❤️ Heart Disease Prediction - Problem Statement

# 📌 Problem Statement

The goal of this project is to develop a machine learning model that can predict whether an individual has heart disease based on various medical attributes. This predictive capability can assist healthcare professionals in early diagnosis and treatment planning.

# 🎯 Project Objectives

- Analyze and understand the structure of the heart disease dataset.

- Perform exploratory data analysis (EDA) to identify key health indicators.

- Preprocess and clean the data for modeling.

- Train classification models to predict the presence of heart disease.

- Evaluate models using appropriate performance metrics.

# 🧾 Dataset Description

The dataset includes medical records of patients along with a target variable indicating the presence or absence of heart disease.

## 📊 Key Features (Examples)

- Age: Age of the patient

- Sex: Gender (1 = male; 0 = female)

- ChestPainType: Type of chest pain

- RestingBP: Resting blood pressure

- Cholesterol: Serum cholesterol in mg/dl

- FastingBS: Fasting blood sugar > 120 mg/dl

- MaxHR: Maximum heart rate achieved

- ExerciseAngina: Exercise-induced angina

- ST\_Slope: Slope of the peak exercise ST segment

- Target: 1 = presence of heart disease, 0 = absence

# 🛠️ Tools & Technologies Used

- Python (pandas, numpy, matplotlib, seaborn)

- Jupyter Notebook

- Scikit-learn for model development

- Classification Algorithms: Logistic Regression, Decision Trees, Random Forest, etc.

# 📈 Expected Outcomes

- A trained machine learning model that predicts heart disease risk.

- Visual analysis of important health indicators and risk factors.

- Performance metrics including Accuracy, Precision, Recall, and F1-Score.