Installation Guide

1. Project Introduction

The University Transport Management System (UTMS) is a full-stack web application designed to automate and streamline transport operations in academic institutions. Built using the MERN stack (MongoDB, Express.js, React.js, Node.js), UTMS provides a dual-interface system ? one for students and one for transport administrators.

2. System Requirements

- Ensure the following are installed before proceeding:
- Node.js (v14 or later)
- pnpm (install via: npm install -g pnpm)
- MongoDB (local or Atlas)
- Git
- Visual Studio Code (recommended)

3. Project Directory Structure

After downloading or cloning the project, your folder structure should look like this:

- utms/
- ??? client/   ? React frontend
- ??? server/   ? Node.js backend
- ??? README.md   ? Basic documentation

4. Backend Setup (server/)

Step 1: Navigate to the server folder
cd server

Step 2: Install dependencies
pnpm install

Step 3: Create a .env file with the following content:

PORT=5000

MONGO_URI=mongodb://localhost:27017/utms

JWT_SECRET=your_jwt_secret

Step 4: Start the backend server
pnpm start

5. Frontend Setup (client/)

Step 1: Navigate to the client folder cd ../client

Step 2: Install dependencies pnpm install

Step 3: Create a .env file with the following:

REACT_APP_API_URL=http://localhost:5000

Step 4: Start the frontend server pnpm start

6. Access Points

- Student Portal: http://localhost:3000/
- Admin Dashboard: http://localhost:3000/admin

Note: Admins should be manually added in the MongoDB database with roles like transportAdmin, departmentAdmin, treasurerAdmin.

7. Deployment Overview

You can host UTMS using:

- Frontend: Vercel, Netlify
- Backend: Render, Railway, Heroku
- Database: MongoDB Atlas

8. Production Build

To create an optimized frontend build for deployment:

pnpm run build

9. Post-Installation Checklist

- Backend and Frontend are running
- MongoDB connected
- Admin account created
- CORS configured
- Email notifications tested

10. Tools Used

- React.js (Frontend)
- Node.js + Express (Backend)
- MongoDB + Mongoose (Database)
- Postman (API Testing)
- Visual Studio Code

- GitHub
- pnpm

11. Troubleshooting

- **Problem:** MongoDB connection fails ? Fix: Check MONGO_URI Problem: API not responding ? Fix: Confirm REACT_APP_API_URL
- **Problem:** Token/auth errors ? Fix: Ensure JWT_SECRET consistency
- **Problem:** Build crashes ? Fix: Check .env and missing files

12. Team & Support

Team Members:

- Ahmad Sultan (Backend Developer)
- M. Adeel (Frontend Developer)
- Zeenat Arooj (Documentation & UI)

Supervisor: Mr. Zaeem Nazir

For support, contact team members through academic channels.