

HIGH LEVEL DESIGN DOCUMENT

Heart Disease Diagnostic Analysis BY
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ABSTRACT

CVD(Cardiovascular Disease) are group of disorders of heart and blood vessels. Heart disease is a general term that means the heart isn't working normally. Babies can be born with heart disease. This is called congenital heart disease. If people get heart disease later, it is called acquired heart disease and most of them are acquired. The most common types of acquired heart disease are CAD(Coronary Artery Disease), CHF(Congestive Heart Failure), Bad Heart Rhythms. India has one of the highest burdens of CVD worldwide. According to a report the annual in of deaths from CVD India rise numbers from 2.26million(1990) to 4.77million(2020).Coronary heart disease prevalence rate in India have been estimated over the past several decades & have ranged from 1.6% to 7.4% in rural populations and from 1% to 13.2% in urban population. The prevalence rate increased with age from 22% in 45-54 to 38% in age 70 and above as per report.

INTRODUCTION

WHY THIS HIGH LEVEL DESIGN DOCUMENT

The purpose of this High-Level Design (HLD) document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions before coding and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

- ♣ Present all of the design aspects and define them in detail.
- Describe the user interface being implemented.
- lacktriangle Describe the hardware and software interfaces.
- lacktright lacktriangle Describe the performance requirements.
- Include design features and the architecture of the project.
- List and describe the non-functional attributes like:-
 - Security
 - Reliability
 - Maintainability
 - Portability
 - Reusability
 - Application Compatibility
 - Resource Utilization
 - Serviceability

SCOPE

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly-technical terms which should be understandable to the administrators of the system.

GENERAL DESCRIPTION PRODUCT PERSPECTIVE & PROBLEM STATEMENT

Heart Disease becomes non curable when not being stop at time when body shows certain signs and to reduce risk of more severe problems, if you even experience some slight discomfort in your body better take a time perform certain medical test which give a better of understanding about condition of body as well as heart so there will chances to minimize any kind of risk that is going to happen or will happen in near future.

The problem statement aims to analyze certain parameter from given individual information come to conclusion that whether the individual will suffer from heart disease or not. To achieve the goal, we used a data set that is given and analyze most important parameter that are responsible for heart disease. Also get some meaningful insights from the given information regarding Heart Disease.

TOOLS

Business Intelligence tools and libraries works such as NumPy, Pandas, Seaborn, Matplotlib, MS-Excel, Power BI, Jupyter Notebook and Python Programming Language are used to build the whole framework.

















DESIGN DETAILS FUNCTIONAL ARCHITECTURE



STEP 1

Data from source systems is integrated and loaded into a data warehouse of other analytics repository.



STEP 2

Data sets are organized into analytics data models or OLAP cubes to prepare them for anlysis.



CTCD.

BI analysts, other analytics professionals and business users run analytical queries against the date.



STEP

The query results are built into data visualizations, dashboards, reports and online portals.



STEP

Busness executives and workers use the information for decision-making and strategic planning.

HOW BI WORKS

ORGANIZATIONAL MEMORY

INFORMATION INTEGRATION

INSIGHT CREATION

PRESENTATION

- Data Warehouse
- Enterprise
 resource
 planning(E
 RP)
- Knowledge Repository
- ♣ Content
 Management
 System(CMS
)

- Business
 Analytical
 Tools
- ♣ Data
 Mining
- ♣ Real Time Decision

- ♣ Text
 Mining
 Tool
- ₩eb Mining Tool
- # Environmen
 tal
 Scanning
- ♣ RFID

- 4 Online
 Analytical
 Processing
 Tool
- ♣ Visualizat ion Tool
- ♣ Digital Dashboard
- ♣ Score Card

OPTIMIZATION

- Your data strategy drives performance
 - Minimize the number of fields.
 - Minimize the number of records.
 - Optimize extracts to speed up future queries by materializing calculations, removing columns & the use of accelerated views.
- ♣ Reduce the marks (data points) in your view
 - Practice guided analytics. There is no need to fit everything you plan to single view. Compile related views and connected them with action filtered to travel from overview to highly-granular views at the speed of thought.
 - Remove unneeded dimensions from the detail self.
 - Explore try displacing your data in different type of views.
- ♣ Limit your filters by number and type
 - Reduce the number of filters in use. Excessive filters on a view will create a more complex query, which takes longer to return results. Double-check your filters and remove any that aren't necessary.
 - Use an include filter. Exclude filters load the entire domain of a dimension while including filters do not. An include filter runs much faster than an exclude filter, especially for dimensions with many members.
 - Use a continuous date filter. Continuous date filters (relative and range-of date filters) can take advantage of the indexing properties in your database and are faster than discrete data filters.
 - Use Boolean or numeric filters. Computers process integers and Booleans (t/f) much faster than strings.
 - Use parameters and action filters. These reduce the query load (and work across data sources.

- Optimize and materialize your calculations
 - Perform calculations in the database.
 - Reduce the number of nested calculations.
 - Reduce the granularity of LOD or table calculations in the view. The more granular the calculation, the longer it takes.
 - LODs Look at the number of unique dimension members in the calculation.
 - Table Calculations the more marks in the view, the longer it will take to calculate.
 - Where possible, use MIN or MAX instead of AVG. AVG requires more processing than MIN or MAX. Often rows will be duplicated and display the same result with MIN, MAX, or AVG.
 - Make groups with calculations. Like include filters, calculated groups load only named members of the domain, whereas Tableau's group function loads the entire domain.
 - Use Booleans or numeric calculations instead of string calculations. Computer can process integers and Booleans (t/f) much faster than strings (Boolean>Int>Float>Date-Time>String).

KPI

Dashboards will be implemented to display and indicate certain KPIs and relevant indicators. AS and when the system starts to capture the historical/periodic data for a user, the dashboards will be included to display charts over time with progress on various indicators or factors.

KPIs (Key Performance Indicator)

Key indicators displaying a summary of the Heart Disease Diagnostic and its relationship with different metrics are as follows:-

- Percentage of People Having Heart Disease.
- ♣ Age with Gender group distribution.
- ♣ No of people experience Chest pain along with age.
- ♣ No of people have Depression along with the age.
- ♣ Gender-wise distribution of disease.
- Person having Blood Pressure, Cholesterol Level, ST Depression along with age.

DEPLOYMENT

Prioritizing data and analytics couldn't come at a better time. Your company, no matter what size, is already collecting data and most likely analyzing just aportion of it to solve business problems, gain competitive advantages, and drive enterprise transformation. With the explosive growth of enterprise data, database technologies, and the high demand for analytical skills, today's most effective IT organizations have shifted their focus to enabling self-service by deploying and operating Power BI Visualization at scale, as well as organizing, orchestrating, and unifying disparate sources of data for business users and experts alike to author and consume content.

- ♣ Patterns in business operations: Data visualization techniques help us to determine the patterns of business operations. By understanding the problem statement and identifying the solutions in terms of pattering and applied to eliminate one or more of the inherent problems.
- ➡ Identify business trends and relate to data: These techniques help us identify market trends by collecting the data on Day-To-Day business activities and preparing trend reports, which helps track the business how influences the market. So that we could understand the competitors and customers. Certainly, this helps to long-term perspective.
- ♣ Storytelling and Decision Making: Knowledge of storytelling from available data is one of the niche skills for business communication, specifically for the Data Science domain which is playing a vital role. Using best visualization this role can be enhanced much better way and reaching the objectives of business problems.
- ♣ Understanding current business insights and setting up goals: Business can be understand from insight of KPI like finding some tangible goals, past performance, past strategy planning & many more factors.
- ♣ Operational and Performance analysis: Increase the productivity with the help of visualization techniques the clarity of KPIs depicting the trends of the productivity and guiding were to improve the productivity.

Power BI prioritizes choice in flexibility to fit, rather than dictate, your enterprise architecture. Power BI Desktop and Power BI Service leverage your existing technology investments and integrate them into your IT infrastructure to provide a self-service, modern analytics platform for your users. With on-premises, cloud, and hosted options, there is a version of Power BI to match your requirements.