Synopsis

Project Title: Disease Prediction System using MERN Stack

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1. Introduction

Healthcare has become one of the most important areas for technology-driven solutions. Many people face difficulties in identifying diseases at an early stage due to lack of medical awareness. This project aims to build a **web-based Disease Prediction System** that predicts possible diseases based on the symptoms entered by the user.

The system will be developed using the **MERN stack (MongoDB, Express, React, Node.js)**, focusing on the **frontend and basic database integration** for the Minor Project. In the future, the project can be enhanced into a **Major Project** by integrating backend APIs, authentication, and machine learning models for advanced prediction.

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2. Objectives

- To design a simple, user-friendly interface where users can input symptoms.
- To provide possible disease predictions based on symptom selection.
- To display disease descriptions and basic precautions.
- To create a scalable MERN-based application that can be extended into a Major Project.

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3. Scope of the Project

- Provides users with a quick and easy way to identify possible diseases.

- Helps raise awareness about common diseases and health precautions.

- Designed to be scalable: can later integrate authentication, user dashboards, and ML models.

- Currently limited to frontend prediction using static data/dataset, but expandable to a full-stack solution.

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4. Technology Stack

- **Frontend:** React.js (User Interface)

- **Database:** MongoDB (disease and symptom dataset storage)

- **Styling:** TailwindCSS / Bootstrap / Material UI

- **Backend (Future Scope):** Node.js + Express.js

- **Optional Future Extension:** ML Model integration (Python/Flask API)

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5. Project Modules

1. **User Interface Module (React):**

   o Symptom input form (multi-select symptoms).

   o Prediction display page (possible diseases).

   o Disease details & precautions page.

2. **Database Module (MongoDB):**

   o Store symptoms and diseases dataset.

   o Store disease descriptions and precautionary measures.

3. **Future Modules (for Major Project):**

   o Authentication & User Dashboard.

   o History of user predictions.

   o Machine learning–based prediction engine.

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6. Expected Outcome

- A functional web application where users can input symptoms and receive possible disease predictions.

- Responsive UI for better user experience.

- Basic MongoDB dataset integration for symptom–disease mapping.

- A solid foundation that can later be extended into a **full-stack Major Project**.

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7. Advantages

- Simple, user-friendly, and accessible from any device.

- Provides awareness about diseases and preventive care.

- Built on a scalable technology stack (MERN).

- Can be expanded into a real-world health application with AI/ML integration.

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8. Future Enhancements

- Add backend APIs (Node + Express) for full-stack functionality.

- User authentication and personalized dashboards.

- Machine Learning–based prediction for accuracy.

- Doctor consultation/chatbot integration.

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9. Conclusion

The proposed Disease Prediction System demonstrates how modern web technologies can be used to create meaningful healthcare applications. For the Minor Project, it will serve as a **frontend + MongoDB prototype**, while for the Major Project, it can evolve into a **full-fledged intelligent health prediction system** with backend and AI/ML support.

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10. References

- MERN Stack Documentation (MongoDB, Express.js, React.js, Node.js)

- Research papers on Disease Prediction using ML models

- Web tutorials on symptom-based healthcare applications