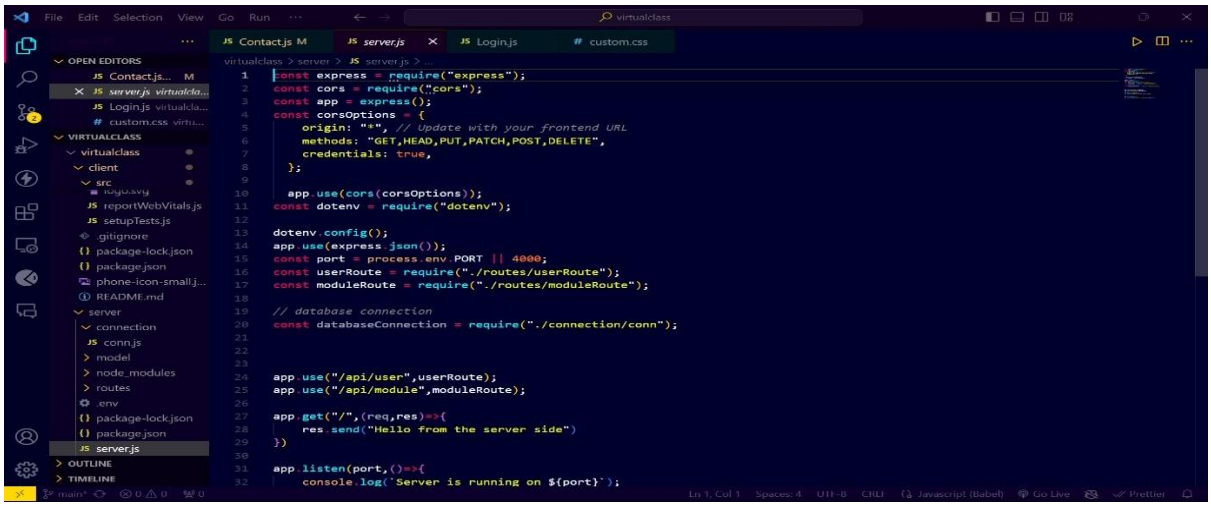




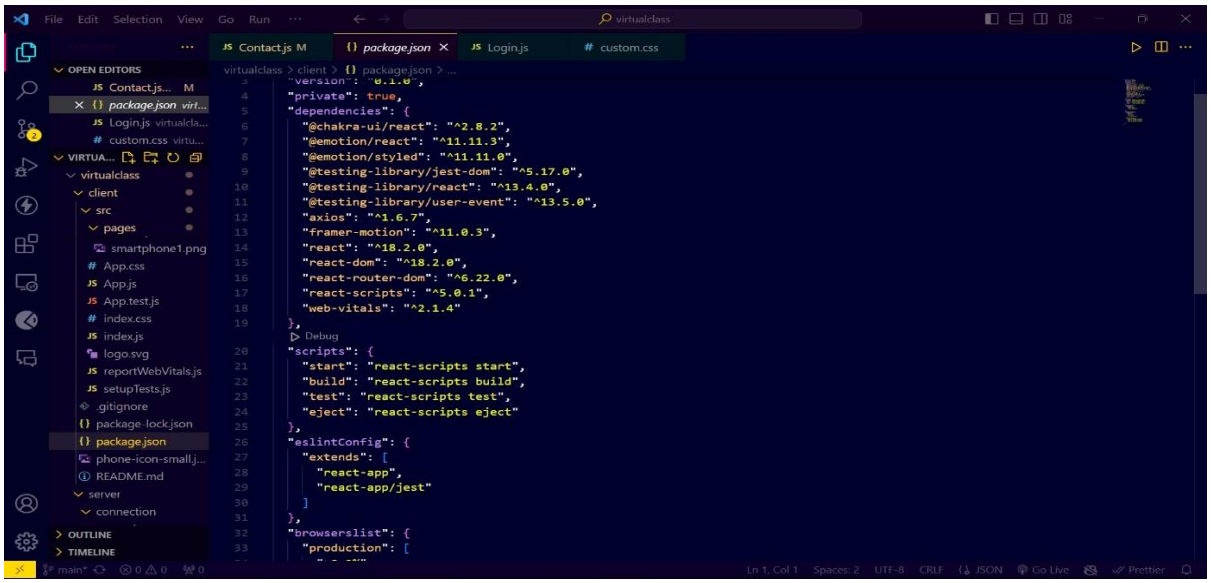


Sample Code of Working Project:-

```
import React, { useState } from 'react';

const ContactPage = () => {
  const [formData, setFormData] = useState({
    name: '',
    email: '',
    message: '',
  });

  const [isHovered, setIsHovered] = useState(false);

  const handleChange = (e) => {
    setFormData({
      ...formData,
      [e.target.name]: e.target.value,
    });
  };

  const handleSubmit = (e) => {
    e.preventDefault();
    // Add your form submission logic here
    console.log('Form submitted:', formData);
  };

  const containerStyle = {
    backgroundColor: '#fff',
    boxShadow: '0 0 10px rgba(0, 0, 0, 0.1)',
    padding: '20px',
    borderRadius: '8px',
    maxWidth: '400px',
    width: '100%',
    textAlign: 'center',
```



```
const express = require("express");
const cors = require("cors");
const app = express();
const corsOptions = {
    origin: "*", // Update with your frontend URL
    methods: "GET,HEAD,PUT,PATCH,POST,DELETE",
    credentials: true,
  };

  app.use(cors(corsOptions));
const dotenv = require("dotenv");

dotenv.config();
app.use(express.json());
const port = process.env.PORT || 4000;
const userRoute = require("./routes/userRoute");
const moduleRoute = require("./routes/moduleRoute");

// database connection
const databaseConnection = require("./connection/conn");



app.use("/api/user",userRoute);
app.use("/api/module",moduleRoute);

app.get("/",(req,res)=>{
    res.send("Hello from the server side")
})

app.listen(port,()=>{
    console.log(`Server is running on ${port}`);
```



```
  "version": "0.1.0",
  "private": true,
  "dependencies": {
    "@chakra-ui/react": "^2.8.2",
    "@emotion/react": "^11.11.3",
    "@emotion/styled": "^11.11.0",
    "@testing-library/jest-dom": "^5.17.0",
    "@testing-library/react": "^13.4.0",
    "@testing-library/user-event": "^13.5.0",
    "axios": "^1.6.7",
    "framer-motion": "^11.0.3",
    "react": "^18.2.0",
    "react-dom": "^18.2.0",
    "react-router-dom": "^6.22.0",
    "react-scripts": "^5.0.1",
    "web-vitals": "^2.1.4"
  },
  "scripts": {
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    "build": "react-scripts build",
    "test": "react-scripts test",
    "eject": "react-scripts eject"
  },
  "eslintConfig": {
    "extends": [
      "react-app",
      "react-app/jest"
    ]
  },
  "browserslist": {
    "production": [
```

DIVISION OF WORK IN TEAM:-

Name of student	ID	Role
Arijit Ghosh	2211981087	Project Manager, Lead Developer.
Niladri Sekhar Rout	2211981249	User Experience(UX) Designer and Security Analyst.
Palash Manna	2211981256	Education Specialist, Quality Assurance.
Snehasis Bera	2211981393	Learning Management System (LMS) Administrator.

Conclusion:-

In conclusion, the creation and implementation of virtual classrooms represent a pivotal and transformative step in revolutionizing the education landscape. The adaptability to technological advancements, the flexibility and convenience afforded to learners, and the resilience in the face of disruptions make virtual classrooms a crucial component in shaping the future of education.

References Used:-

https://legacy.reactjs.org/tutorial/tutorial.html
https://react.dev/learn/describing-the-ui
https://react.dev/learn/reacting-to-input-with-state
https://nodejs.org/api/documentation.html
https://www.youtube.com/watch?v=FQo8D1o1Op4&ab_channel=ThapaTechnical