LOW LEVEL DESIGN (LLD)

HEART DISEASE DIAGNOSTIC ANALYSIS

DOCUMENT VERSION CONTROL

Date Issue	Version	Description	Author
25/02/2023	1	Initial LLD – V 1.0	Abdul Jaweed
02/04/2023	2	Final LLD - V 2.0	Abdul Jaweed Masna Ashraf Shaziya Shaikh

CONTENT

ABSTRACT

Heart disease is the most major health issue that is suffered by many people all over the globe, some of the causes of heart diseases due to hypertension, diabetes, overweight, and an unhealthy lifestyle. This project of Healthcare Analysis on Heart Disease Data is aimed to explore the Heart Disease dataset .The objective is to analyze the various features and their relationship with each other and find out their contribution towards getting a heart disease.

Various features such as Age, Sex, Chest pain type, Blood pressure, Cholesterol,Fasting Blood sugar, Rest ECG, Thalach, Exercise enduced Angina,Major vessels,oldpeak,slope,thal are present in the dataset.The goal of the project is to find all types of relationships between the features and come out with significant contributors to a heart disease.

INTRODUCTION

What is a Low Level Design Document?

The goal of LLD or a low-level design document (LLDD) is to give the internal logical design of the actual program code for Credit Card Default Prediction. LLD describes the class diagrams with the methods and relations between classes and program specs. It describes the modules so that the programmer can directly code the program from the document. Low-level design is a detailed description of every module of software. It describes every module in detail by incorporating the logic behind every component in the system. It delves deep into every specification of every system, providing a micro-level design.

Scope

Low Level Design (LLD) is a component level design process that follows a step by step refinement process. This process can be used to design data structure, required software architecture, source code and ultimately performance algorithm. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

PROJECT INTRODUCTION

This dataset contains details of the age,BP,cholesterol and about having heart disease or not.Using the attributes in the dataset we can predict heart disease risk for an individual and identify the risk factors.

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 analyze this health and medical data for better future preparation.

DATASET INFORMATION

This database contains 76 attributes, but all published experiments refer to using a subset of 14 of them. In particular, the Cleveland database is the only one that has been used by ML researchers to this date. The "goal" field refers to the presence of heart disease in the patient. It is integer valued from 0 (no presence) to 4. Experiments with the Cleveland database have concentrated on simply attempting to distinguish presence (values 1,2,3,4) from absence (value 0).

The names and social security numbers of the patients were recently removed from the database, replaced with dummy values.

One file has been "processed", that one containing the Cleveland database. All four unprocessed files also exist in this directory.

To see Test Costs (donated by Peter Turney), please see the folder "Costs"

ATTRIBUTE INFORMATION

- age: The person's age in years
- sex: The person's sex (1 = male, 0 = female)
- cp: The chest pain experienced (Value 1: typical angina, Value 2: atypical angina, Value 3: non-anginal pain, Value 4: asymptomatic)
- trestbps: The person's resting blood pressure (mm Hg on admission to the hospital)
- 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 (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 (1 = yes; 0 = no)
- oldpeak: ST depression induced by exercise relative to rest
- slope: the slope of the peak exercise ST segment (Value 1: upsloping, Value 2: flat, Value 3: downsloping)
- ca: The number of major vessels (0-3)
- thal: A blood disorder called thalassemia (3 = normal; 6 = fixed defect; 7 = reversable defect)
- num: Heart disease (0 = no, 1 = yes)

ARCHITECTURE

Heart disease is a major health concern globally, and understanding the factors that contribute to this condition is critical for developing effective prevention and treatment strategies. In this project, we aim to analyze the relationships between different features and identify the significant contributors to heart disease. Our end goal is to create a dashboard that can be used by healthcare professionals to gain insights into the factors that impact heart disease risk.

To achieve this goal, we will begin by collecting and pre-processing the dataset that will be used in our analysis. We will use Python data manipulation libraries like Pandas to clean and optimize the data. We will also perform table calculations and data filtering to obtain more granular results.

Next, we will import the cleaned dataset into a Business Intelligence (BI) tool such as Tableau. Using this tool, we will create visualizations and dashboards that will help us to explore the relationships between different attributes and identify key findings. We will also use filters to speed up the process of finding insights and create more granular reports.

In addition to creating visualizations and dashboards, we will also perform feature engineering to extract more useful information from the dataset. This can help us to identify the most important predictors of heart disease and improve the accuracy of our analysis. We will also build predictive models and validate them to ensure that they are accurate and reliable.

Finally, we will create a detailed project report that includes all the visual plots and key findings from the analysis. We will also host the dashboard on a cloud platform like Tableau Public, making it easily accessible to healthcare professionals around the world.

By following this comprehensive approach, we can gain valuable insights into the factors that contribute to heart disease and develop effective prevention and treatment strategies. We hope that our analysis will help healthcare professionals to identify patients who are at risk for heart disease and provide them with the care they need to stay healthy.

POWER BI DASHBOARD

Power BI is a business analytics service by Microsoft that provides interactive visualizations and business intelligence capabilities with an interface that is simple enough for end users to create their own reports and dashboards.

Power BI dashboards can be created using a variety of data sources, such as Excel spreadsheets, SQL databases, and cloud-based applications like Salesforce and Google Analytics. Power BI also provides connectors to many other data sources, making it easy to bring in data from multiple sources.

Once data is connected, Power BI allows users to create visually appealing and interactive dashboards. Users can drag and drop visualizations onto the canvas, customize the appearance of the dashboard, and add filters and slicers to allow for interactive exploration of the data.

Power BI dashboards also have a variety of sharing options. Users can share dashboards with others within their organization, publish dashboards to the web, or embed them into websites and other applications.

Power BI also has many advanced features, such as the ability to perform complex data modeling and calculations using DAX formulas, and the ability to create and share reports with others.

Overall, Power BI dashboards are a powerful tool for organizations to gain insights into their data, improve decision-making, and drive business success.

HEART DISEASE DIAGNOSTIC VISUALIZATION DASHBOARD