**Team Members & Roles**

* **Member 1 – Project Lead / Planner**
* **Member 2 – Data Engineer**
* **Member 3 – ML Engineer**
* **Member 4 – Backend Developer**
* **Member 5 – Frontend/UI Developer**

**🗓️ 5-Day Work Plan**

**🔹 Day 1 – Project Setup & Data Preparation**

* Define objectives and success metrics (Member 1)
* Collect datasets (e.g., UCI Liver dataset) (Member 2)
* Preprocess data: missing values, encoding, normalization (Member 2)
* Create project repo and architecture documentation (Member 1)

**🔹 Day 2 – Feature Engineering & Model Selection**

* Perform EDA and feature selection (Member 2 & 3)
* Try basic models: Logistic Regression, Random Forest, SVM (Member 3)
* Begin model evaluation using cross-validation (Member 3)

**🔹 Day 3 – Model Optimization & Testing**

* Hyperparameter tuning using GridSearchCV (Member 3)
* Finalize best-performing model (Member 3)
* Split clean code into modules and functions (Member 2 & 3)
* Start backend API development (Member 4)

**🔹 Day 4 – Integration & Interface Development**

* Develop Flask/Django-based prediction API (Member 4)
* Design frontend: input form for patient data + result display (Member 5)
* Connect frontend with backend (Member 4 & 5)
* Perform unit and integration testing (Member 1)

**🔹 Day 5 – Final Testing, Feedback, and Deployment**

* Test the full system with dummy inputs (All Members)
* Collect internal feedback and make quick fixes (All Members)
* Deploy on local or cloud server (Member 4)
* Prepare final presentation/report (Member 1)
* Demonstration of the tool to stakeholders (All Members)

**🔷 Logical Workflow Pattern (5-Day Plan)**

**🔹 1. Requirement Analysis & Objective Finalization (Day 1)**

* **Logic:** Understand the problem, define goals, scope, and deliverables.
* Why: A clear goal is essential before any technical work begins.

**🔹 2. Data Handling & Preprocessing (Day 1 - Day 2)**

* **Logic:** Collect, clean, and prepare data for model input.
* Why: Machine learning is only as good as the quality of data fed into it.

**🔹 3. Feature Engineering & Exploratory Data Analysis (Day 2)**

* **Logic:** Discover patterns, correlations, and important features.
* Why: Helps improve model accuracy and interpretability.

**🔹 4. Model Building & Evaluation (Day 2 - Day 3)**

* **Logic:** Train various models and evaluate their performance.
* Why: Identifies the most suitable algorithm for liver cirrhosis prediction.

**🔹 5. Model Optimization (Day 3)**

* **Logic:** Fine-tune models using hyperparameter tuning (e.g., GridSearchCV).
* Why: Enhances accuracy and generalization of predictions.

**🔹 6. Backend API Development (Day 3 - Day 4)**

* **Logic:** Wrap the trained model into an API for easy access.
* Why: Enables practical use of the model in applications.

**🔹 7. User Interface Integration (Day 4)**

* **Logic:** Build an intuitive frontend to input patient data and view results.
* Why: Ensures ease of use by healthcare professionals.

**🔹 8. Testing & Debugging (Day 4 - Day 5)**

* **Logic:** Test all components individually and together.
* Why: Verifies the system works reliably under various scenarios.

**🔹 9. Deployment & Demonstration (Day 5)**

* **Logic:** Host the application and present to stakeholders.
* Why: Transitions the project from development to real-world usability.

**🔹 10. Documentation & Final Reporting (Day 5)**

* **Logic:** Record methodology, architecture, and outcomes.
* Why: Supports transparency, reproducibility, and future improvement.

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