# Installation Guide

# 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.

# 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)

# 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

# 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

# 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

# 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.

# Deployment Overview

You can host UTMS using:

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

# Production Build

To create an optimized frontend build for deployment:

pnpm run build

# Post-Installation Checklist

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

# Tools Used

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

# 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

# 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.