

Heart Disease Diagnostic Analysis

LOW LEVEL DESIGN (LLD)

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1. Introduction

1.1. What is Low-Level design document?

The goal of the Low-level design document (LLDD) is to give the internal logic design of the actual program code for the Heart Disease Diagnostic Analysis dashboard. LLD describes the class diagrams with the methods and relations between classes and programs specs. It describes the modules so that the programmer can directly code the program from the document. The LLD phase is the stage where the actual software components are designed. During the detailed phase the logical and functional design is done and the design of application structure is developed during the high-level design phase.

1.2. Scope

Low-level design document (LLD) is a component-level design process that follows a step-by-step refinement process. This process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

1.3 Project Introduction

Heart disease is type of disease that affects the human heart or blood vessels. Heart disease is a term covering any disorder of the heart. Basically Heart disease is a general term that means that the heart is not working normally. Heart diseases have become a major concern nowadays. Studies shows that the number of deaths due to heart failures have increased significantly over the past few decades in India. It has become the leading cause of death in India. A study shows that from 1990 to 2016 the death rate due to heart diseases have increased around 34% from 155.7 to 209.1 deaths per 1 lakh population in India. Thus, preventing heart diseases has become more than necessary. Good data driven systems for prediction of heart diseases can improve the research and prevention process, which makes sure that more people can live healthy lives.

2. Problem Statement

Health is real wealth in the pandemic time we all realized the brute effects of covid-19 on all irrespective of any status. You are required to analyse this health and medical data for better future preparation. A dataset is formed by taking into consideration some of the information of 303 individuals.

3. Dataset Information:

age: The person's age in years

sex: The person's sex i.e.1 - male, 0 - female

cp: The chest pain experienced i.e.1- typical angina, 2- atypical angina, 3-non-anginal pain, 4-asymptomatic

trestbps: The person's resting blood pressure

chol: The person's cholesterol measurement in mg/dl

fbs: The person's fasting blood sugar > 120 mg/dl, 1 - true; 0 – false

restecg: Resting electrocardiographic measurement i.e.0 - normal, 1- having ST-T wave abnormality, 2 -showing probable or definite left ventricular hypertrophy by Estes' criteria

thalach: The person's maximum heart rate achieved

exang: Exercise induced angina i.e.1 – yes, 0 – no

oldpeak: ST depression induced by exercise relative to rest

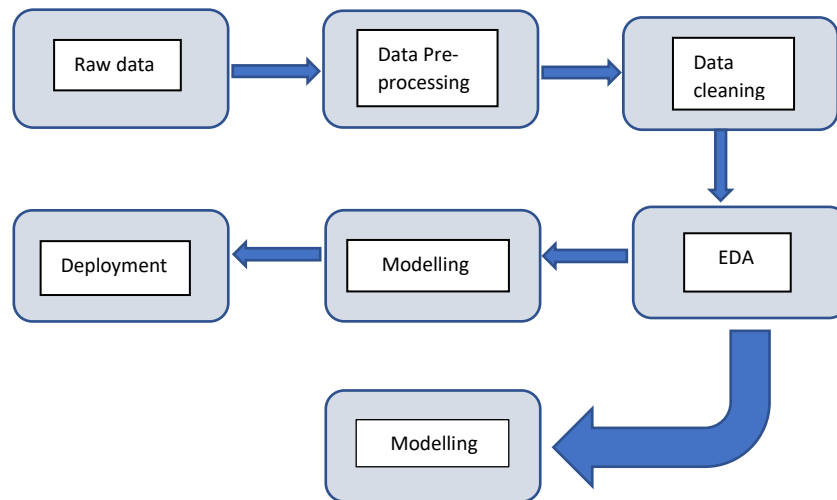
slope: the slope of the peak exercise ST segment i.e. 1- upsloping, 2- flat, 3- downsloping

ca: The number of major vessels (0-3)

thal: A blood disorder called thalassemia i.e. 3 - normal; 6 - fixed defect; 7 - reversable defect

num: Heart disease i.e.0 - no, 1 -yes

4. Architecture:



4.1 Architecture Description

1. Raw Data Collection

The Dataset was taken from Project Description Document.

2. Data Pre-Processing: Before building any model, it is crucial to perform data pre-processing to feed the correct data to the model to learn and predict. This Process includes

- a) Handling Null/Missing Values
- b) Handling Skewed Data
- c) Outliers Detection and Removal

3. Data Cleaning : Data cleaning is the process of removing incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within a dataset.

- a) Remove duplicate or irrelevant observations
- b) Filter unwanted outliers
- c) Renaming required attributes

4. Exploratory Data Analysis (EDA): It is the process of performing initial investigations on data to discover patterns, spot anomalies, test hypothesis and to check assumptions with the help of summary statistics and graphical representations.

5. Reporting: Reporting is a most important skill of a data analytics field. Because being a Data Analyst you should be able to create easy and self explanatory report because your model will be used by many stakeholders who are not from technical background.

- a) High Level Design Document (HLD)
- b) Low Level Design Document (LLD)

c) Architecture

d) Wireframe

e) Detailed Project Report

f) Power Point Presentation

6. Modelling: Data Modelling is the process of analysing the data objects and their relationship to the other objects. It is used to analyse the data requirements that are required for the business processes. The data models are created for the data to be stored in a database. The Data Model's main focus is on what data is needed and how we have to organize data rather than what operations we have to perform.

7. Deployment: Created a Power BI Dashboard

