INTRODUCTION

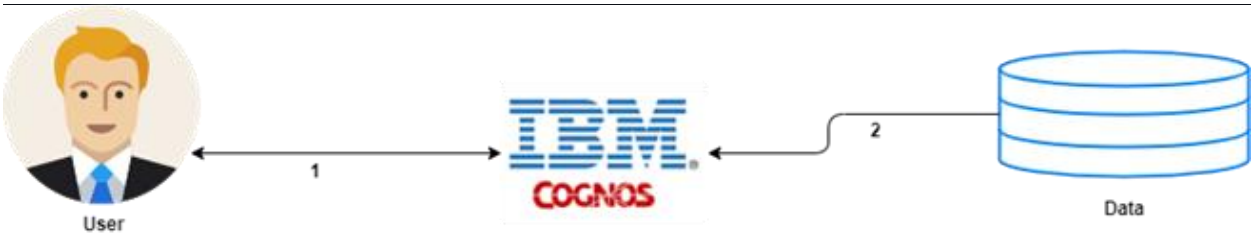
Your heart is one of your body's most important organs. Essentially a pump, the heart is a muscle made up of four chambers separated by valves and divided into two halves. Each half contains one chamber called an atrium and one called a ventricle. The atria (plural for atrium) collect blood, and the ventricles contract to push blood out of the heart. The right half of the heart pumps oxygen-poor blood (blood that has a low amount of oxygen to the lungs where blood cells can obtain more oxygen. Then, the newly oxygenated blood travels from the lungs into the left atrium and the left ventricle. The left ventricle pumps the newly oxygen-rich blood to the organs and tissues of the body. This oxygen provides your body with energy and is essential to keep your body healthy.The diagnosis of heart disease is usually based on signs, symptoms and physical examination of the patient. There are several factors that increase the risk of heart disease, such as smoking habit, body cholesterol level, family history of heart disease, obesity, high blood pressure, and lack of physical exercise.predicting presence/absence of Locomotor disorders, Heart diseases and more. Such information, if predicted well in advance, can provide important insights to doctors who can then adapt their diagnosis and treatment per patient basis.The term “heart disease” refers to several types of heart conditions. The most common type of heart disease in the United States is coronary artery disease (CAD), which affects the blood flow to the heart. Decreased blood flow can cause a heart attack.The objective of this project is to check whether the patient is likely to be diagnosed with any cardiovascular heart diseases based on their medical attributes such as gender, age, chest pain, fasting sugar level, etc. A dataset is selected from the Kaggle repository with the patient's medical history and attributes.It is a way to recognize patient health by applying

data mining and machine learning techniques on patient treatment history.Is heart disease so important? Heart disease is the leading cause of death for men, women, and people of most racial and ethnic groups in the United States. One person dies every 34 seconds in the United States from cardiovascular disease. About 697,000 people in the United States died from heart disease in 2020—that's 1 in every 5 deaths.What is the best predictor of heart disease? Having either high LDL cholesterol (“bad” cholesterol) or low HDL cholesterol (“good” cholesterol)—or both—is one of the best predictors of your risk of heart disease. A blood lipid profile measures both your cholesterol numbers and your triglycerides, another type of fat in the blood that is a risk factor.The Health Prediction system is an end user support and online consultation project. This system allows users to get instant guidance on their health issues through an intelligent health care system online. The system contains data of various symptoms and the disease/illness associated with those symptoms.

1.1 Project Overview

Globally cardiovascular death is once again the leading cause of death, taking the lives of 18 million people each year. With this high number of deaths, one would expect research in cardiovascular disease to be a critical undertaking.

Visualizing and Predicting Heart Diseases with an Interactive Dashboard The leading cause of death in the developed world is heart disease. Therefore, there needs to be work done to help prevent the risks of having a heart attack or stroke. Content: Use this dataset to predict which patients are most likely to suffer from a heart disease in the near future using the features given.

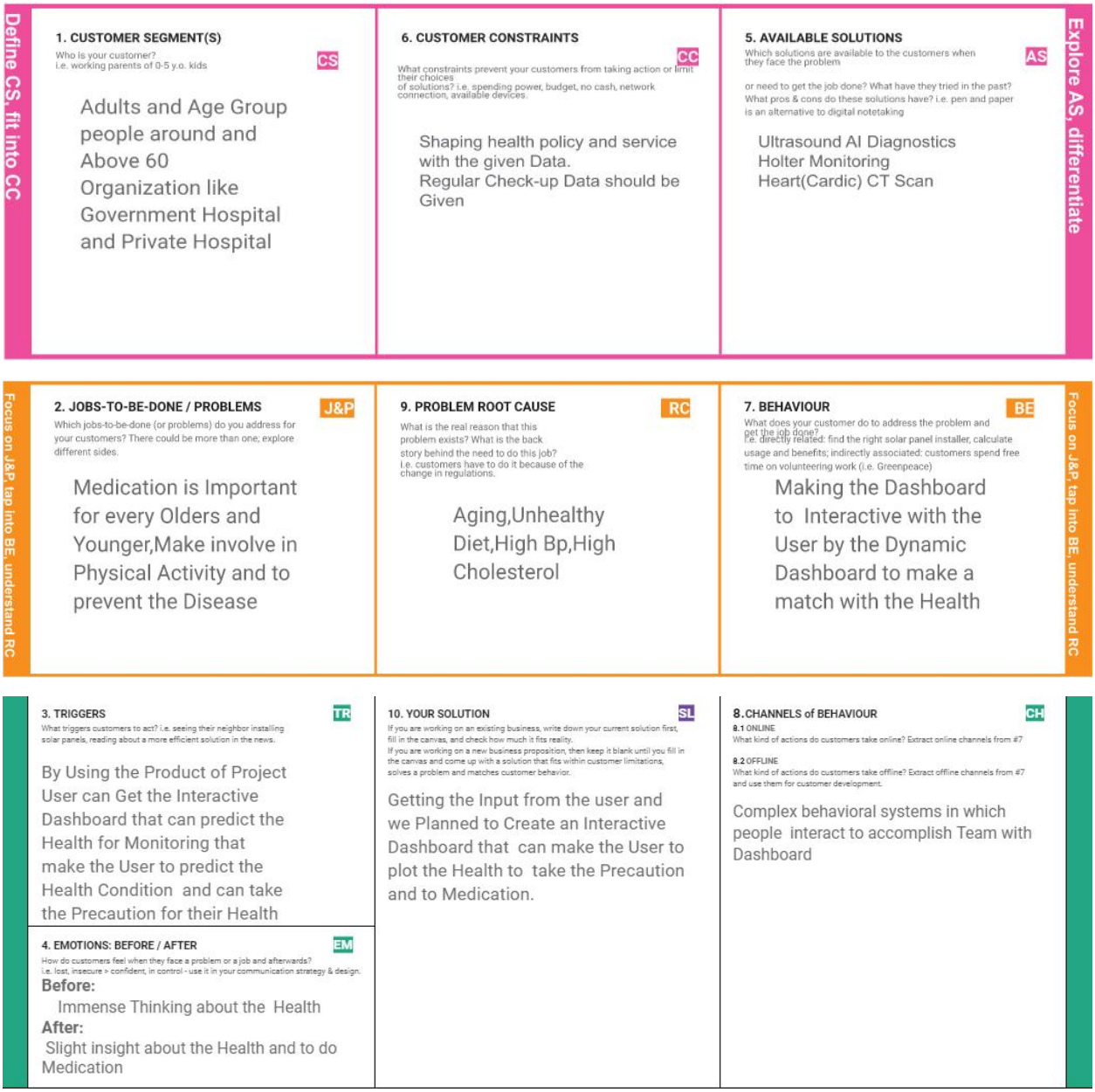


1.2 Purpose

This predicts the likelihood of patients getting heart disease. It enables significant knowledge, eg, relationships between medical factors related to heart disease and patterns, to be established.Day by day the cases of heart diseases are increasing at a rapid rate and it's very Important and concerning to predict any such diseases beforehand. This diagnosis is a difficult task i.e. it should be performed precisely and efficiently. The research paper mainly focuses on which patient is more likely to have a heart disease based on various medical attributes. We prepared a heart disease prediction system to predict whether the patient is likely to be diagnosed with a heart disease or not using the medical history of the patient.The healthcare industries collect huge amounts of data that contain some hidden information, which is useful for making effective decisions. For providing appropriate results and making effective decisions on data, some advanced data mining techniques are used. In this study, a Heart Disease Prediction System (HDPS) is developed using Naives Bayes and Decision Tree algorithms for predicting the risk level of heart disease. The system uses 15 medical parameters such as age, sex, blood pressure, cholesterol, and obesity for prediction. The HDPS predicts the likelihood of

patients getting heart disease. It enables significant knowledge. E.g. Relationships between medical factors related to heart disease and patterns, to be established. We have employed the multilayer perceptron neural network with backpropagation as the training algorithm. The obtained results have illustrated that the designed diagnostic system can effectively predict the risk level of heart diseases.

Problem_solution_fit:



2.1 Existing problem

The main objective of this research is to develop a heart prediction system. The system can discover and extract hidden knowledge associated with diseases from a historical heart data set. Heart disease prediction system aims to exploit data Visualization techniques on medical data sets to assist in the prediction of heart diseases.

1.4.2 Specific Objectives.

• Provides a new approach to concealed patterns in the data.

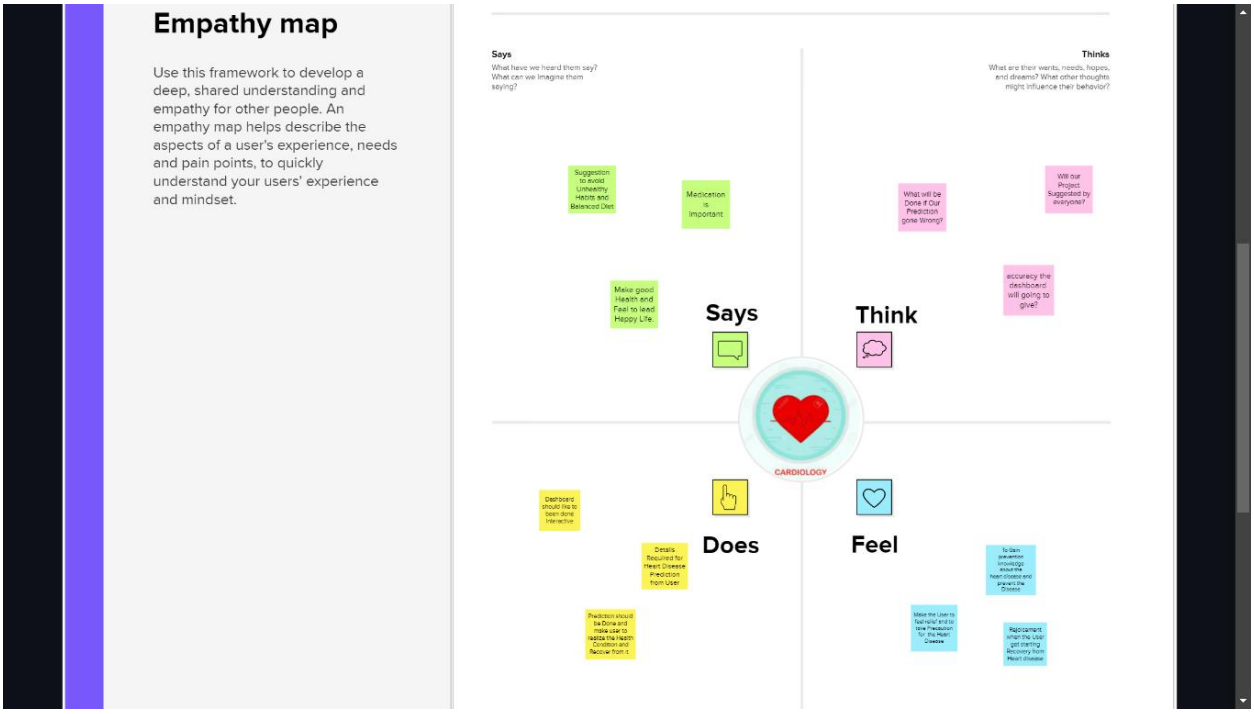
• Helps avoid human biases.

• To implement a dashboard that classifies the disease as per the input of the user.

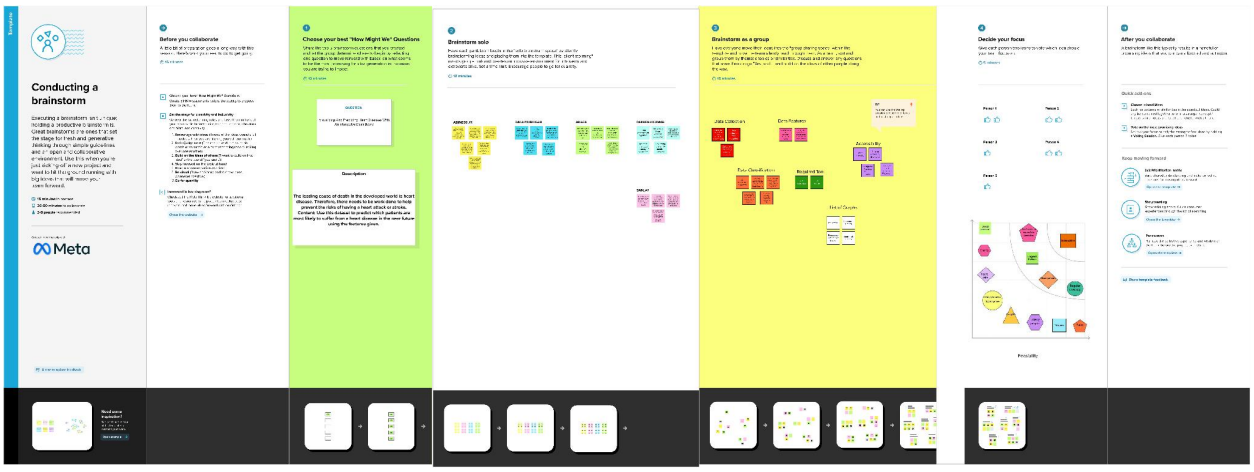
• Reduce the cost of medical tests.

IDEATION & PROPOSED SOLUTION

1.1 Empathy Map Canvas



1.2 BrainStorming & Ideation :



Literature Survey

TITLE OF THE PAPER: A novel approach for heart disease prediction using strength scores with significant predictors

Year of Publication: June 21, 2021

Journal name: PubMed Central

Authors: Armin Yazdani, Kasturi Dewi Varathan, Yin Kia Chiam, Asad Waqar Malik, Wan Azman Wan Ahmad

Theme: Visualizing and predicting heart diseases with an interactive dashboard

Inference: This research contributed to obtaining the highest confidence score using significant features in WARM for heart disease prediction. Assigning appropriate weight scores have proven to improve the performance of confidence level in the prediction. A set of significant features with different weights to represent the strength of each of the features used in heart disease prediction. To the best of our knowledge, this is the first study that made use of significant features in executing WARM. This research has also contributed to listing the top rules in predicting heart disease based on the UCI dataset. This is the first research that benchmarked the healthy rules and sick rules with the highest confidence scores. Future researches may look into predicting the risk levels of heart disease, as this will help medical practitioners and patients to gauge their heart disease severity. The algorithm used in this study for measuring weight can be further explored for use with other datasets to cater to other prediction models using the weighted approach. The machine learning techniques used in feature selection phase This research is limited to the most popular techniques used in heart disease prediction research. Future researchers should look into exploring other machine learning techniques in selecting the significant features.

TITLE OF THE PAPER: Heart Disease Prediction Using Exploratory Data Analysis YEAR OF THE PUBLICATION:

1st of July 2020

JOURNAL NAME: Elsevier

AUTHOR NAMES: R.Indrakumari , T.Poongodi , Soumya Ranjan Jena THEME: Visualizing and Predicting heart disease with an interactive dashboard INFERENCE:

Healthcare industries generate enormous amounts of data, so called big data that accommodates hidden knowledge or patterns for decision making. The huge volume of data is used to make decisions which are more accurate than intuition. Exploratory Data Analysis (EDA) detects mistakes, finds appropriate data, checks assumptions and determines the correlation among the explanatory variables. In the context, EDA is considered as analyzing data that excludes inferences and statistical modeling. Analytics is an essential technique for any profession as it forecasts the future and hidden pattern. Data analytics is considered as a cost- effective technology in the recent past and it plays an essential role in healthcare which includes new research findings, emergency situations and outbreaks of disease. The use of analytics in healthcare improves care by facilitating preventive care and EDA is a vital step while analyzing data. In this paper, the risk factors that cause heart disease are considered and predicted using the K-means algorithm and the analysis is carried out using publicly available data for heart disease. The dataset holds 209 records with 8 attributes such as age, chest pain type, blood pressure, blood glucose level, ECG in rest, heart rate and four types of chest pain. To predict heart disease, K-means clustering algorithm is used along with data analytics and visualization tools. The paper discusses the pre-processing methods, classifier performances and

evaluation metrics. In the result section, the visualized data shows that the prediction is accurate.

TITLE OF THE PAPER: Big Data Analytics in Heart Attack Prediction

Year of Publication: April 29, 2017

Journal name: Journal of Nursing & Care

Authors: Cheryl Ann Alexander, Department of Nursing, University of Phoenix, USA. Lidong Wang, Department of Engineering Technology, Mississippi Valley State University, USA

Theme: Visualizing and predicting heart diseases using data analytics

Inference: The analysis of voluminous, structured and unstructured data, as well as disorganized data has produced substantial discoveries. The absence of cross-border direction and technology integration demands standards to enable interoperability amid the elements of the big data value chain. Big data proposes vast promises for detecting interactions and nonlinearities in relationships among variables. Mobile devices, such as smartphones and tablets, and sensors, will continue to be the most indispensable tools available to deliver heart attack prediction andTele-cardiology services over wireless networks to reduce cardiovascular disease morbidity and mortality. The deployment of cloud computing has inexpensively facilitated the collaborative application of Tele-cardiology between hospitals and has expanded services from regional to global. The most important factor, however, in the development and application of big data, Tele-cardiology, sensor use, mobile phone or tablet use and landline use is patient privacy and to safeguard the patient's ability to direct and discover the use of his or her health care information. Care managers, specially trained nurses who

are revolutionizing healthcare by empowering patients directly to change their lifestyle and habits based on evidentiary research and data are needed to assist patients in this new data-driven healthcare scene. Nurses have always been on the forefront of revolutionary medicine and in In today's data-driven healthcare system, nurses are critical in assisting their patients to navigate the data landmines and empower them to change unhealthy habits and reach a more improved health status.

Title of the paper: Visualization and Prediction of Heart Diseases Using Data Science Framework

Year of publication: 2021

Journal Name: 2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC)

Authors: Vaibhav Gupta, Vaibhav Aggarwal, Shagun Gupta, Neeti Sharma, Kiran Sharma, NeetuSharma

Theme: The leading cause of death in the developed world is heart disease. Therefore, there needs to be work done to help prevent the risks of having a heart attack or stroke.

Inference: The main aim of this paper is to use various classification algorithms of data science framework to somehow detect the chances of having a heart disease. Also, the aim of this research paper is to find out the most efficient classification algorithm that can help us to detect heart diseases at early stage. This algorithm can be used on heart records of the patient or by using it on classification reports. This research was conducted and tested upon various algorithms to test its accuracy like Logistic Regression, Random Forest, Vector Support and XG-Boost. After applying these algorithms of prediction model has been developed.

REQUIREMENT ANALYSIS

Functional requirement

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	**User Registration**	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	**User Confirmation**	Confirmation via Email Confirmation via OTP
FR-3	**Access for Download**	Allow Access is Required for Downloading the Report
FR-4	**Network Access**	Internet through Wi-Fi Access internet through mobile data
FR-5	**Enter the Data**	Data Required for analyzing and Visualizing the Dashboard
FR-6	**Add-on Dashboard**	Make the Data to plot and release the Required Report
FR-7	**Terms and Conditions**	Accept the Terms and Policy

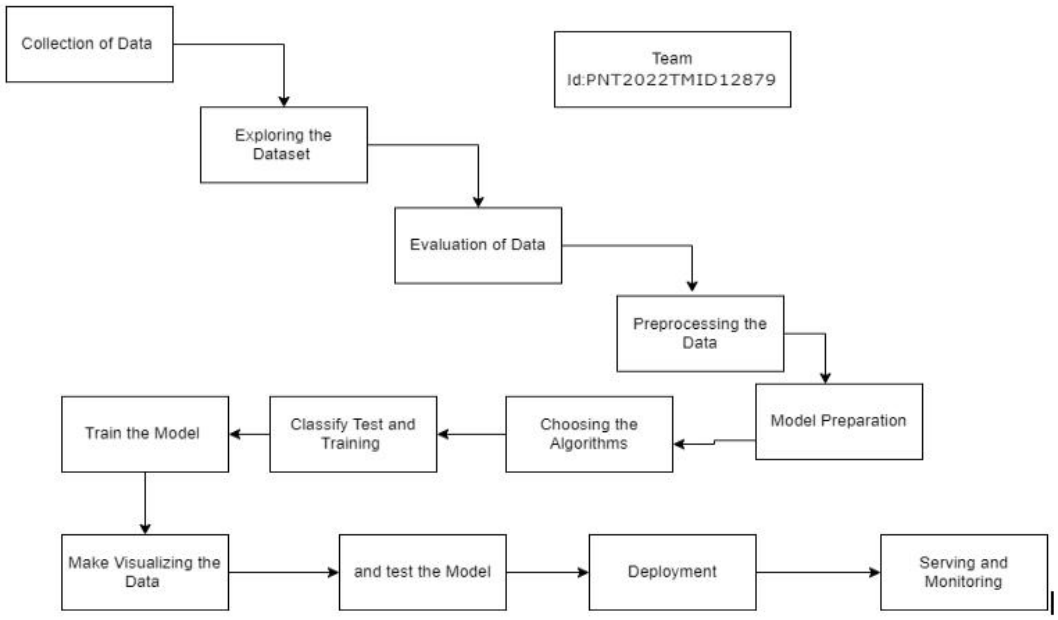
Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Make Convince the user to use interactively with the Dashboard,Make user-Friendly
NFR-2	**Security**	Make safe the Data to be Stored along the respective Profile
NFR-3	**Reliability**	Consistent at every situation and has to run without failure.
NFR-4	**Performance**	Make efficient Performance including Speed,Processing,Visualizing
NFR-5	**Availability**	Software can be available for a large number of users without any Lack of Concentration
NFR-6	**Scalability**	Must make to available for Large number of User even though they Attains at an same Time

PROJECT DESIGN

Data Flow Diagram



A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	I can get registered the Account	Medium	Sprint-1

	Login	USN-1	As a user, I can log into the application by entering email & password	I can get my Login Id and Password	High	Sprint-1
	Dashboard	USN-1	As a User, I can enter my data and check my Result	I can get my analysis	High	Sprint-1
Customer (Web user)	Registration	USN-7	As a user, I can register for the application by entering my email, password, and confirming my password	I can access my account / dashboard	High	Sprint-1
		USN-7	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
	Login	USN-7	As a user, I can log into the application by entering email & password	I can get my Login Id and Password	High	Sprint-1
	Data Insertion	USN-7	As a user, I can enter the data to the required blank	I can enter the detail for my analysis	High	Sprint-1
	Dashboard	USN-7	As a User, I can enter my data and check my Result	I can get my analysis	High	Sprint-1

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer Care Executive	Forgotten Login Credential	USN-8	As a Customer care executive, If He forgotten my credential I can reset it	I can help user to maintain credential	High	Sprint-1
	Customer care	USN-8	As a Customer care executive,I can provide 24/7/365 day service to the customers	I can provide endless service to the customers	High	Sprint-3
	Help in feature	USN-9	As a Customer care executive,I can Call the Interest User make help them to Know the Feature	I can Provide Information about the Product	Low	Sprint-2
	Demo	USN-10	As a Customer care executive,I can Make an Free demo session the user	I can provide the User how to use	Medium	Sprint-1
Administrator	Registration	USN-11	As an administrator, I can register for the application by entering	I can access my account / dashboard	High	Sprint-1

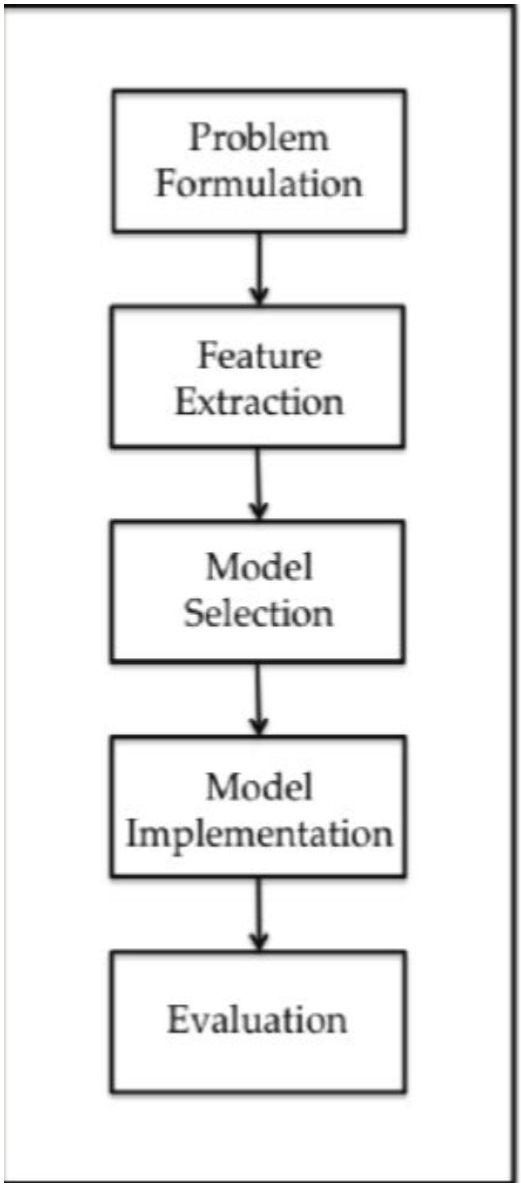
User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
			my email, password, and confirming my password.			
	Maintenance	USN-12	As an Administrator, I can Make the product to standalone and error free	I can make the product to work good	High	Sprint-1
	Login	USN-11	As an administrator, I can log into the application by entering email & password	I can login to the dashboard and can access it easily.	Medium	Sprint-2
		USN-11	As an administrator, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1

Solution & Technical Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Block Diagram for the Project:



Solution Architecture Diagram :

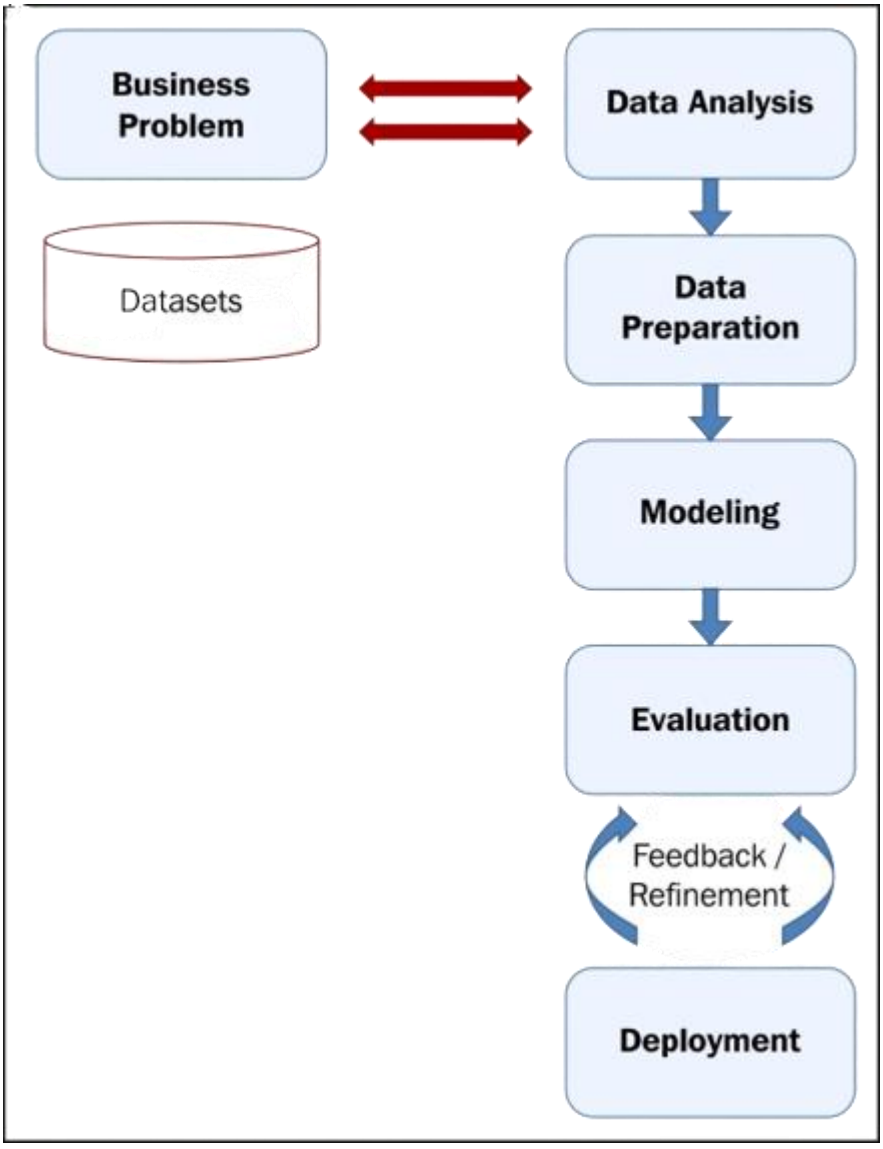


Figure 1: Architecture and data flow of the Project

Technical Architecture:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Python
3.	Application Logic-2	Logic for a process in the application	IBM Cognos Analytics
4.	Database	Data Type, Configurations etc.	MySQL
5.	Cloud Database	Database Service on Cloud	IBM Cloud
6.	File Storage(If Required)	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
7.	External API-1	Purpose of External API used in the application	Sketchfab.(Download)
8.	Machine Learning Model	Purpose of Machine Learning Model	k-means, Decision Tree, Naïve Bayes,Any other Algo (if Required)*

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	IBM Cognos Analytics
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	IBM Cognos software security.
3.	Availability	Justify the availability of applications (e.g. use of load balancers, distributed servers etc.)	IBM Cognos Analytics
4.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	IBM Cognos Analytics

PROJECT PLANNING & SCHEDULING

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	20	High	Abiness JR Dhinesh Kumar
Sprint-2	Dataset collection	USN-2	The data required for analysis and prediction must be collected from various sources	10	High	Akash Bala Murgan
Sprint-3	Exploring dataset	USN-3	The data set would be explored to find the general trends of the data set	20	Low	Akash sanjay Dhinesh Kumar
Sprint-3	Working with Dataset	USN-4	The Data Should be Evaluated and make useful for the Project	20	Medium	Bala Murugan Dhinesh

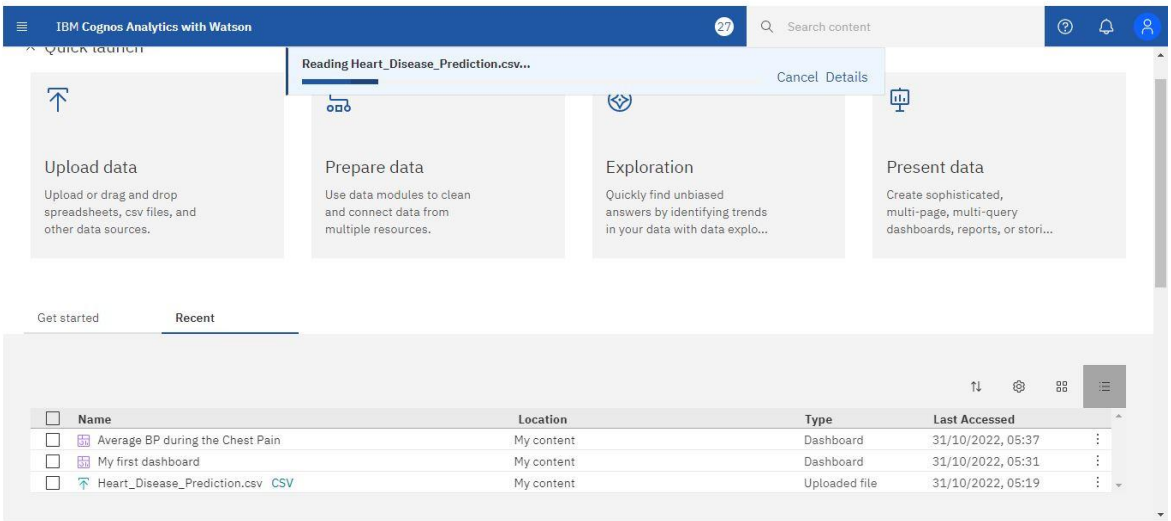
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
						Kumar Sanjay
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	10	Low	Sanjay Akash BalaMuruga n
Sprint-4	Dashboard	USN-6	Making configure to IBM Cognos to interact with the user to enter the Data	25	High	Abiness JR Dhinesh Kumar Akash
Sprint-5	Visualizing dataset	USN-7	Visualizing and Predicting data. The explored dataset with their trends being spotted would be visualized and predicted.	25	High	Abiness JR Bala Murugan DhineshKum ar
Sprint-5	Report Generation	USN-8	Make the dashboard convert to Report that can be useful for the User	25	High	Abiness JR Sanjay Bala Murugan
Sprint-6	Analysis	USN-9	By the Report make the user to Analyses what	20	High	Abiness JR Bala

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
			must be Do further			Murugan DhineshKumar Akash Sanjay

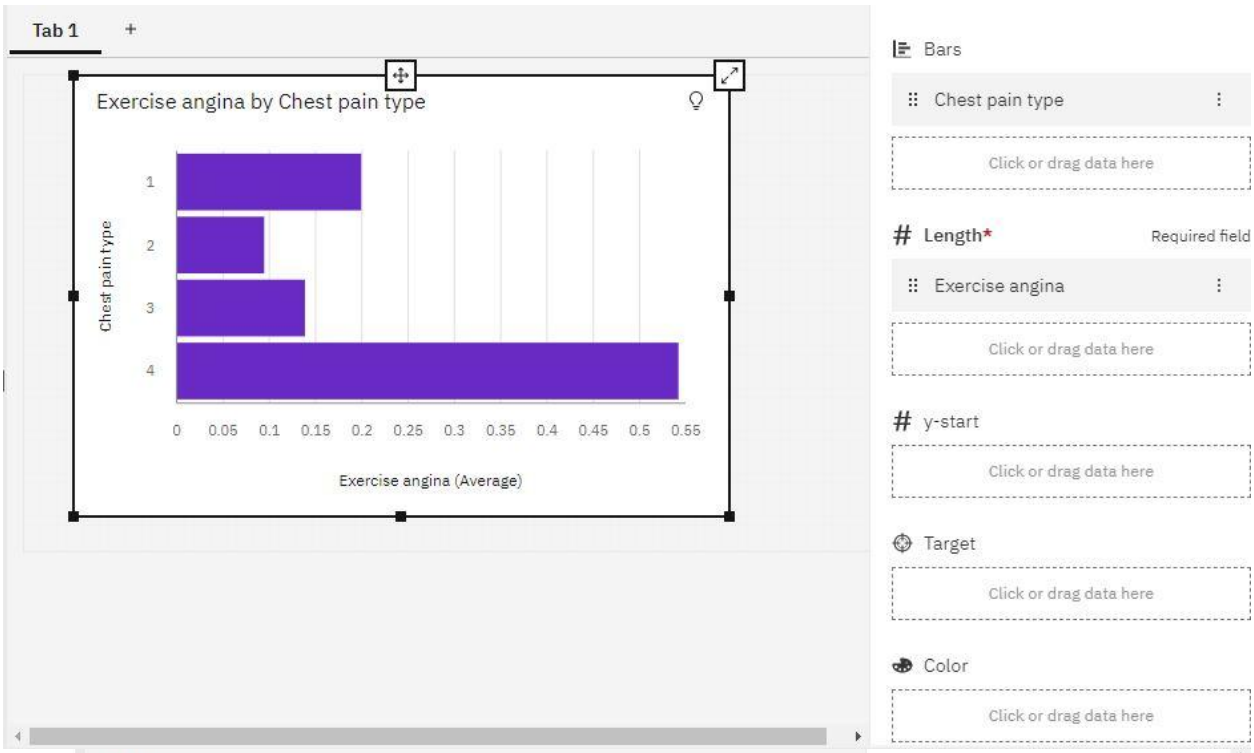
Sprint Planning & Estimation

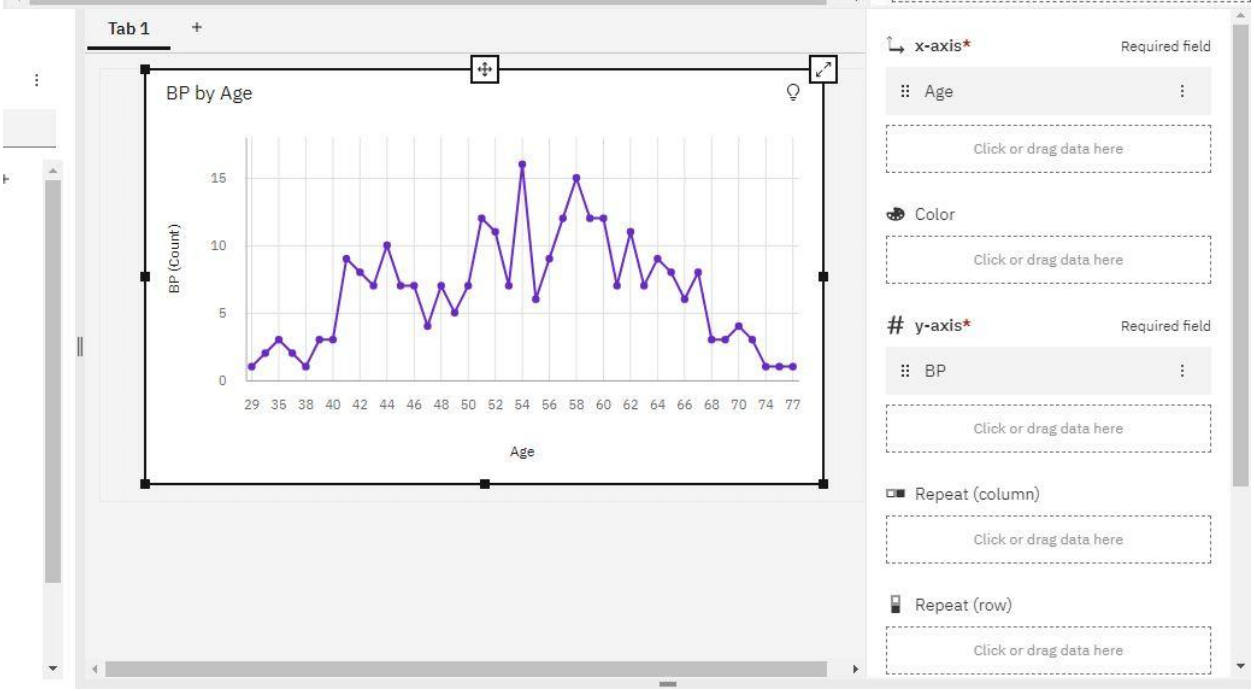
Sprint	Total Story Points	Duration	Story Points Completed (as on Planned End Date)
Sprint-1	30	6 Days	30
Sprint-2	10	6 Days	10
Sprint-3	40	6 Days	30
Sprint-4	25	6 Days	20
Sprint-5	50	5 Days	40
Sprint-6	20	6 Days	20

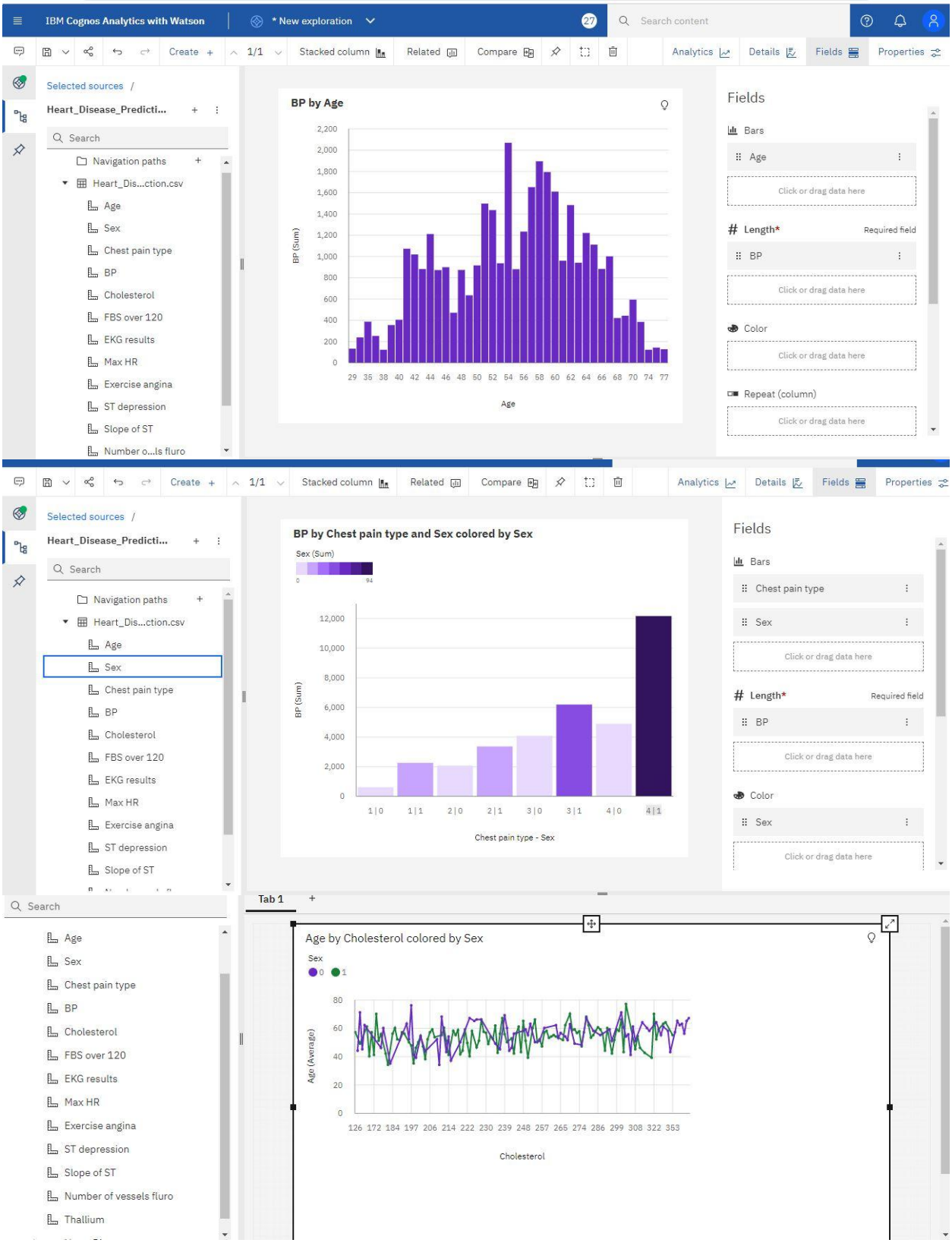
Uploading the Dataset:



Exploring Dataset- The data set would be explored to find the general trends of the data set.


Tab 1
+
Exercise angina by Chest pain type
Chest pain type
1
2
3
4
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
Exercise angina (Average)
Bars
Chest pain type
Click or drag data here
Length*
Required field
Exercise angina
Click or drag data here
y-start
Click or drag data here
Target
Click or drag data here
Color
Click or drag data here


Tab 1
+
BP by Age
BP (Count)
0
5
10
15
29
35
38
40
42
44
46
48
50
52
54
56
58
60
62
64
66
68
70
74
77
Age
x-axis*
Required field
Age
Click or drag data here
Color
Click or drag data here
y-axis*
Required field
BP
Click or drag data here
Repeat (column)
Click or drag data here
Repeat (row)
Click or drag data here


IBM Cognos Analytics with Watson
* New exploration
Search content
Create
1/1
Stacked column
Related
Compare
Analytics
Details
Fields
Properties
Selected sources /
Heart_Disease_Predicti...
Search
Navigation paths
Heart_Dis...ction.csv
Age
Sex
Chest pain type
BP
Cholesterol
FBS over 120
EKG results
Max HR
Exercise angina
ST depression
Slope of ST
Number o...ls fluro
BP by Age
BP (Sum)
Age
Fields
Bars
Age
Click or drag data here
Length*
Required field
BP
Color
Repeat (column)
BP by Chest pain type and Sex colored by Sex
Sex (Sum)
Chest pain type - Sex
Sex
Thallium
Tab 1
Age by Cholesterol colored by Sex
Age (Average)
Cholesterol

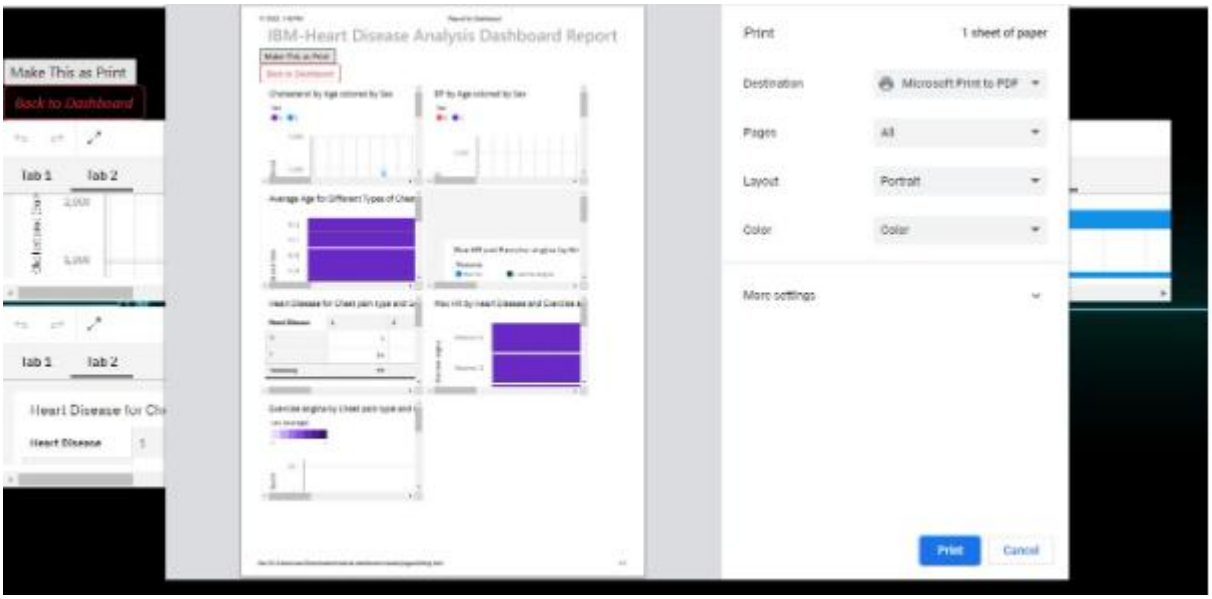
CODING & SOLUTIONING

Feature Making the Report

Code:-

```
<html>
    <head>
        <!-- CSS only -->
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-Zenh87qX5JnK2J10vWa8Ck2rdkQ2Bzep5IDxbcnCeuOxjzrPF/et3URy9Bv1WTRi
        <title>Report for Dashboard</title>

    </head>
    <body style="background-image:url(https://wallpaperaccess.com/full/1141530.jpg); background-size: cover;">
            <h1 style="color:#FFFFFF; text-align: center;">IBM-Heart Disease Analysis Dashboard Report</h1>


                <script>
                function printPage() {
                  window.print();
                }
                </script>



                <input type="button" value="Make This as Print " onclick="printPage()" />  <a class="nav-link me-2" href="file:///C:/Users/user/Downloads/material-dashboard-master/page
                      <i class="btn btn-outline-danger"  >  Back to Dashboard </i>  </a>

                      <iframe src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.my_folders%2FExercise%2BAngina%2BBy%2BChest%2BPain%2BType%2Band%2BGender&amp;
                      <iframe src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.my_folders%2FBP%2BVariation%2BWith%2BRespect%2BTo%2BAge&amp;closeWindowOnLast
                      <iframe src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.my_folders%2FChest%2BPain%2BType%2Bby%2BAge%2Band%2BGender&amp;closeWindowOnL
                      <iframe src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.my_folders%2FBP%2BVariation%2BWith%2BRespect%2BTo%2BAge&amp;closeWindowOnLast
                      <iframe src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.my_folders%2FChest%2BPain%2BType%2Bby%2BAge%2Band%2BGender&amp;closeWindowOnL




            </Body>
            </Body>
            <iframe src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.my_folders%2FEffect%2BOf%2BExisting%2BHeart%2BDisease%2BOn%2BAverage%2BOf%2BExercise%2B
            <iframe src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.my_folders%2FExercise%2BAngina%2BBy%2BChest%2BPain%2BType%2Band%2BGender&amp;closeWindo
            <p style="background-image: url('https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcRpGgxkfBrSIaaxn493KLhZgsoVynqcXw9ykw&usqp=CAU');"></p>
    </body>
</html>
```


IBM-Heart Disease Analysis Dashboard Report
Make This as Print
Back to Dashboard
Tab 1
Tab 2
Tab 3
DT by Age colored by Sex
Average Age for Different Types of Chest Pain
Heart Disease for Chest pain type and Se
Heart Disease


Make This as Print
Back to Dashboard
IBM-Heart Disease Analysis Dashboard Report
Print
1 sheet of paper
Destination
Microsoft Print to PDF
Pages
All
Layout
Portrait
Color
Color
More settings
Print
Cancel

Making the DashBoard Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
  <link rel="apple-touch-icon" sizes="76x76" href="../assets/img/apple-icon.png">
  <link rel="icon" type="image/png" href="../assets/img/favicon.png">
  <title>
    Welcome to IBM Heart Analysis-Dashboard
  </title>
  <!--     Fonts and icons     -->
  <link rel="stylesheet" type="text/css" href="https://fonts.googleapis.com/css?family=Roboto:300,400,500,700,900|Robot o+Slab:400,700" />
  <!-- Nucleo Icons -->
  <link href="../assets/css/nucleo-icons.css" rel="stylesheet" />
  <link href="../assets/css/nucleo-svg.css" rel="stylesheet" />
  <!-- Font Awesome Icons -->
  <script src="https://kit.fontawesome.com/42d5adcbca.js" crossorigin="anonymous"></script>
  <!-- Material Icons -->
  <link href="https://fonts.googleapis.com/icon?family=Material+Icons+Round" rel="stylesheet">
  <!-- CSS Files -->
```

```
 <link id="pagestyle" href="../assets/css/material-dashboard.css?v=3.0.4" rel="stylesheet" />
</head>

<body class="g-sidenav-show  bg-gray-200">
 <aside class="sidenav navbar navbar-vertical navbar-expand-xs border-0 border-radius-xl my-3 fixed-start ms-3   bg-gradient-dark" id="sidenav-main">
   <div class="sidenav-header">
    <i class="fas fa-times p-3 cursor-pointer text-white opacity-5 position-absolute end-0 top-0 d-none d-xl-none" aria-hidden="true" id="iconSidenav"></i>
    <a class="navbar-brand m-0" href=" https://demos.creative-tim.com/material-dashboard/pages/dashboard " target="_blank">
     <img src="../assets/img/logo-ct.png" class="navbar-brand-img h-100" alt="main_logo">
     <span class="ms-1 font-weight-bold text-white">IBM Heart Analysis-Dashboard</span>
    </a>
   </div>
   <hr class="horizontal light mt-0 mb-2">
   <div class="collapse navbar-collapse  w-auto " id="sidenav-collapse-main">
    <ul class="navbar-nav">
     <li class="nav-item">
      <a class="nav-link text-white active bg-gradient-primary" href="../pages/dashboard.html">
       <div class="text-white text-center me-2 d-flex align-items-center justify-content-center">
        <i class="material-icons opacity-10">dashboard</i>
```

```
          </div>
          <span class="nav-link-text ms-1">Dashboard</span>
        </a>
      </li>

      <li class="nav-item">
        <a class="nav-link text-white " href="../pages/billing.html">
          <div class="text-white text-center me-2 d-flex align-items-center justify-content-center">
            <i class="material-icons opacity-10">receipt_long</i>
          </div>
          <span class="nav-link-text ms-1">Report </span>
          <li class="nav-item mt-3">
        <h6 class="ps-4 ms-2 text-uppercase text-xs text-white font-weight-bolder opacity-8">Account pages</h6>
      </li>
      <li class="nav-item">
        <a class="nav-link text-white " href="../pages/profile.html">
          <div class="text-white text-center me-2 d-flex align-items-center justify-content-center">
            <i class="material-icons opacity-10">person</i>
          </div>
          <span class="nav-link-text ms-1">Profile</span>
        </a>
      </li>
      <li class="nav-item">
        <a class="nav-link text-white " href="../pages/sign-in.html">
```

```
        <div class="text-white text-center me-2 d-flex align-items-center justify-content-center">
        <main class="main-content position-relative max-height-vh-100 h-100 border-radius-lg ">
   <!-- Navbar -->
   <nav class="navbar navbar-main navbar-expand-lg px-0 mx-4 shadow-none border-radius-xl" id="navbarBlur" data-scroll="true">
     <div class="container-fluid py-1 px-3">
       <nav aria-label="breadcrumb">
         <ol class="breadcrumb bg-transparent mb-0 pb-0 pt-1 px-0 me-sm-6 me-5">
          <li class="breadcrumb-item text-sm"><a class="opacity-5 text-dark" href="javascript:;">Pages</a></li>
          <li class="breadcrumb-item text-sm text-dark active" aria-current="page">Dashboard</li>
         </ol>
         <h6 class="font-weight-bolder mb-0">Dashboard</h6>
       </nav>
       <div class="collapse navbar-collapse mt-sm-0 mt-2 me-md-0 me-sm-4" id="navbar">
         <div class="ms-md-auto pe-md-3 d-flex align-items-center">
          <div class="input-group input-group-outline">
            <label class="form-label">Type here...</label>
            <input type="text" class="form-control">
          </div>
         </div>
         <ul class="navbar-nav  justify-content-end">
```

```
<li class="nav-item d-flex align-items-center">
 <a href="../pages/sign-in.html" class="nav-link text-body font-weight-bold px-0">
  <i class="fa fa-user me-sm-1"></i>
  <span class="d-sm-inline d-none">Sign In</span>
 </a>
</li>
<li class="nav-item d-xl-none ps-3 d-flex align-items-center">
 <a href="javascript:;" class="nav-link text-body p-0" id="iconNavbarSidenav">
            <li class="nav-item px-3 d-flex align-items-center">
 <a href="javascript:;" class="nav-link text-body p-0">
  <i class="fa fa-cog fixed-plugin-button-nav cursor-pointer"></i>
 </a>
</li>
 <div class="card-footer p-3">
 <div class="parent">
  <div class="sub1">
  <input type="text">
  <button onclick="" class="button">Submit</button>
</div>
</div>
 <p class="mb-0"><span class="text-success text-sm font-weight-bolder">% </span>Comparing</p>
</div>
</div>
</div>
```

```
<div class="col-xl-3 col-sm-6 mb-xl-0 mb-4">
  <div class="card">
    <div class="card-header p-3 pt-2">
      <div class="icon icon-lg icon-shape bg-gradient-primary shadow-primary text-center border-radius-xl mt-n4 position-absolute">
        <i class="material-icons opacity-10">person</i>
      </div>
      <div class="text-end pt-1">
        <p class="text-sm mb-0 text-capitalize">Enter Blood Input</p>
        <h4 class="mb-0"></h4>
      </div>
    </div>
    <hr class="dark horizontal my-0">
    <div class="card-footer p-3">
      <div class="parent">
        <div class="sub1">
        <input type="text">
        <button onclick="" class="button">Submit</button>
    </div>
    </div>
      <p class="mb-0"><span class="text-success text-sm font-weight-bolder"></span></p>
    </div>
  </div>
</div>
<div class="col-xl-3 col-sm-6 mb-xl-0 mb-4">
  <div class="card">
```

```
          <div class="card-header p-3 pt-2">
            <div class="icon icon-lg icon-shape bg-gradient-success shadow-success text-center border-radius-xl mt-n4 position-absolute">
              <i class="material-icons opacity-10">person</i>
            </div>
            <div class="text-end pt-1">
              <p class="text-sm mb-0 text-capitalize">Enter Cholestral rate</p>

              <h4 class="mb-0"></h4>
            </div>
          </div>
                    <p class="mb-0"><span class="text-danger text-sm font-weight-bolder">%</span> Comparing</p>
          </div>
        </div>
        <div class="col-xl-3 col-sm-6">
          <div class="card">
            <div class="card-header p-3 pt-2">
              <div class="icon icon-lg icon-shape bg-gradient-info shadow-info text-center border-radius-xl mt-n4 position-absolute">
                <i class="material-icons opacity-10"></i>
              </div>
              <div class="text-end pt-1">
                <p class="text-sm mb-0 text-capitalize">Enter Serum Level</p>
                <h4 class="mb-0"></h4>
              </div>
```

```
        </div>
        <hr class="dark horizontal my-0">
        <div class="card-footer p-3">
          <div class="parent">
            <div class="sub1">
            <input type="text">
            <button onclick="" class="button">Submit</button>
        </div>
        </div>
          <p class="mb-0"><span class="text-success text-sm font-weight-bolder">% </span>Comparing</p>
        </div>
      </div>
    </div>
    <div class="row mt-4">
      <div class="col-lg-4 col-md-6 mt-4 mb-4">
        <div class="card z-index-2 ">
          <div class="card-header p-0 position-relative mt-n4 mx-3 z-index-2 bg-transparent">
            <div class="bg-gradient-primary shadow-primary border-radius-lg py-3 pe-1">
              <div class="chart">
                <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.my_folders%2FBP%2BVariation%2BWith%2BRespect%2BTo%2BAge&amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;s
```

hareMode=embedded&action=view&mode=dashboard&subView=model000001846016e228_00000002" width="320" height="200" frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>

 campaign sent per report ago

<iframe

src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FExercise%2BAngina%2BBy%2BChest%2BPain%2BType%2Band%2BGender&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=view&mode=dashboard&subView=model000001846033418b_00000000" width="320" height="200" frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>

```
<div class="card z-index-2 ">
  <div class="card-header p-0 position-relative mt-n4 mx-3 z-index-2 bg-transparent">
    <div class="bg-gradient-dark shadow-dark border-radius-lg py-3 pe-1">
      <div class="chart">
        <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.my_folders%2FChest%2BPain%2BType%2Bby%2BAge%2Band%2BGender&amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;shareMode=embedded&amp;action=view&amp;mode=dashboard&amp;subView=model00000184603e3108_00000000" width="320" height="200" frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>

      </div>
    </div>
  </div>
  <div class="card-body">
    <h6 class="mb-0 ">Chest pain</h6>
    <p class="text-sm ">Heart Disease for Chest pain Type by Gender</p>
    <hr class="dark horizontal">
    <div class="d-flex ">
      <i class="material-icons text-sm my-auto me-1">schedule</i>
      <p class="mb-0 text-sm">per report ago</p>
    </div>
  </div>
</div>
```

```
    </div>
  </div>
                this month
          </p>
        </div>
        <div class="col-lg-6 col-5 my-auto text-end">
          <div class="dropdown float-lg-end pe-4">
            <a class="cursor-pointer" id="dropdownTable" data-bs-toggle="dropdown" aria-expanded="false">
              <i class="fa fa-ellipsis-v text-secondary"></i>
            </a>
            <ul class="dropdown-menu px-2 py-3 ms-sm-n4 ms-n5" aria-labelledby="dropdownTable">
              <li><a class="dropdown-item border-radius-md" href="javascript:;">Weekly Report</a></li>
              <li><a class="dropdown-item border-radius-md" href="javascript:;">Last 15 days action</a></li>
              <li><a class="dropdown-item border-radius-md" href="javascript:;">Last Month Action</a></li>
            </ul>
          </div>
        </div>
      </div>
    </div>
    <div class="card-body px-0 pb-2">
      <div class="table-responsive">
        <table class="table align-items-center mb-0">
```

```
            <thead>


                        <div class="col-lg-4 col-md-6">
      <div class="card h-100">
        <div class="card-header pb-0">
          <h6>Health  overview</h6>
          <p class="text-sm">
            <i class="fa fa-arrow-up text-success" aria-hidden="true"></i>
            <span class="font-weight-bold">Increased ---- by </span> this month
          </p>
        </div>
        <div class="card-body p-3">
         <div class="fixed-plugin">
<a class="fixed-plugin-button text-dark position-fixed px-3 py-2">
  <i class="material-icons py-2">settings</i>
</a>
<div class="card shadow-lg">
  <div class="card-header pb-0 pt-3">
    <div class="float-start">
      <h5 class="mt-3 mb-0"></h5>
      <p>See our dashboard options.</p>
    </div>
    <div class="float-end mt-4">
      <button class="btn btn-link text-dark p-0 fixed-plugin-close-button">
        <i class="material-icons">clear</i>
      </button>
    </div>
```

```
      <!-- End Toggle Button -->
    </div>
    <hr class="horizontal dark my-1">
    <div class="card-body pt-sm-3 pt-0">
      <!-- Sidebar Backgrounds -->
      <div>
        <h6 class="mb-0">Sidebar Colors</h6>
      </div>
      <a href="javascript:void(0)" class="switch-trigger background-color">
        <div class="badge-colors my-2 text-start">
          <span class="badge filter bg-gradient-primary active" data-color="primary" onclick="sidebarColor(this)"></span>
          <span class="badge filter bg-gradient-dark" data-color="dark" onclick="sidebarColor(this)"></span>
          <span class="badge filter bg-gradient-info" data-color="info" onclick="sidebarColor(this)"></span>
          <span class="badge filter bg-gradient-success" data-color="success" onclick="sidebarColor(this)"></span>
          <span class="badge filter bg-gradient-warning" data-color="warning" onclick="sidebarColor(this)"></span>
          <span class="badge filter bg-gradient-danger" data-color="danger" onclick="sidebarColor(this)"></span>
        </div>
      </a>
      <!-- Sidenav Type -->
      <div class="mt-3">
        <h6 class="mb-0">Sidenav Type</h6>
```

```
      <p class="text-sm">Choose between 2 different sidenav types.</p>
    </div>
    <div class="d-flex">
      <button class="btn bg-gradient-dark px-3 mb-2 active" data-class="bg-gradient-dark" onclick="sidebarType(this)">Dark</button>
      <button class="btn bg-gradient-dark px-3 mb-2 ms-2" data-class="bg-transparent" onclick="sidebarType(this)">Transparent</button>
      <button class="btn bg-gradient-dark px-3 mb-2 ms-2" data-class="bg-white" onclick="sidebarType(this)">White</button>
    </div>

    <!-- Navbar Fixed -->
    <div class="mt-3 d-flex">
      <h6 class="mb-0">Navbar Fixed</h6>
      <div class="form-check form-switch ps-0 ms-auto my-auto">
        <input class="form-check-input mt-1 ms-auto" type="checkbox" id="navbarFixed" onclick="navbarFixed(this)">
      </div>
    </div>
    <hr class="horizontal dark my-3">
    <div class="mt-2 d-flex">
      <h6 class="mb-0">Light / Dark</h6>
      <div class="form-check form-switch ps-0 ms-auto my-auto">
        <input class="form-check-input mt-1 ms-auto" type="checkbox" id="dark-version" onclick="darkMode(this)">
    <!--   Core JS Files   -->
  <script src="../assets/js/core/popper.min.js"></script>
```

```
<script src="../assets/js/core/bootstrap.min.js"></script>
<script src="../assets/js/plugins/perfect-scrollbar.min.js"></script>
<script src="../assets/js/plugins/smooth-scrollbar.min.js"></script>
<script src="../assets/js/plugins/chartjs.min.js"></script>
<script>
      },
    options: {
      responsive: true,
      maintainAspectRatio: false,
      plugins: {
        legend: {
          display: false,
        }
      },
      interaction: {
        intersect: false,
        mode: 'index',
      },
      scales: {
        y: {
          grid: {
            drawBorder: false,
            display: true,
            drawOnChartArea: true,
            drawTicks: false,
            borderDash: [5, 5],
            color: 'rgba(255, 255, 255, .2)'
```

```
    },
    ticks: {
      suggestedMin: 0,
      suggestedMax: 500,
      beginAtZero: true,
      padding: 10,
      font: {
        size: 14,
        weight: 300,
        family: "Roboto",
        style: 'normal',
        lineHeight: 2
      },
      color: "#fff"
    },
  },
  x: {
    grid: {
      drawBorder: false,
      display: true,
      drawOnChartArea: true,
      drawTicks: false,
      borderDash: [5, 5],
      color: 'rgba(255, 255, 255, .2)'
    },
    ticks: {
      display: true,
```

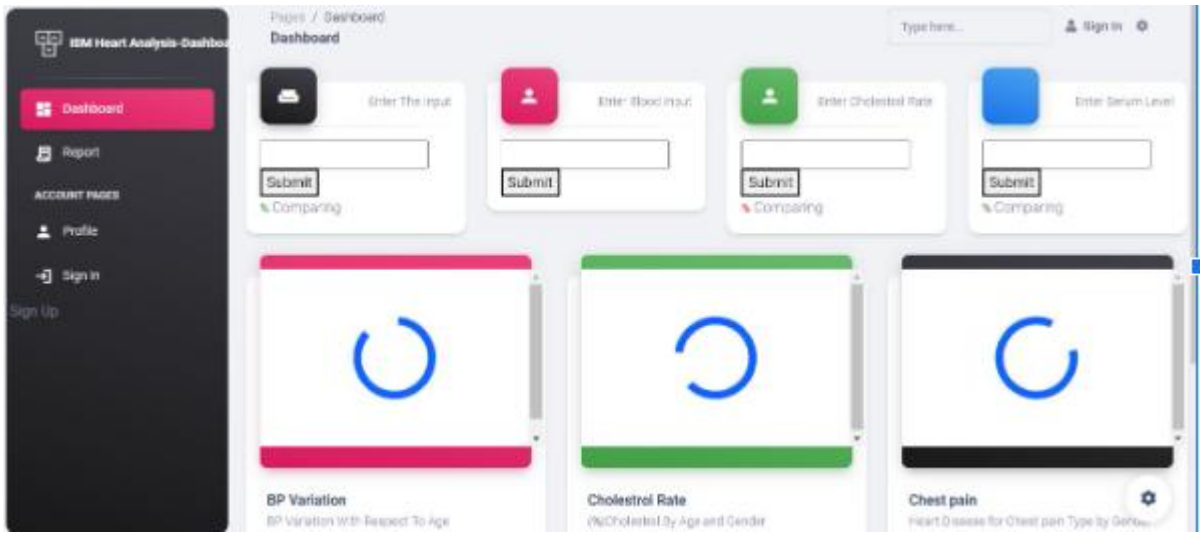
```
        color: '#f8f9fa',
        padding: 10,
        font: {
          size: 14,
          weight: 300,
          family: "Roboto",
          style: 'normal',
          lineHeight: 2
        new Chart(ctx2, {
type: "line",
data: {
  labels: ["Apr", "May", "Jun", "Jul", "Aug", "Sep", "Oct", "Nov", "Dec"],
  datasets: [{
    label: "Mobile apps",
    tension: 0,
    borderWidth: 0,
    pointRadius: 5,
    pointBackgroundColor: "rgba(255, 255, 255, .8)",
    pointBorderColor: "transparent",
    borderColor: "rgba(255, 255, 255, .8)",
    borderColor: "rgba(255, 255, 255, .8)",
    borderWidth: 4,
    backgroundColor: "transparent",
    fill: true,
    data: [50, 40, 300, 320, 500, 350, 200, 230, 500],
    maxBarThickness: 6
```

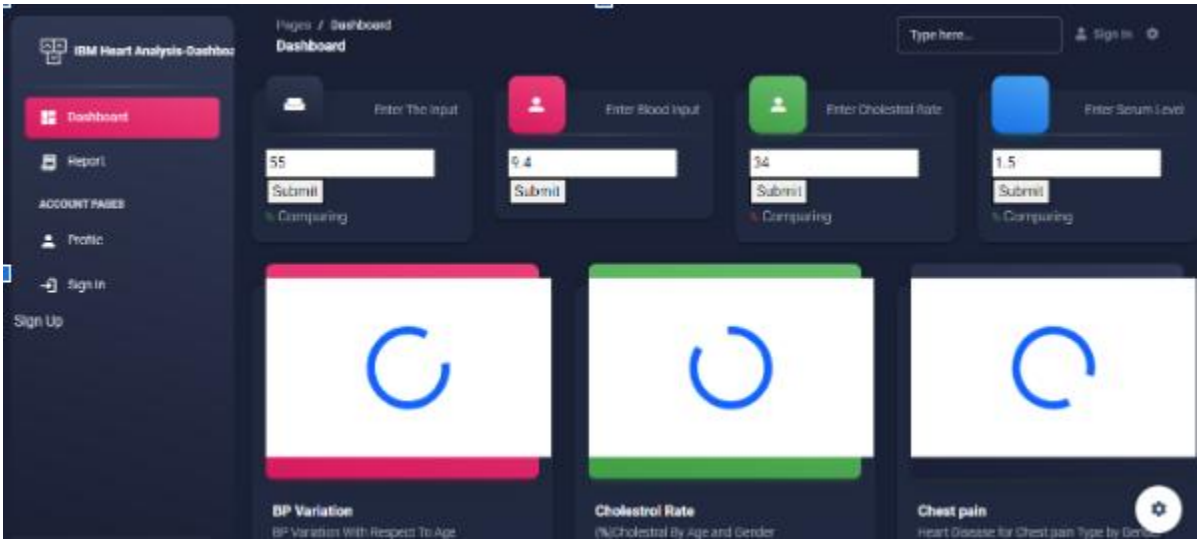
```
  }],
},
options: {
  responsive: true,
  maintainAspectRatio: false,
  plugins: {
    legend: {
      display: false,
    }
  },
  interaction: {
    intersect: false,
    mode: 'index',
  },
  scales: {
    y: {
      grid: {
        drawBorder: false,
        display: true,
        drawOnChartArea: true,
        drawTicks: false,
        borderDash: [5, 5],
        color: 'rgba(255, 255, 255, .2)'
              grid: {
        drawBorder: false,
        display: false,
        drawOnChartArea: false,
```

```
      drawTicks: false,
      borderDash: [5, 5]
    },
        data: {
labels: ["Apr", "May", "Jun", "Jul", "Aug", "Sep", "Oct", "Nov", "Dec"],
datasets: [{
  label: "Mobile apps",
  tension: 0,
  borderWidth: 0,
  pointRadius: 5,
  pointBackgroundColor: "rgba(255, 255, 255, .8)",
  pointBorderColor: "transparent",
  borderColor: "rgba(255, 255, 255, .8)",
  borderWidth: 4,
  backgroundColor: "transparent",
  fill: true,
  data: [50, 40, 300, 220, 500, 250, 400, 230, 500],
   scales: {
  y: {
   grid: {
     drawBorder: false,
     display: true,
     drawOnChartArea: true,
     drawTicks: false,
     borderDash: [5, 5],
     color: 'rgba(255, 255, 255, .2)'
    },
```

```
        </script>
  <script>
    var win = navigator.platform.indexOf('Win') > -1;
    if (win && document.querySelector('#sidenav-scrollbar')) {
      var options = {
        damping: '0.5'
      }
      Scrollbar.init(document.querySelector('#sidenav-scrollbar'), options);
    }
  </script>
  <!-- Github buttons -->
  <script async defer src="https://buttons.github.io/buttons.js"></script>
  <!-- Control Center for Material Dashboard: parallax effects, scripts for the example pages etc -->
  <script src="../assets/js/material-dashboard.min.js?v=3.0.4"></script>
</body>

</html>
```

Picture:


IBM Heart Analysis-Dashboa
Dashboard
Report
ACCOUNT PAGES
Profile
Sign In
Sign Up
Pages / Dashboard
Dashboard
Type here...
Sign In
Enter The Input
Enter Blood Input
Enter Cholestrol Rate
Enter Serum Level
Submit
Comparing
BP Variation
Cholestrol Rate
Chest pain


IBM Heart Analysis-Dashboa
Dashboard
Report
ACCOUNT PAGES
Profile
Sign In
Sign Up
Pages / Dashboard
Dashboard
Type here...
Sign In
Enter The Input
Enter Blood Input
Enter Cholestrol Rate
Enter Serum Level
55
9.4
34
1.5
Submit
Comparing
BP Variation
Cholestrol Rate
Chest pain

Sign-up Page:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
  <link rel="apple-touch-icon" sizes="76x76" href="../assets/img/apple-icon.png">
  <link rel="icon" type="image/png" href="../assets/img/favicon.png">
  <title>
    sign-up Page for IBM-Heart
  </title>
  <!--     Fonts and icons     -->
  <link rel="stylesheet" type="text/css" href="https://fonts.googleapis.com/css?family=Roboto:300,400,500,700,900|Roboto+Slab:400,700" />
  <!-- Nucleo Icons -->
  <link href="../assets/css/nucleo-icons.css" rel="stylesheet" />
  <link href="../assets/css/nucleo-svg.css" rel="stylesheet" />
  <!-- Font Awesome Icons -->
  <script src="https://kit.fontawesome.com/42d5adcbca.js" crossorigin="anonymous"></script>
  <!-- Material Icons -->
```

```
  <link
href="https://fonts.googleapis.com/icon?family=Material+Icons+Round"
rel="stylesheet">
  <!-- CSS Files -->
  <link id="pagestyle" href="../assets/css/material-dashboard.css?v=3.0.4"
rel="stylesheet" />
</head>

<body class="">
  <div class="container position-sticky z-index-sticky top-0">
    <div class="row">
      <div class="col-12">
        <!-- Navbar -->
        <nav class="navbar navbar-expand-lg blur border-radius-lg top-0 z-
index-3 shadow position-absolute mt-4 py-2 start-0 end-0 mx-4">
          <div class="container-fluid ps-2 pe-0">
            <a class="navbar-brand font-weight-bolder ms-lg-0 ms-3 "
href="../pages/dashboard.html">
            Welcome to our Project for Heart Analysis Dashboard
            </a>
            <button class="navbar-toggler shadow-none ms-2" type="button"
data-bs-toggle="collapse" data-bs-target="#navigation" aria-
controls="navigation" aria-expanded="false" aria-label="Toggle
navigation">
              <span class="navbar-toggler-icon mt-2">
                <span class="navbar-toggler-bar bar1"></span>
                <span class="navbar-toggler-bar bar2"></span>
```

```
            <span class="navbar-toggler-bar bar3"></span>
          </span>
        </button>
        <div class="collapse navbar-collapse" id="navigation">
          <ul class="navbar-nav mx-auto">
            <li class="nav-item">
              <a class="nav-link d-flex align-items-center me-2 active" aria-current="page" href="../pages/dashboard.html">
                <i class="fa fa-chart-pie opacity-6 text-dark me-1"></i>
                Dashboard
              </a>
            </li>
            <li class="nav-item">
              <a class="nav-link me-2" href="../pages/profile.html">
                <i class="fa fa-user opacity-6 text-dark me-1"></i>
                Profile
              </a>
            </li>
            <li class="nav-item">
              <a class="nav-link me-2" href="../pages/sign-up.html">
                <i class="fas fa-user-circle opacity-6 text-dark me-1"></i>
                Sign Up
              </a>
            </li>
            <li class="nav-item">
              <a class="nav-link me-2" href="../pages/sign-in.html">
                <i class="fas fa-key opacity-6 text-dark me-1"></i>
```

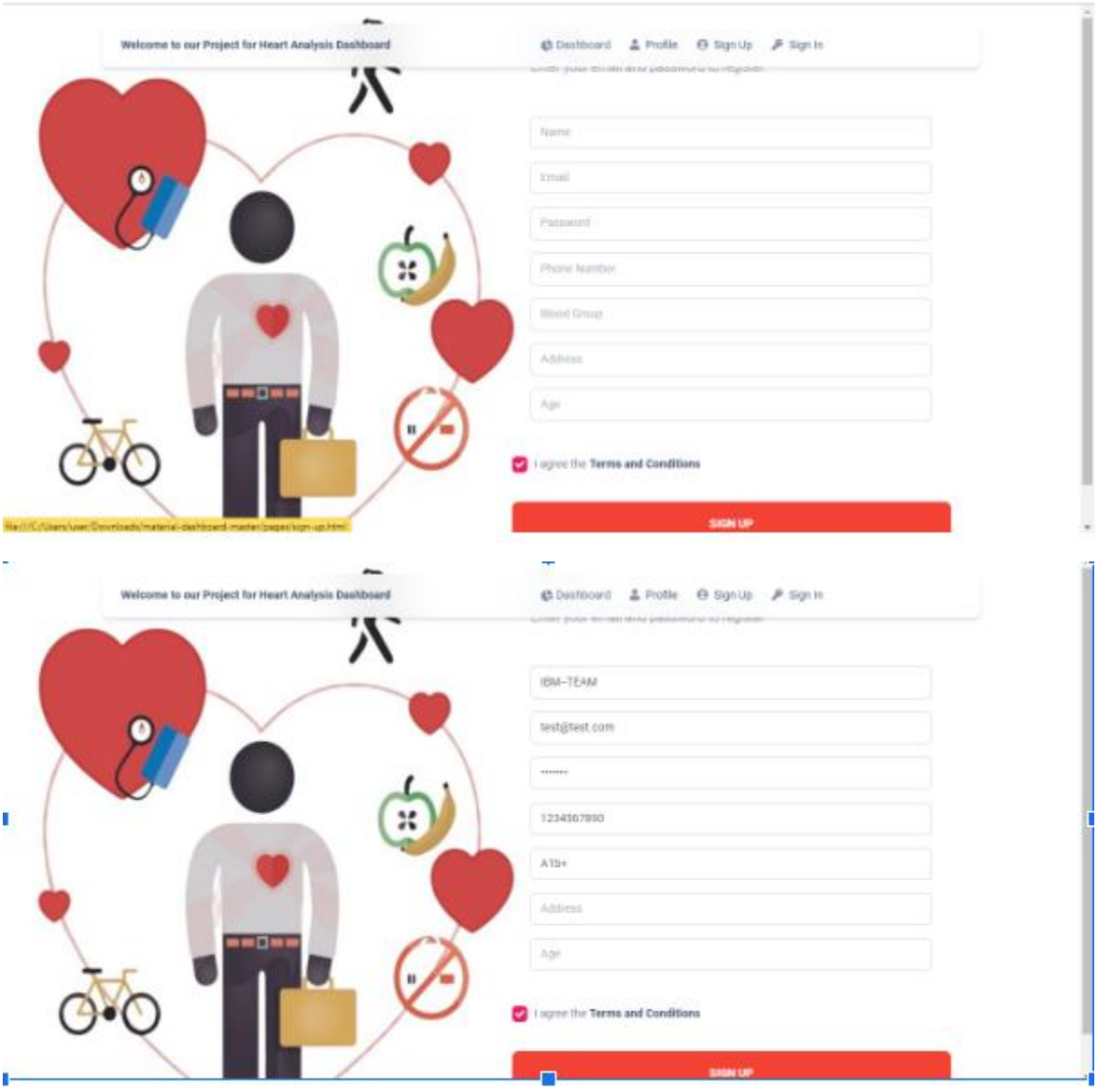
```
                Sign In
              </div>
  <main class="main-content  mt-0">
    <section>
      <div class="page-header min-vh-100">
        <div class="container">
          <div class="row">
            <div class="col-6 d-lg-flex d-none h-100 my-auto pe-0 position-absolute top-0 start-0 text-center justify-content-center flex-column">
              <div class="position-relative bg-gradient-primary h-100 m-3 px-7 border-radius-lg d-flex flex-column justify-content-center" style="background-image: url('../assets/img/illustrations/illustration-signup.jpg'); background-size: cover;">
              </div>
            </div>
            <div class="col-xl-6 col-lg-7 col-md-9 d-flex flex-column ms-auto me-auto ms-lg-auto me-lg-5">
              <div class="card card-plain">
                <div class="card-header">
                  <h4 class="font-weight-bolder">Sign Up</h4>
                  <p class="mb-0">Enter your email and password to register</p>
                </div>
                <div class="card-body">
                  <form role="form">
                    <div class="input-group input-group-outline mb-3">
                      <label class="form-label"></label>
```

```
                <input type="text" class="form-control"
placeholder="Name">
            </div>
            <div class="input-group input-group-outline mb-3">
              <label class="form-label"></label>
              <input type="email" class="form-
control"placeholder="Email" >
            </div>
            <div class="input-group input-group-outline mb-3">
              <label class="form-label"></label>
              <input type="password" class="form-
control"placeholder="Password">
            </div>
            <div class="input-group input-group-outline mb-3">
              <label class="form-label"></label>
              <input type="string" class="form-control"placeholder="Phone
Number" >
            </div>
            <div class="input-group input-group-outline mb-3">
              <label class="form-label"></label>
              <input type="text" class="form-control"placeholder="Blood
Group">
            </div>
            <div class="input-group input-group-outline mb-3">
              <label class="form-label"></label>
              <input type="text" class="form-
control"placeholder="Address">
```

```
                </div>
                  <div class="input-group input-group-outline mb-3">
                    <label class="form-label"></label>
                    <input type="text" class="form-control"placeholder="Age">
                  </div>
                </div>
                <div class="form-check form-check-info text-start ps-0">
                  <input class=" form-check-input" type="checkbox" value="" id="flexCheckDefault" checked>
                  <label class="form-check-label" for="flexCheckDefault">
                    I agree the <a href="javascript:;" class="text-dark font-weight-bolder">Terms and Conditions</a>
                  </label>
                </div>
                <div class="text-center">
                  <button type="button" class="btn btn-lg p-3 mb-2 bg-danger text-white btn-lg w-100 mt-4 mb-0">Sign Up</button>
                </div>
              </form>
            </div>
            <div class="card-footer text-center pt-0 px-lg-2 px-1">
              <p class="mb-2 text-sm mx-auto">
                Already have an account?
                <a href="../pages/sign-in.html" class="text-primary text-gradient font-weight-bold">Sign in</a>
          </main>
  <!--   Core JS Files   -->
```

```
  <script src="../assets/js/core/popper.min.js"></script>
  <script src="../assets/js/core/bootstrap.min.js"></script>
  <script src="../assets/js/plugins/perfect-scrollbar.min.js"></script>
  <script src="../assets/js/plugins/smooth-scrollbar.min.js"></script>
  <script>
    var win = navigator.platform.indexOf('Win') > -1;
    if (win && document.querySelector('#sidenav-scrollbar')) {
      var options = {
        damping: '0.5'
      }
      Scrollbar.init(document.querySelector('#sidenav-scrollbar'), options);
    }
  </script>
  <!-- Github buttons -->
  <script async defer src="https://buttons.github.io/buttons.js"></script>
  <!-- Control Center for Material Dashboard: parallax effects, scripts for the example pages etc -->
  <script src="../assets/js/material-dashboard.min.js?v=3.0.4"></script>
</body>

</html>
```

Page Diagram:



Sign-in:

<!DOCTYPE html>

<html lang="en">

```
<head>
  <meta charset="utf-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
  <link rel="apple-touch-icon" sizes="76x76" href="../assets/img/apple-icon.png">
  <link rel="icon" type="image/png" href="../assets/img/favicon.png">
  <title>
   LOGIN PAGE
  </title>
  <!--     Fonts and icons     -->
  <link rel="stylesheet" type="text/css" href="https://fonts.googleapis.com/css?family=Roboto:300,400,500,700,900|Robot o+Slab:400,700" />
  <!-- Nucleo Icons -->
  <link href="../assets/css/nucleo-icons.css" rel="stylesheet" />
  <link href="../assets/css/nucleo-svg.css" rel="stylesheet" />
  <!-- Font Awesome Icons -->
  <script src="https://kit.fontawesome.com/42d5adcbca.js" crossorigin="anonymous"></script>
  <!-- Material Icons -->
  <link href="https://fonts.googleapis.com/icon?family=Material+Icons+Round" rel="stylesheet">
  <!-- CSS Files -->
  <link id="pagestyle" href="../assets/css/material-dashboard.css?v=3.0.4" rel="stylesheet" />
</head>
```

```
<body class="bg-gray-200">
  <div class="container position-sticky z-index-sticky top-0">
    <div class="row">
      <div class="col-12">
        <!-- Navbar -->
        <nav class="navbar navbar-expand-lg blur border-radius-xl top-0 z-index-3 shadow position-absolute my-3 py-2 start-0 end-0 mx-4">
          <div class="container-fluid ps-2 pe-0">
            <a class="navbar-brand font-weight-bolder ms-lg-0 ms-3 " href="../pages/dashboard.html">
              Welcome to Our Project for Heart analysis Dashboard
            </a>
            <button class="navbar-toggler shadow-none ms-2" type="button" data-bs-toggle="collapse" data-bs-target="#navigation" aria-controls="navigation" aria-expanded="false" aria-label="Toggle navigation">
              <span class="navbar-toggler-icon mt-2">
                <span class="navbar-toggler-bar bar1"></span>
                <span class="navbar-toggler-bar bar2"></span>
                <span class="navbar-toggler-bar bar3"></span>
              </span>
            </button>
            <div class="collapse navbar-collapse" id="navigation">
              <ul class="navbar-nav mx-auto">
                <li class="nav-item">
                  <a class="nav-link d-flex align-items-center me-2 active" aria-current="page" href="../pages/dashboard.html">
                    <i class="fa fa-chart-pie opacity-6 text-dark me-1"></i>
```

```
            Dashboard
          </a>
        </li>
        <li class="nav-item">
          <a class="nav-link me-2" href="../pages/profile.html">
            <i class="fa fa-user opacity-6 text-dark me-1"></i>
            Profile
          </a>
        </li>
        <li class="nav-item">
          <a class="nav-link me-2" href="../pages/sign-up.html">
            <i class="fas fa-user-circle opacity-6 text-dark me-1"></i>
            Sign Up
          </a>
        </li>
        <li class="nav-item">
          <a class="nav-link me-2" href="../pages/sign-in.html">
            <i class="fas fa-key opacity-6 text-dark me-1"></i>
            Sign In
          </a>
        </li>
      </ul>
      </ul>
    </div>
  </div>
</nav>
<!-- End Navbar -->
```

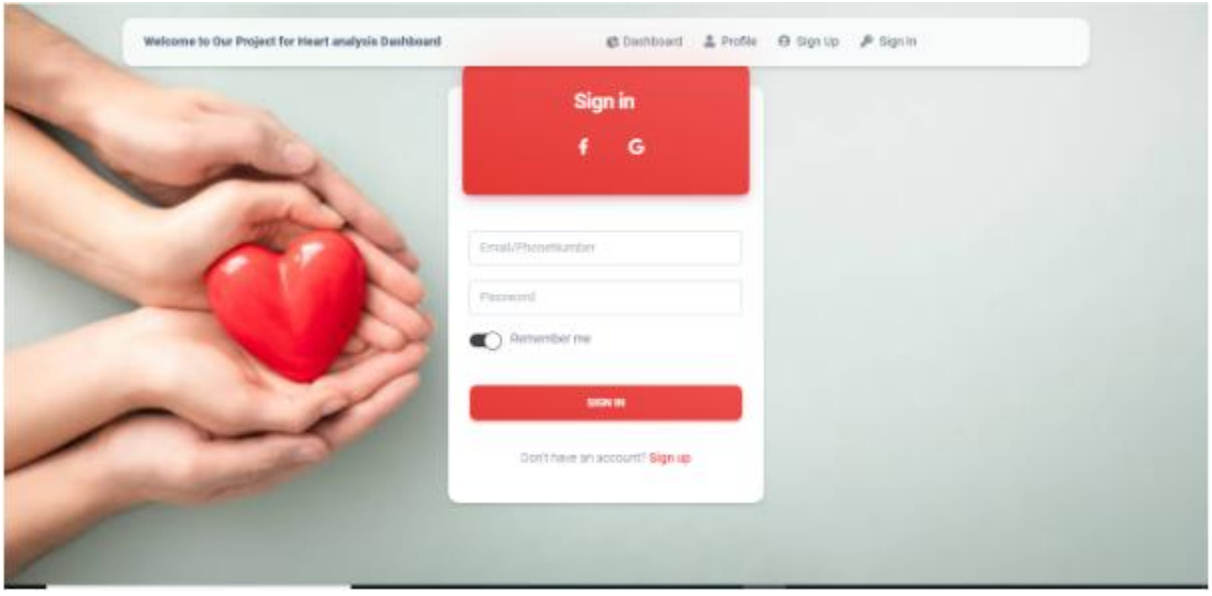
```
    </div>
   </div>
  </div>
  <main class="main-content  mt-0">
   <div class="page-header align-items-start min-vh-100" style="background-image: url('https://media.istockphoto.com/photos/the-adult-and-the-child-holding-red-heart-picture-id1224521725?b=1&k=20&m=1224521725&s=612x612&w=0&h=URlSMm61G-Ef3rges2RZer4-Qt7A72EtXi4N0_ZHe3Y=');">
    <span class="bg-gradient-dark opacity-6"></span>
    <div class="container my-auto">
     <div class="row">
      <div class="col-lg-4 col-md-8 col-12 mx-auto">
       <div class="card z-index-0 fadeIn3 fadeInBottom">
        <div class="card-header p-0 position-relative mt-n4 mx-3 z-index-2">
         <div class=" bg-gradient-danger shadow-primary border-radius-lg py-3 pe-1">
          <h4 class="text-white font-weight-bolder text-center mt-2 mb-0">Sign in</h4>
          <div class="row mt-3">
           <div class="col-2 text-center ms-auto">
            <a class="btn btn-link px-3" href="javascript:;">
             <i class="fa fa-facebook text-white text-lg"></i>
            </a>
           </div>

           <div class="col-2 text-center me-auto">
```

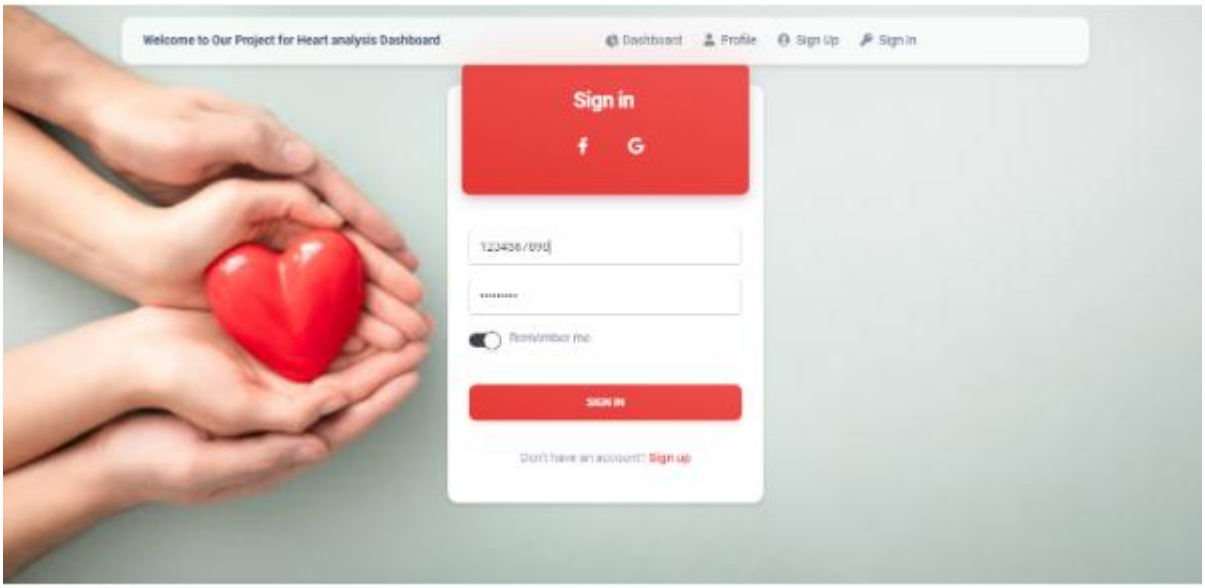
```
                <a class="btn btn-link px-3" href="javascript:;">
                  <i class="fa fa-google text-white text-lg"></i>
                </a>
              </div>
            </div>
          </div>
        </div>
        <div class="card-body">
          <form role="form" class="text-start">
            <div class="input-group input-group-outline my-3">
              <label class="form-label"></label>
              <input type="text" class="form-control" placeholder="Email/PhoneNumber">
            </div>
            <div class="input-group input-group-outline mb-3">
              <label class="form-label"></label>
              <input type="password" class="form-control" placeholder="Password">
            </div>
            <div class="form-check form-switch d-flex align-items-center mb-3">
              <input class="form-check-input" type="checkbox" id="rememberMe" checked>
              <label class="form-check-label mb-0 ms-3" for="rememberMe">Remember me</label>
            </div>
            <div class="text-center">
```

```
                <button type="button" class="btn bg-gradient-danger w-100 my-4 mb-2">Sign in</button>
              </div>
              <p class="mt-4 text-sm text-center">
                Don't have an account?
                <a href="../pages/sign-up.html" class="text-danger text-gradient font-weight-bold">Sign up</a>
              </p>
            </form>
          </div>
        </div>
      </div>
    </div>
  </div>
</main>
<!--   Core JS Files   -->
<script src="../assets/js/core/popper.min.js"></script>
<script src="../assets/js/core/bootstrap.min.js"></script>
<script src="../assets/js/plugins/perfect-scrollbar.min.js"></script>
<script src="../assets/js/plugins/smooth-scrollbar.min.js"></script>
<script>
  var win = navigator.platform.indexOf('Win') > -1;
  if (win && document.querySelector('#sidenav-scrollbar')) {
    var options = {
      damping: '0.5'
    }
```

```
    Scrollbar.init(document.querySelector('#sidenav-scrollbar'), options);
  }
 </script>
 <!-- Github buttons -->
 <script async defer src="https://buttons.github.io/buttons.js"></script>
 <!-- Control Center for Material Dashboard: parallax effects, scripts for the example pages etc -->
 <script src="../assets/js/material-dashboard.min.js?v=3.0.4"></script>
</body>

</html>
```

Page Picture:




Welcome to Our Project for Heart analysis Dashboard
Dashboard
Profile
Sign Up
Sign In
Sign in
SIGN IN
Don't have an account? Sign up

Profile Page:

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="utf-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
  <link rel="apple-touch-icon" sizes="76x76" href="../assets/img/apple-icon.png">
  <link rel="icon" type="image/png" href="../assets/img/favicon.png">
  <title>
    Your Profile
  </title>
  <!--     Fonts and icons     -->
  <link rel="stylesheet" type="text/css" href="https://fonts.googleapis.com/css?family=Roboto:300,400,500,700,900|Robot o+Slab:400,700" />
  <!-- Nucleo Icons -->
  <link href="../assets/css/nucleo-icons.css" rel="stylesheet" />
  <link href="../assets/css/nucleo-svg.css" rel="stylesheet" />
  <!-- Font Awesome Icons -->
  <script src="https://kit.fontawesome.com/42d5adcbca.js" crossorigin="anonymous"></script>
  <!-- Material Icons -->
  <link href="https://fonts.googleapis.com/icon?family=Material+Icons+Round" rel="stylesheet">
```

```
  <!-- CSS Files -->
  <link id="pagestyle" href="../assets/css/material-dashboard.css?v=3.0.4" rel="stylesheet" />
</head>

<body class="g-sidenav-show bg-gray-200">
  <aside class="sidenav navbar navbar-vertical navbar-expand-xs border-0 border-radius-xl my-3 fixed-start ms-3   bg-gradient-dark" id="sidenav-main">
    <div class="sidenav-header">
      <i class="fas fa-times p-3 cursor-pointer text-white opacity-5 position-absolute end-0 top-0 d-none d-xl-none" aria-hidden="true" id="iconSidenav"></i>
      <a class="navbar-brand m-0" href=" https://demos.creative-tim.com/material-dashboard/pages/dashboard " target="_blank">
        <img src="../assets/img/logo-ct.png" class="navbar-brand-img h-100" alt="main_logo">
        <span class="ms-1 font-weight-bold text-white">IBM-Heart Dashboard</span>
      </a>
    </div>
    <hr class="horizontal light mt-0 mb-2">
    <div class="collapse navbar-collapse  w-auto " id="sidenav-collapse-main">
      <ul class="navbar-nav">
        <li class="nav-item">
          <a class="nav-link text-white " href="../pages/dashboard.html">
            <div class="text-white text-center me-2 d-flex align-items-center justify-content-center">
              <i class="material-icons opacity-10">dashboard</i>
```

```
          </div>
          <span class="nav-link-text ms-1">Dashboard</span>
        </a>
      </li>



      </li>
      <li class="nav-item">
        <a class="nav-link text-white " href="../pages/notifications.html">
          <div class="text-white text-center me-2 d-flex align-items-center justify-content-center">
            <i class="material-icons opacity-10">notifications</i>
          </div>
          <span class="nav-link-text ms-1">Notifications</span>
        </a>
      </li>
      <li class="nav-item mt-3">
        <h6 class="ps-4 ms-2 text-uppercase text-xs text-white font-weight-bolder opacity-8">Account pages</h6>
      </li>
      <li class="nav-item">
        <a class="nav-link text-white active bg-gradient-primary" href="../pages/profile.html">
          <div class="text-white text-center me-2 d-flex align-items-center justify-content-center">
            <i class="material-icons opacity-10">person</i>
          </div>
```

```
          <span class="nav-link-text ms-1">Profile</span>
        </a>
      </li>
      <li class="nav-item">
        <a class="nav-link text-white " href="../pages/sign-in.html">
          <div class="text-white text-center me-2 d-flex align-items-center justify-content-center">
            <i class="material-icons opacity-10">login</i>
          </div>
          <span class="nav-link-text ms-1">Sign In</span>
        </a>
      </li>
      <li class="nav-item">
        <a class="nav-link text-white " href="../pages/sign-up.html">
          <div class="text-white text-center me-2 d-flex align-items-center justify-content-center">
            <i class="material-icons opacity-10">assignment</i>
          </div>
          <span class="nav-link-text ms-1">Sign Up</span>
        </a>
      </li>
    </ul>
  </div>
  <div class="sidenav-footer position-absolute w-100 bottom-0 ">

  </div>
</aside>
```

```
<div class="main-content position-relative max-height-vh-100 h-100">
  <!-- Navbar -->
  <nav class="navbar navbar-main navbar-expand-lg px-0 mx-4 shadow-none border-radius-xl" id="navbarBlur" data-scroll="true">
    <div class="container-fluid py-1 px-3">
      <nav aria-label="breadcrumb">
        <ol class="breadcrumb bg-transparent mb-0 pb-0 pt-1 px-0 me-sm-6 me-5">
          <li class="breadcrumb-item text-sm"><a class="opacity-5 text-dark" href="javascript:;">Pages</a></li>
          <li class="breadcrumb-item text-sm text-dark active" aria-current="page">Profile</li>
        </ol>
        <h6 class="font-weight-bolder mb-0">Profile</h6>
      </nav>
      <div class="collapse navbar-collapse mt-sm-0 mt-2 me-md-0 me-sm-4" id="navbar">
        <div class="ms-md-auto pe-md-3 d-flex align-items-center">

        </div>

          <li class="nav-item d-flex align-items-center">
            <a href="../pages/sign-in.html" class="nav-link text-body font-weight-bold px-0">
              <i class="fa fa-user me-sm-1"></i>
              <span class="d-sm-inline d-none">Sign In</span>
            </a>
          </li>
```

```
<li class="nav-item d-xl-none ps-3 d-flex align-items-center">
 <a href="javascript:;" class="nav-link text-body p-0" id="iconNavbarSidenav">
  <div class="sidenav-toggler-inner">
   <i class="sidenav-toggler-line"></i>
   <i class="sidenav-toggler-line"></i>
   <i class="sidenav-toggler-line"></i>
  </div>
 </a>
</li>
<li class="nav-item px-3 d-flex align-items-center">
 <a href="javascript:;" class="nav-link text-body p-0">
  <i class="fa fa-cog fixed-plugin-button-nav cursor-pointer"></i>
 </a>
</li>
<li class="nav-item dropdown pe-2 d-flex align-items-center">
 <a href="javascript:;" class="nav-link text-body p-0" id="dropdownMenuButton" data-bs-toggle="dropdown" aria-expanded="false">
  <i class="fa fa-bell cursor-pointer"></i>
 </a>
 <ul class="dropdown-menu  dropdown-menu-end  px-2 py-3 me-sm-n4" aria-labelledby="dropdownMenuButton">
  <li class="mb-2">
   <a class="dropdown-item border-radius-md" href="javascript:;">
    <div class="d-flex py-1">
```

```
              </div>
             </a>
            </li>
            <li class="mb-2">
             <a class="dropdown-item border-radius-md" href="javascript:;">
              <div class="d-flex py-1">

               <div class="d-flex flex-column justify-content-center">
            <!-- End Navbar -->
   <div class="container-fluid px-2 px-md-4">
    <div class="page-header min-height-250 border-radius-xl mt-4"
style="background-image:
url('
AMAAAAGjUrGAAABSlBMVEX////sHyb8/////f////38//j///v4zczrHR7/8/f8//v/9vjv
GR3bNzvcMzneABD3////+v/vHSb7/f/oISXqa03N81hyqltgPUb9CByG8ynTUbolh
ZBLO/oMZ240cwLjNLdqdzL5YdaOXc4tXe+cnmQlpB+QfQiRvRMFZKF9JIW8
YDXOMO6cE1Kl4oPM4LTajjGb1kNBvTtPfQgXx/fKkMwGkJ+CkRjwxOW42tt
OQl8yxxdm8Rs9iA5ajIET1mJwxOBRzGxtcXtzc3N7ALY2lIuvKZurwF/TGWQC
gujs6YqO3c6Jsyqbe52PjqlSp3ynAjwReEWP0jGftqS9RBz+BEbRFDrTk1HRVV
CLVx+W2odtw1m2/qah8dY7in35TzG28aBLs2p6T6nClnUrr97OZOpJgal0D2brX
35aqQYe2sjQs3ezbFNHAXpFLdN0Usa2t9ClnKfPZJzgOpaq5+JGWlddAx1JQlfa
4rviEEBf0jZj7d66qt/AKLzGl//gJB/ahUe5QxDIxcy6Dz3UEaEXROam8yczSF4vd
x1/9xWrduwP8Pco24fy8bqk2QBptzYM5de2678peDCbHQDfn/hq4LQtT/5TXfB
XBKSkpKSkpKSkpKSkpKSkpKSkpKSkpKSkpKSkpKSkpKSkpKSkrKvPP
/xFjHMdM0vWQAAAAASUVORK5CYII='); background-size: cover;">

    </div>
```

```
<div class="card card-body mx-3 mx-md-4 mt-n6">
  <div class="row gx-4 mb-2">
    <div class="col-auto">
      <div class="avatar avatar-xl position-relative">
        <img
src="
AMAAAC896z3AAAAilBMVEX///8wMzj8/PwAAAAtMDX4+PgyMzUqLTIoK
zHb29vv7+8kJy3z8/PW1tbq6uq/v8Dh4eKmp6gcICcsLS/Pz8/JycomJym2tretrq+O
j5F7fH1XWFo/QUQgISQXGBtyc3WZmpuEhYYAAAhISk1qa20AzKMTWU29
7MV9E03zw2GIW5PJjFmQRxYkYEuk74gCEaX87C/IdCzvfsfR66KRqbF9v3uZt
bjZ7rhFxmkr9s1bl9q/as6fAs2WxRnV992xP5fWGroul9CiLXwLWF56dI2Dvpj5z
0VrB+bneHFcHmtvefzU39ivwXMzmLaMoj6JSTDed/7ekKsKu3adu6MFUI0aM
GDFixIgRI0aMGDFixIgR/xf+AcHHy7Wg/JBOAAAAAElFTkSuQmCC"
alt="profile_image" class="w-100 border-radius-lg shadow-sm">
      </div>
    </div>
    <div class="col-auto my-auto">
      <div class="h-1500">
        <h5 class="mb-1">
          Name
        </h5>
        <p class="mb-0 font-weight-normal text-sm">

        </p>
      </div>
    </div>
```

```
<div class="col-lg-4 col-md-6 my-sm-auto ms-sm-auto me-sm-0 mx-auto mt-3">
  <div class="nav-wrapper position-relative end-0">
    <ul class="nav nav-pills nav-fill p-1" role="tablist">
      <li class="nav-item">
        <a class="nav-link mb-0 px-0 py-1 active " data-bs-toggle="tab" href="javascript:;" role="tab" aria-selected="true">
          <i class=" text-lg position-relative">Be Happy and Stay Healthy</i>
  <div class="col-5 col-xl-4">
    <div class="card card-plain h-300">
      <div class="card-header pb-0 p-3">
        <div class="row">
          <div class="col-md-8 d-flex align-items-start">
            <h6 class="mb-0">Profile Information</h6>
          </div>
          <div class="col-md-9 text-end">
            <a href="javascript:;">
              <i class="fas fa-user-edit text-secondary text-sm" data-bs-toggle="tooltip" data-bs-placement="top" title="Edit Profile"></i>
            </a>
          </div>
        </div>
      </div>
      <div class="card-body p-3">
        <p class="text-sm">
```

"Do your part by caring for the heart." "Be smart and protect your heart." "Cover those kilometers because the heart matters." "Start from the healthy heart."

</p>

<hr class="horizontal gray-light my-4">

<ul class="list-group">

<li class="list-group-item border-0 ps-0 pt-0 text-sm">Full Name:

<li class="list-group-item border-0 ps-0 text-sm">Mobile: (+91)

<li class="list-group-item border-0 ps-0 text-sm">Email:

<li class="list-group-item border-0 ps-0 text-sm">Location:

<li class="list-group-item border-0 ps-0 text-sm">Gender:

<li class="list-group-item border-0 ps-0 text-sm">Age:

<li class="list-group-item border-0 ps-0 text-sm">Blood Group:

<li class="list-group-item border-0 ps-0 pb-0">

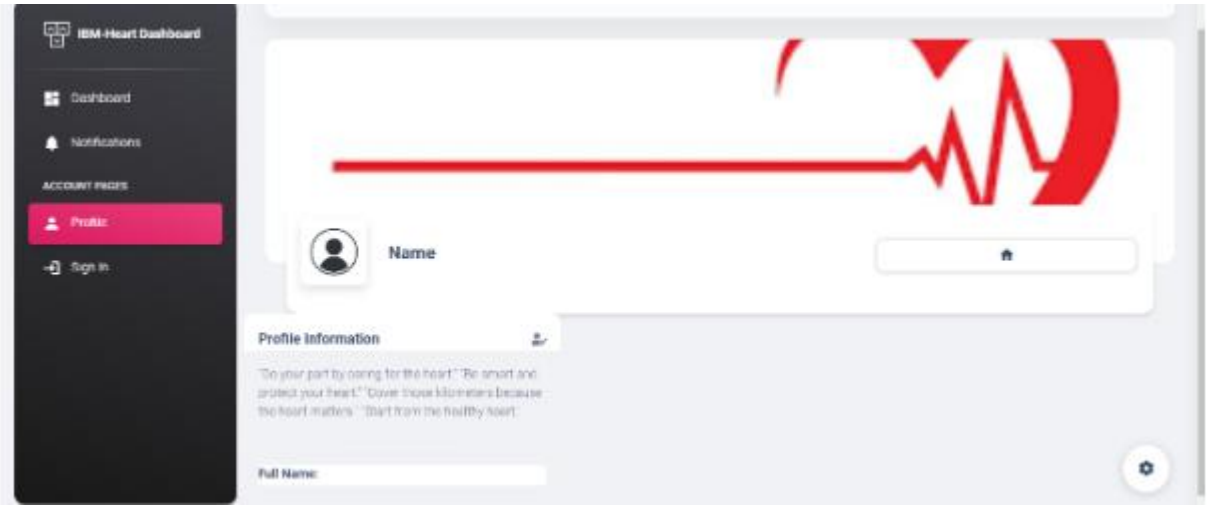
Social:

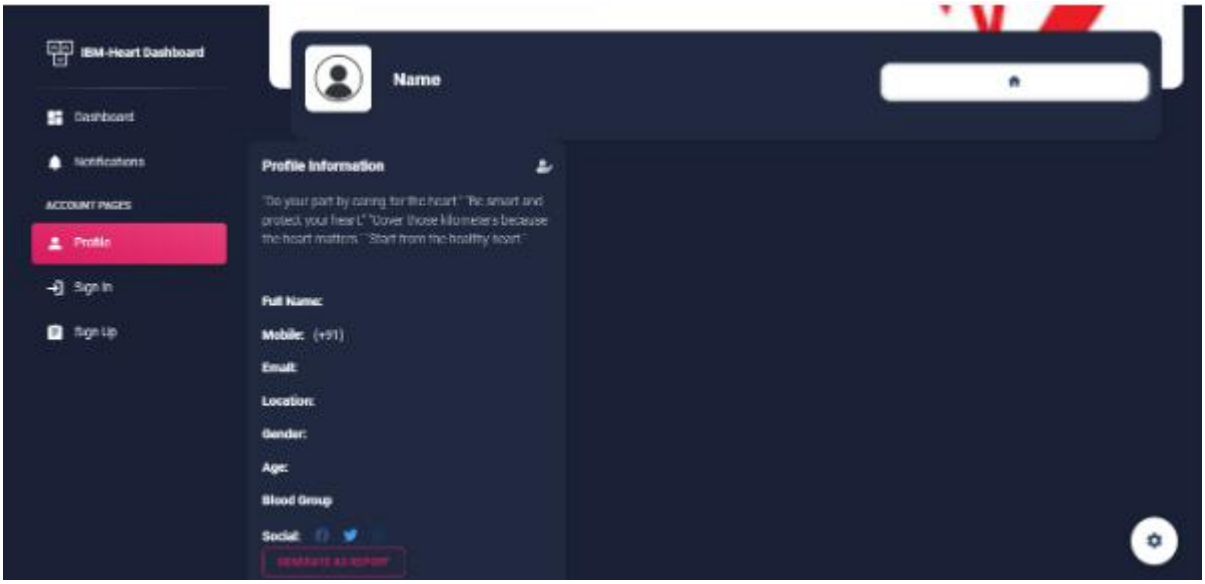

```
                <a class="btn btn-twitter btn-simple mb-0 ps-1 pe-2 py-0" href="javascript:;">
                  <i class="fab fa-twitter fa-lg"></i>
                </a>
                <a class="btn btn-instagram btn-simple mb-0 ps-1 pe-2 py-0" href="javascript:;">
                  <i class="fab fa-instagram fa-lg"></i>
                </a>
                <a>
                <button type="button" class=" btn btn-warning"><a href="file:///C:/Users/user/Downloads/material-dashboard-master/pages/billing.html">
                  Generate as Report</button>
                </a></button>  </button>
                </a></li>
                  <div class="d-flex align-items-start justify-content-between">
        <footer class="footer py-4  ">
    <div class="container-fluid">
      <div class="row align-items-start justify-content-lg-between">
        <div class="col-lg-6 mb-lg-0 mb-4">


      </div>
    </div>
  </footer>
 </div>
 <div class="fixed-plugin">
  <a class="fixed-plugin-button text-dark position-fixed px-3 py-2">
```

```
    <i class="material-icons py-2">settings</i>
  </a>
  <div class="card shadow-lg">
    <div class="card-header pb-0 pt-3">
      <div class="float-start">

        <p>See our dashboard options.</p>

      </div>
      <!-- End Toggle Button -->
    </div>
    <hr class="horizontal dark my-1">
    <div class="card-body pt-sm-3 pt-0">
      <!-- Sidebar Backgrounds -->
      <div>
        <h6 class="mb-0">Sidebar Colors</h6>
      </div>
      <hr class="horizontal dark my-3">
      <div class="mt-2 d-flex">
        <h6 class="mb-0">Light / Dark</h6>
        <div class="form-check form-switch ps-0 ms-auto my-auto">
          <input class="form-check-input mt-1 ms-auto" type="checkbox" id="dark-
version" onclick="darkMode(this)">
        </div>
      </div>

      <!-- Sidenav Type -->
```

```
      <div class="d-flex">
        <button class="btn bg-gradient-dark px-3 mb-2 active" data-class="bg-gradient-dark" onclick="sidebarType(this)">Dark</button>
        <button class="btn bg-gradient-dark px-3 mb-2 ms-2" data-class="bg-transparent" onclick="sidebarType(this)">Transparent</button>
        <button class="btn bg-gradient-dark px-3 mb-2 ms-2" data-class="bg-white" onclick="sidebarType(this)">White</button>
  <!--   Core JS Files   -->
  <script src="../assets/js/core/popper.min.js"></script>
  <script src="../assets/js/core/bootstrap.min.js"></script>
  <script src="../assets/js/plugins/perfect-scrollbar.min.js"></script>
  <script src="../assets/js/plugins/smooth-scrollbar.min.js"></script>
  <script>
    var win = navigator.platform.indexOf('Win') > -1;
    if (win && document.querySelector('#sidenav-scrollbar')) {
      var options = {
        damping: '0.5'
      }
      Scrollbar.init(document.querySelector('#sidenav-scrollbar'), options);
    }
  </script>
  <!-- Github buttons -->
  <script async defer src="https://buttons.github.io/buttons.js"></script>
  <!-- Control Center for Material Dashboard: parallax effects, scripts for the example pages etc--><script src="../assets/js/material-dashboard.min.js?v=3.0.4"></script></body><html/>
```

Profile Picture:





References

[1] Soni J, Ansari U, Sharma D & Soni S (2011). Predictive data mining for medical diagnosis: an overview of heart disease prediction. International Journal of Computer Applications, 17(8), 43-8

[2] Dangare C S & Apte S S (2012). Improved study of heart disease prediction systems using data mining classification techniques. International Journal of Computer Applications, 47(10), 44-8.

[3] Ordonez C (2006). Association rule discovery with the train and test approach for heart disease prediction. IEEE Transactions on Information Technology in Biomedicine, 10(2), 334-43.

[4] Shinde R, Arjun S, Patil P & Waghmare J (2015). An intelligent heart disease prediction system using k-means clustering and Naïve Bayes algorithm. International Journal of Computer Science and Information Technologies, 6(1), 637-9.

[5] Bashir S, Qamar U & Javed M Y (2014, November). An ensemble-based decision support framework for intelligent heart disease diagnosis. In International Conference on Information Society (i-Society 2014) (pp. 259-64). IEEE.

[6] Jee S H, Jang Y, Oh D J, Oh B H, Lee S H, Park S W & Yun Y D (2014). A coronary heart disease prediction model: the Korean Heart Study. BMJ open, 4(5), e005025.

[7] Ganna A, Magnusson P K, Pedersen N L, de Faire U, Reilly M, Ärnlöv J & Ingelsson E (2013). Multilocus genetic risk scores for coronary heart disease prediction. Arteriosclerosis, thrombosis, and vascular biology, 33(9), 2267-72.

[8] Jabbar M A, Deekshatulu B L & Abidra P (2013, March). Heart disease prediction using lazy associative classification. In 2013

International Multi-Conference on Automation, Computing,Communication, Control and Compressed Sensing (iMac4s) (pp. 40- 6). IEEE.

[9] Dangare Chaitrali S and Sulabha S Apte. "Improved study of the heart disease prediction system using data mining classification techniques." International Journal of Computer Applications 47.10 (2012): 44-8.

[10] Soni Jyoti. "Predictive data mining for medical diagnosis: An overview of heart disease prediction." International Journal of Computer Applications 17.8 (2011): 43-8.

[11] Chen A H, Huang S Y, Hong P S, Cheng C H & Lin E J (2011, September). HDPS: Heart disease prediction system. In 2011 Computing in Cardiology (pp. 557-60). IEEE.

[12] Parthiban, Latha and R Subramanian. "Intelligent heart disease prediction system using ANFIS and genetic algorithm." International Journal of Biological, Biomedical and Medical Sciences 3.3 (2008).

[13] Wolgast G, Ehrenborg C, Israelsson A, Helander J, Johansson E & Manefjord H (2016). Wireless body area network for heart attack detection [Education Corner]. IEEE antennas and propagation magazine, 58(5), 84-92.

[14] Patel S & Chauhan Y (2014). Heart attack detection and medical attention using motion sensing device -kinect. International Journal of Scientific and Research Publications, 4(1), 1-4. [15] Zhang Y, Fogoros R, Thompson J, Kenknight B H, Pederson M J, Patangay A & Mazar S T (2011). U.S. Patent No. 8,014,863. Washington, DC: U.S. Patent and Trademark Office.

[16] Raihan M, Mondal S, More A, Sagor M O F, Sikder G, Majumder M A & Ghosh K (2016, December). Smartphone based ischemic heart disease

(heart attack) risk prediction using clinical data and data mining approaches, a prototype design. In 2016 19th International Conference on Computer and Information Technology (ICCIT) (pp. 299-303). IEEE

. [17] Buechler K F & McPherson P H (1999). U.S. Patent No. 5,947,124. Washington, DC: U.S. Patent and Trademark Office.

[18] Takci H (2018). Improvement of heart attack prediction by the feature selection methods. Turkish Journal of Electrical Engineering & Computer Sciences, 26(1), 1-10.

[19] Worthen W J, Evans S M, Winter S C & Balding D (2002). U.S. Patent No. 6,432, 124. Washington, DC: U.S. Patent and Trademark Office.

[20] Acharya U R, Fujita H, Oh S L, Hagiwara Y, Tan J H & Adam M (2017). Application of deep