A PROJECT REPORT ON

ANALYTICS FOR HOSPITAL'S HEALTH CARE DATA

Domain : DATA ANALYTICS

Team ID : PNT2022TMID28169

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1.INTRODUCTION:

1.1PROJECT OVERVIEW:

Estimating Patient Length of Stay (LOS) in healthcare systems is significant for seemly decision making regarding capacity planning, resource allocation and scheduling. In most Emergency Healthcare Services Departments, the commonly used indicators to measuring performance include length of stay, waiting time, resource utilization and number of patients treated. The existing challenge of Prolonged Hospital Length of Stay (PHLOS), usually experienced in most healthcare system indicates constant surge, resulting in over demand of Healthcare resources (facilities and personnel).

Initially, we had intended to analyze hospital LOS as a continuous outcome. However, internal testing yielded a poor performing model. Analyzing LOS as a continuous outcome has the advantage of being able to provide the end user of a CDS with a more precise estimate of the outcome. As we systematically consider different options for analyzing in-hospital LOS after an elective surgery.

1.2PURPOSE:

At the beginning of the COVID-19 pandemic, surgical leadership was tasked with determining which elective surgeries would necessitate the usage of additional resources, with the intention of potentially delaying them. Due to the pandemic, numerous health systems in the US have reported increased workload and surges in patient volumes, resulting in ED crowding, which harms patient outcomes and puts additional strain on medical staff .A key characteristic of crowding is the formation of queues in various parts of the health system as a result of demand-exceeding capacities.

A prolonged stay of patients in hospitals implies consider-able costs and discomfort for patients. It also entails the need for efficient use of resources and facilities for better planning at forthcoming resources demands. These reasons

motivate in-depth studies that attempt to reduce the length of stay (LOS) in hospitals. Proper prediction of Length Of Stay (LOS) has become increasingly important these years. The LOS prediction provides better services, managing hospital resources and controls their costs.

LOS estimations has a lot of applications in operational and clinical functions of a healthcare system such as finding out the future bed usage, making estimates of the forth coming demands on different hospital resources, defining the case-mix, providing help to the patients to understand the course of the disease and recovery, finding health insurance schemes and reimbursement systems in the private sector, planning discharge dates for elderly patients, patients who are dependent, patients with needs and as a crucial factor for the quality of life of the patients and families.

2.LITERATURE SURVEY

2.1 EXISTING PROBLEM

Recent Covid-19 Pandemic has raised alarms over one of the most overlook to focus: Healthcare Management. While healthcare management has various use cases focusing data science, patient length of stay is one critical parameter to observe and prediction wants to improve the efficiency of the healthcare management in a hospital. This parameter helps hospitals to identify patients of high LOS-risk (patients who will stay longer) at the time of admission.

Once identified, patients with high LOS risk can have their treatment plan optimized to minimize LOS and lower the chance of staff/visitor infection. Also, prior knowledge of LOS can aid in logistics such as room and bed allocation planning. Patient length of stay is one critical parameter to observe and predict Improper bed management and poor scheduling in contagious diseases leads to the mortality. Patients are continually denied health care due to the shortages of hospital beds, doctors.

2.2 REFERENCE

[1]Chandan K. Reddy and Charu C. Aggarwal gave a brief introduction to the health care data analytics The various forms of patient data that is currently being collected inboth clinical and non-clinical environments will be studied. The clinical data will havethe structured electronic health records and biomedical images

2. Matthew Mitchell and Thomas Stratmann have proposed some information on bed shortage in that they have discussed about The requirements vary from state to state andcover a variety of services and procedures, ranging from hospitals and hospital beds to medical imaging devices and substance abuse facilities. First, need is subjective. It depends on the individually-defined value that particular consumers believe they will obtain from a service. Second, need is constantly changing as circumstances and tastes change. Researchers find that when health care providers are able to change their services without proving need to a regulator, they are more likely to adapt.

3.Center for Medicare and Medicaid Services. [(accessed on 1 August 2017)];Availableonline: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-andReports /NationalHealthExpendData/NationalHealthAccountsHistorical.html

4.Prokosch H.-U., Ganslandt T. Perspectives for medical informatics. *Methods Inf.Med.* 2009;48:38–44. doi: 10.3414/ME9132. [PubMed] [CrossRef] [Google Scholar]

5.Yang J.-J., Li J., Mulder J., Wang Y., Chen S., Wu H., Wang Q., Pan H. Emerginginformation technologies for enhanced healthcare. *Comput. Ind.* 2015;69:3–11.doi:10.1016/j.compind.2015.01.012. [CrossRef] [Google Scholar]

7.Panagiota Galetsia , Korina Katsaliakia , Sameer Kumarb,∗ a School of Economics, Business Administration & Legal Studies, International HellenicUniversity, 14th km

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Minneapolis, MN 55403, USA

8. V. Mayer-Schönberger and K. Cukier, *Big Data: A Revolution That WillTransform How We Live, Work, and Think*. Eamon Dolan, 2014.

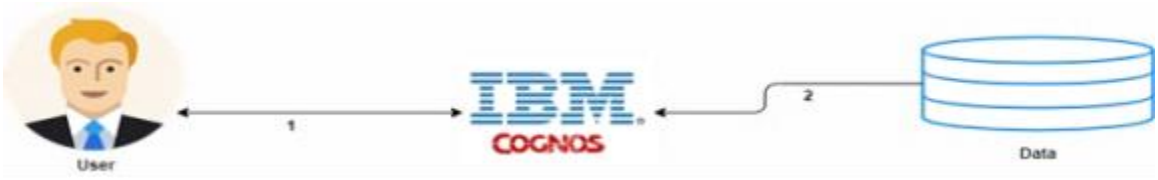
9. S. Axryd. Why 85% of big data projects fail. [Online]. Available: https://www.digitalnewsasia.com/insights/why-85-big-data-projects-fail. Accessed on:Apr. 16, 2019.

10. A. Hunter, L. Johnson, A. Coustasse

Reduction of intensive care unit length of stay: the case of early mobilization Health Care Manager, 33 (2) (2014), pp. 128-135

2.3 PROBLEM STATEMENT DEFINITION

Who does the problem affect?	The patients of the hospital.
What are the boundaries of the problem?	Patients satisfaction about the various service and management of hospital
Why does the issue occur?	Ineffective bed management operations, Improper data analysis Precaution less system.
When does the issue occur?	Improper bed allocation plan
Why is it important that we fix the problem?	Ø If it is not fixed then it is leading to treatment limitations for critically ill patients. Ø Improper bed management in contagious diseases leads to the mortality
What solution to solve this issue?	Ø Hospital needs the system that announces the bed availability and identify patients of high LOS-risk. Ø Prior knowledge of Length of stay and to prepare accordingly
What methodology used to solve the issue?	Using IBM Cognos Analytics for dashboard and data analysis.



3. IDEATION AND PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

An empathy map canvas is a more in-depth version of the original empathy map, which helps identify and describe the user's needs and pain points. And this is valuable information for improving the user experience.

An empathy map canvas helps brands provide a better experience for users by helping teams understand the perspectives and mindset of their customers. Using a template to create an empathy map canvas reduces the preparation time and standardizes the process so you create empathy map canvases of similar quality.

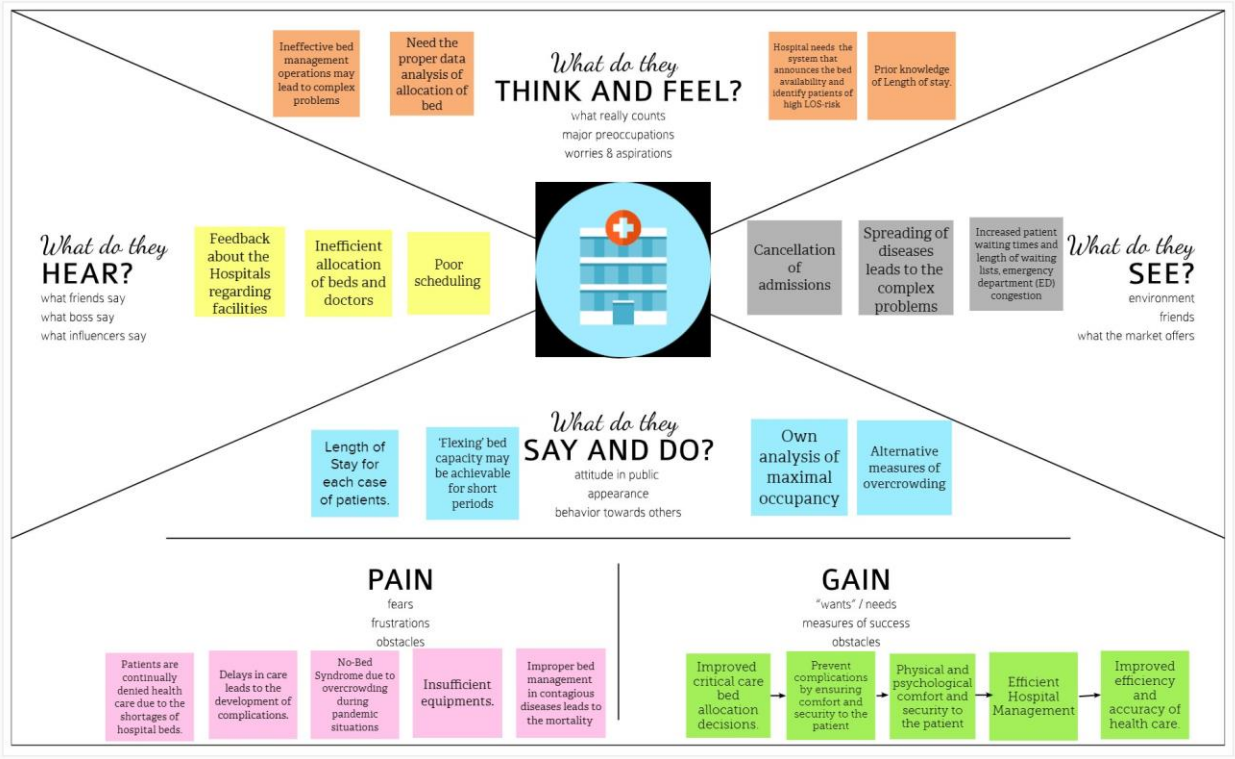
Edit this template
Right-click to unlock

Empathy Map Canvas

Gain insight and understanding on solving customer problems.

1

Build empathy and keep your focus on the user by putting yourself in their shoes.



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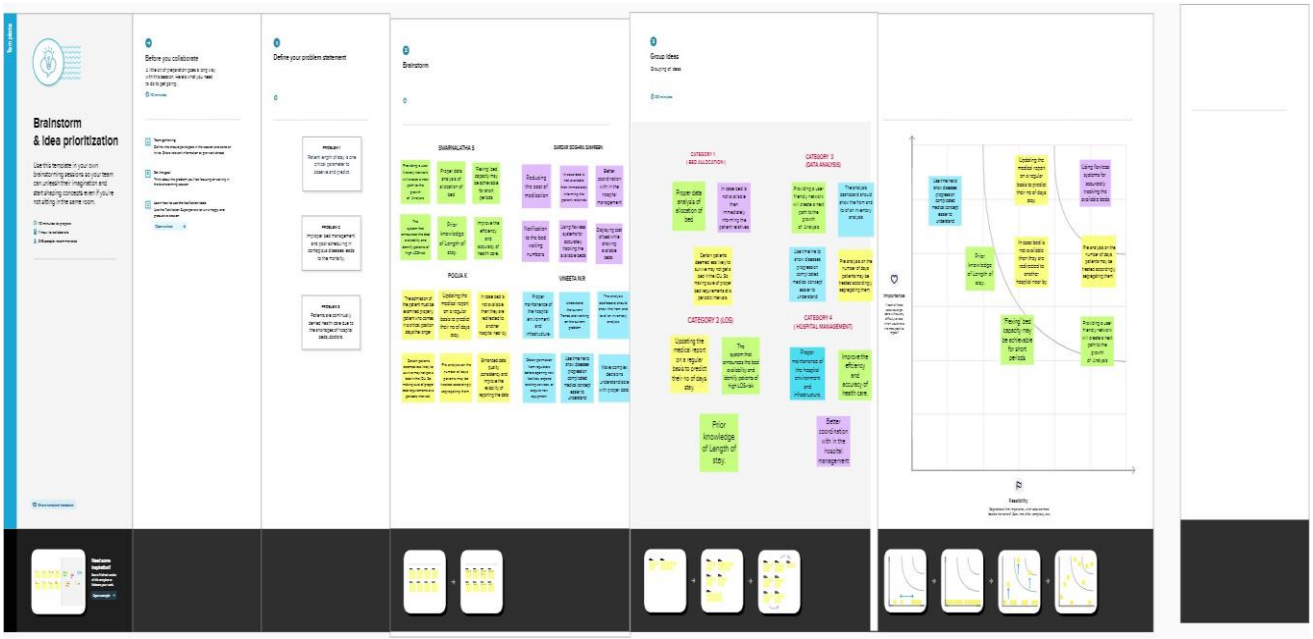
3.2 IDEATION AND BRAINSTROMING

Ideation is often closely related to the practice of brainstorming, a specific technique that is utilized to generate new ideas. A principal difference between ideation and brainstorming is that ideation is commonly more thought of as being an individual pursuit, while brainstorming is almost always a group activity.



In ideation each member in the team have given their ideas and we have collected all the ideas and have performed brain storming.

Brain storming is nothing bur collecting all the ideas and prioritizing them and analyzing the ideas based on efficiency we have choose those solution fit ideas and the highest effective idea is chosen.

We have created a graph based on that graph we selected the solution which is effective and accurate.

3.3 PROPOSED SOLUTION

Proposed solution should relate the current situation to a desired result and describe the benefits that will accrue when the desired result is achieved. So, begin your proposed solution by briefly describing this desired result.

Based on the brainstorming the solution which is fit and can solve the problem statement effectively that solution is taken and it is declared as the perfect solution fit to the problem statement.

S.NO	PARAMETER	DESCRIPTION
1.	**Problem Statement (Problem to be solved)**	The goal is to enhance **predict** the bed **availability** and improve efficiency in the health-care industry. ØDifficult to identify patients of high LOS-risk. ØImproper bed allocation planning. ØPoor scheduling in contagious diseases leads tothe mortality. ØPatients end up: Waiting too long for treatment Being diverted to another hospital To solve customer issues ,certain techniques need tobe adopted.

2.	**Idea / Solution description**	ØUsing data analytics tools to monitor patterns indata access, sharing, and utilization can give organizations an early warning when something changes ØCreating the interactive dashboard to know the bedavailability. ØAutomatic update by using daily sync of the dailydatabase. ØDisplay the status of the bed to the hospitalmanagement.
3.	**Novelty / Uniqueness**	ØUsing web-based portals and advanced dashboardreporting, a flexible reporting system that measures ongoing performance and provides a real-time warning system of possible problems can be added. ØResponsive 24/7 Dashboard to get the bed availability and to know the high LOS riskpatients. ØDesign dashboards and build interfaces to all data bases - begin to monitor the process.

4.	**Social Impact / Customer Satisfaction**	1. The ultimate goal of this project is to builddashboard and data analysis of the beds . 2. Good coordination within the hospitalmanagement. 3. Better accessibility of beds. 4. Improved efficiency and accuracy of health care. 5. Increased coordination resulting in better patienttransfer and better pre-planning. Designing and developing new models for bettermanagement of inventory.
5.	**Business Model (Revenue Model)**	ØRelationship have 24/7 Support, Knowledge-based updated dashboard. ØThe components provide immediate, highly focused improvements for maximum benefit. ØCost Structure expresses maintenance of thendata.
6.	**Scalability of the Solution**	Update the data periodically. ØUsing flawless systems for accurately trackingthe available beds Ø‘Flexing’ bed capacity may be achievable forshort periods.

Knowledge-based updated dashboard.

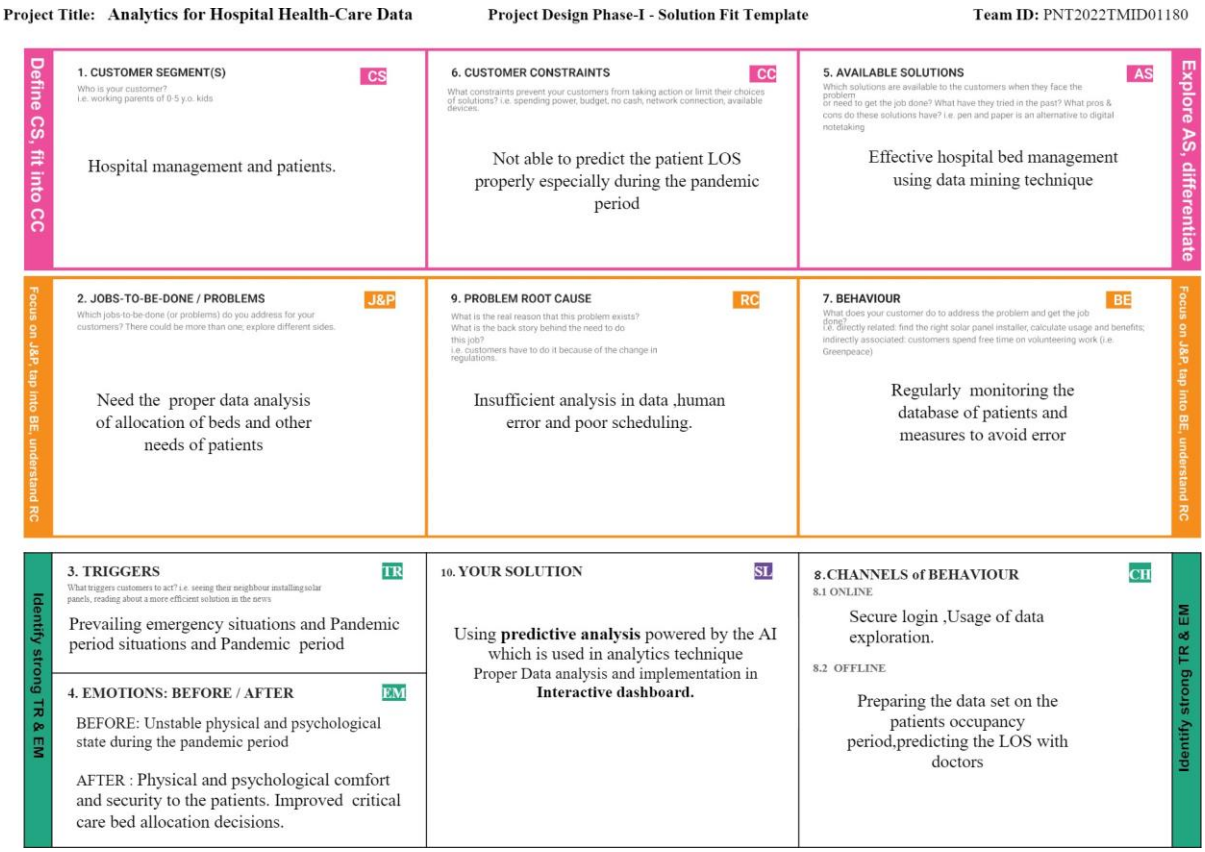
ØThe components provide immediate, highly focused improvements for maximum benefit.

ØCost Structure expresses maintenance of thendata.

As mentioned in the above table proposed solution is based on some qualities i-e, the proposed solution must consists of the requirements like the actual problem statement, idea, novelty i-e, uniqueness and scalability of the idea revenue model social impacts the description the above mentioned terms is clearly given in the table mentioned above. The proposed solution must satisfy all these parameters. The solution for problem statement is creating an interactive dashboard and creating a website which predicts the length of stay of inpatient and it shows the availability of extra rooms to the patients to stay in. This reduces the human error and can be very accurate. By predicting the length of stay accurately it helps the management and the new inpatient to show their availability of beds. And according to that count patient admission can be done.

3.4 PROBLEM SOLUTION FIT

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem.



To find the exact solution for given problem statement the solution must satisfy some parameters like in job to be done column need the proper analysis of allocation of beds and another needs of patients. The emotions before and after must be calculated exactly to find the best solution. The root cause also play a vital role in calculation the exact solution that is fit to problem. A regular monitoring of data base need to be done to avoid any human error. The data must be very secure in order to maintain privacy.

4..REQUIREMENT ANALYSIS:

4.1 FUNCTIONAL REQUIREMENTS

Functional requirements are product features or functions that developers must implement to enable users to accomplish their tasks. So, it's important to make them clear both for the development team and the stakeholders. Generally, functional requirements describe system behavior under specific conditions.

FR No.	**Functional Requirement (Epic)**	**Sub Requirement (Story / Sub-Task)**
FR-1	Appointments	ØRecurrent appointments and scheduling the available time slots in a regular basis. ØShowing the number of appointments ongiven day. ØAfter sign in asking for a ID and phonenumber to avoid any issues. ØGenerating appointment. ØSupporting group appointments and automatically creating a billing charge for completed appointments. ØAppointment Status: a.Pending b.Confirmed c.Cancelled; No Reschedule d.Cancelled; Reschedule e.No Show f.Completed

FR-2	Clinical Care	ØThe admission of the patient must be examined properly and patients who comes ina critical position should be given immediate treatment. ØEnhanced and improved reliability onreporting the data. ØAccess medication history from externalsources (ex. Surescripts). ØPredict the length of stay of inpatients.
FR-3	Patient Records	ØA Proper record or documentations need to be maintained regarding the patients who all consulted and detailed analysis of their health details. ØIt should be easily accessible when required. ØAccessible as Standalone function, as well as easily accessible from Progress Note and Evaluation activities. ØDigital records will be more efficient and time saving.
FR-4	Bed requirements	ØAnalyzing and monitoring of beds which are required are the most important task. ØUsing flawless systems for accuratelytracking the availability of beds.
FR-5	Providing insights of dataset	ØRaw data collection and sharing of dataand systems are essential factors in hospital management. ØAccording to these data in appropriatemeasures can be taken. ØProviding data set without human error .

4.2 NON FUNCTIONAL REQUIREMENTS

Nonfunctional requirements, not related to the system functionality, rather define how the system should perform :

The non functional requirements discussed here are

1. Usability-Usable systems are straightforward to use by as many people as possible, both in caseof either end users or administrators to view the hospital records when needed.
2. Security- To recognize andanalyze the patient perfectly.
3. Reliability-Understanding the current trend and working on to it to solve the problem in anefficient manner.

4. Performance is measured by response time and comfortability

FR No.	**Non-Functional Requirement**	**Description**
NFR-1	**Usability**	ØUsable systems are straightforward to use by as many people as possible, both in caseof either end users or administrators to view the hospital records when needed.
NFR-2	**Security**	**Patient identification** : ØTo recognize andanalyze the patient perfectly.
NFR-3	**Reliability**	ØUnderstanding the current trend and working on to it to solve the problem in anefficient manner. ØBeing software as a service, HMS is highly resilient to any technology disruptions, downtime, or crashes experienced by other technology systems.

NFR-4	**Performance**	**Response time:** ØProviding acknowledgment in minimaltime about the patient information. **Comfortability:** ØTo ensure that the guidelines and accessibilities are followed.
NFR-5	**Availability**	ØBetter coordination with the hospital management to provide all its resources accessible when needed. ØAccessibility of all medical facilities.
NFR-6	**Scalability**	ØMake sure that the work is done in more efficient way with the appropriate resources. ØMake complex decisions understandablewith proper data.

5. PROJECT DESIGN:

5.1 DATA FLOW DIAGRAM

A data flow diagram (DFD) maps out the flow of information for any process or system.
They can be used to analyze an existing system or model a new one.

In our project the process starts from collecting the data from the hospital(patient client record, disease registers, hospital management record, existing medical database,survey and literature). Then the data set is uploaded in the IBM COGNOS to analyse and visualize the dataset.
In which we are using the analytical tools like python , machine and AI principles.Then it is uploaded into the cloud.

Team ID : PNT2022TMID01180

Visualize data flows and behaviors to explain complex processes

Data Flow Diagram

INSTRUCTIONS

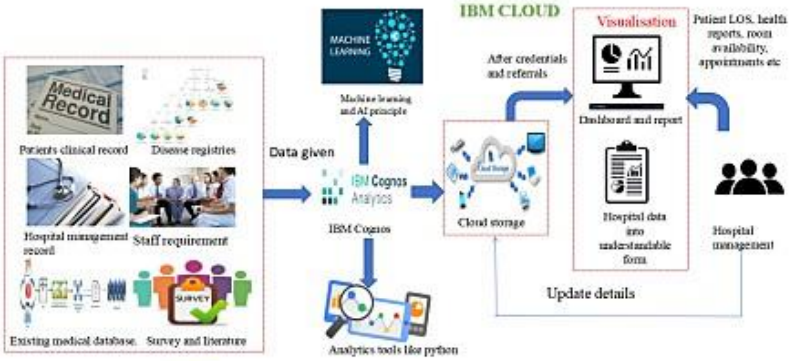
BRAINSTORMING AREA

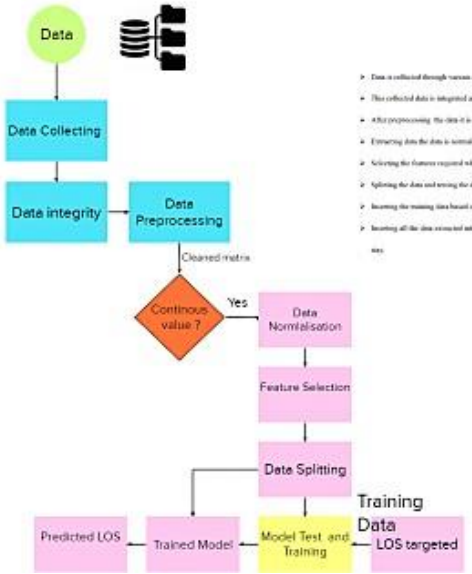
NEXT STEPS

FLOW KEY

VISUAL KEY

DATA FLOW DIAGRAM OF HOSPITAL HEALTH CARE DATA





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5.2 SOLUTION AND TECHNICAL ARCHITECTURE

A solution architecture (SA) is an architectural description of a specific solution. SAs combine guidance from different enterprise architecture viewpoints (business, information and technical), as well as from the enterprise solution architecture (ESA).

solution architecture translates technical business needs into practical IT solutions while establishing rules and instructions for proper implementation and delivery. It also considers all external factors that could have an impact on the development process.

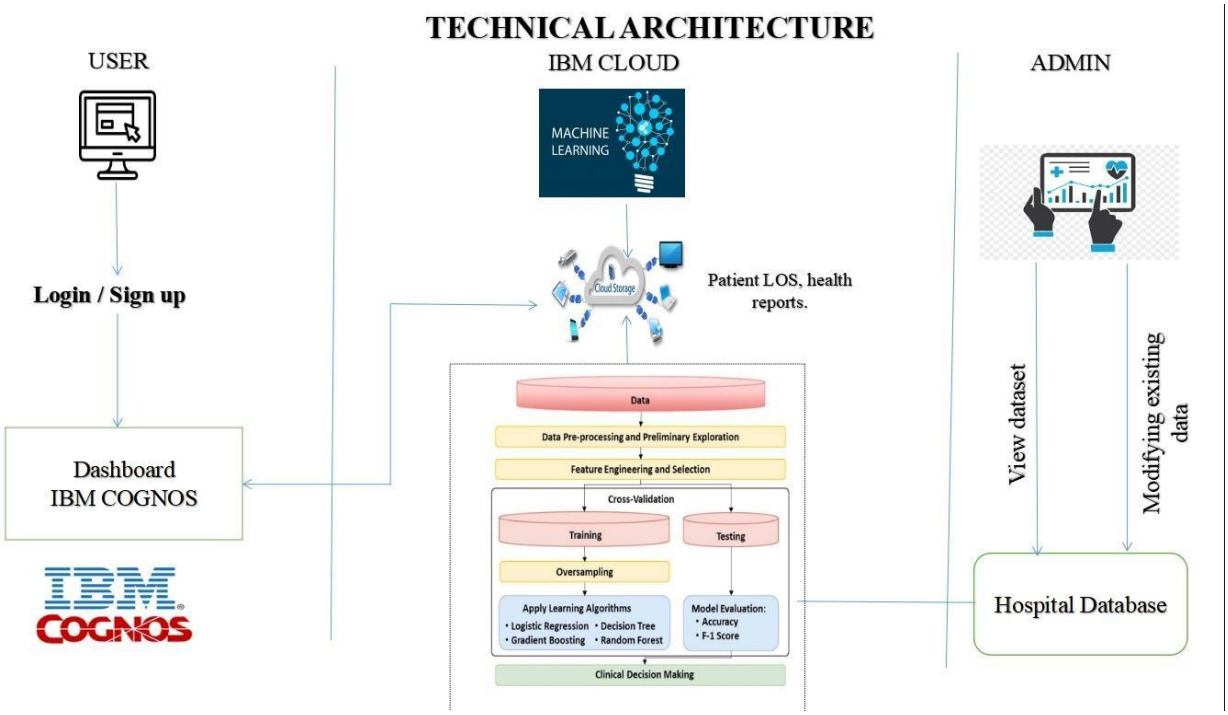


Table-1 : Components & Technologies

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g.Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript
2.	Application Logic-1	Logic for a process in the application	Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson Assistant
4.	Database	Data Type, Configurations etc.	MySQL
5.	Cloud Database	Database Service on Cloud	IBM Cloud etc.
6.	File Storage	File storage requirements	IBM Block Storage or Other StorageService or Local Filesystem
7.	External API-1	Purpose of External API used in the application	Aadhar API, etc.
8.	Machine Learning Model	Purpose of Machine Learning Model	Regression Model, etc.
9.	Infrastructure (Server / Cloud)	Application Deployment on Local System / CloudLocal Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, etc.

Table-2: Application Characteristics:

Technical Architecture (TA) is a form of IT architecture that is used to design computer systems. It involves the development of a technical blueprint with regard to the arrangement, interaction, and interdependence of all elements so that system-relevant requirements are met.

The major technology used in our project are the IBM COGNOS,IBM CLOUD and IBM WATSON ASSISTANT.

IBM COGNOS - is used to upload and visualize the dataset.

IBM CLOUD- is used for the storage purpose

IBM WATSON - is used for the analytical purpose.

There are some other technology used HTML,CSS,Java script,PYTHON etc.

S.NO	Characteristics	Description	Technology
1	Open-Source Frameworks	List the open-source frameworks used	Python
2	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	Encryption,Firewall,Antivirus
3	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Supports higher workloads

4	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	High availability enables your IT infrastructure to continue functioning even when some of itscomponents fail.
5	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache,use of CDN's) etc.	A field of practice that uses various tools, processes, and ideas in a scientific manner toimprove the desired outcomes of individualsand organizations.

5.3 USER STORIES:

A user story is a short, simple description of a feature told from the perspective of the person who desires the new capability, usually a user or customer of the system.

User stories were historically written on index cards or sticky notes, stored in a shoe box, and arranged on walls or tables to facilitate planning and discussion. Nowadays, they might just as easily be stored in a Jira issue.
User stories are designed to strongly shift the focus from writing about features to discussing them.

User Type	Functional Requirement(Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	HIV/AIDS Risk Smart Form forDataEntry	**User Number-1**	As a Clinician, I want to review and update a HIV/AIDS Risk form. so that I can determine my patient's risk of HIV/AID (risk category), and ensure proper Remedy accordingly.	I can access patient record or data accurately.	High	Sprint-1

	BPA to Prompt Ordering HIV/AIDS on Admission	**User Number-2**	As an Inpatient ,I want to be prompted to Order HIV/AID on admission .so that I remember to place my patient on AIDS	Maintain the Record for correct preference	High	Sprint-1
	HIV/AIDS Dynamic Order Group in Admit Order Sets	**User Number-3**	As an Inpatient,I want to view only risk-appropriate HIV/AID options in AdmissionOrder Sets so that I can ensure my patient is getting optimal HIV/AID prophylaxis	For Admission purposeof patient to get solutions among their problem	High	Sprint-2

		User Number-4	As a user, I access the data in visualize mode		Medium	Sprint-1
	Dashboard	**User Number-5**	As a user, I can access the data from Queries, graph ,pie chart		High	Sprint-1
Customer Care Executive			Have data in graph modes		Medium	

6.PROJECT PLANNING AND SCHEDULING

6.1 SPRINT PLANING AND ESTIMATION:

Planning and Estimation are essential in software projects to achieve predictability, reduce the risks involved, and set a basic expectation for all stakeholders. Planning brings a lot of focus on preparation and forecasting whereas Estimation is a process to forecast project-related variables i.e., effort, scope, schedule, etc.

Planning: Planning is required irrespective of the project management methodologies that the team follows, whether it is Waterfall or Agile. Planning gives the project team a perspective on how to meet the objective in a systematic way and helps project stakeholders to keep a tab on the project progress and investments done.

Sprint	Functional Requirement	User story number(Epic)	User story /Task	Story points	Priority	Team Member
Sprint -1	Retrieve Data	USN-1	As a user I should get clear clinical context for AIDS patient's unique case.	10	Medium	Sardar Soghra Samreen S

Sprint-1	Visualize the data	USN-2	As a user I need nicely visualized dashboard of number of beds occupied and number of free beds in hospital.	20	High	Pooja k Swarnalatha S
Sprint-2	Track of patient visit to the hospital	USN-3	Tracking a patient Health care over years of visit and screening of data they have in hospital.	10	Medium	Vineeta M R Pooja K

Sprint-2	Dashboard	USN-4	As a user I want the interactive dashboard to analyse the data have the data in terms of graph.	20	High	Swarnalatha S SardarSoghra Samreen
Sprint-3	Detailed EHR's of Patient	USN-5	Provided greater details in the HER's of individual patient with clear idea of what to do.	10	Medi um	Pooja k Vineeta M R
Sprint-3	Story Creation	USN-6	As a user I need the story animation of the data set with insights.	20	High	Vineeta M R Pooja K

Sprint-4	Predict LOS	USN-7	As a user I want the flawless system to predict the length of stay of the patients.	20	High	Sardar Soghra Samreen Swarnalatha S

6.2 SPRINT DELIVERY SCHEDULE

Sprint Delivery is an essential process that an organization needs to adapt to be successful. It indicates the road map for the next two to four weeks when stakeholders and team members decide as a group what they need to complete and deliver before the next sprint review meeting.

Sprint delivery is an important phase in project delivery and is crucial to project success. A high-level view of the sprint backlog is created where the scrum team discusses, creates a plan for completing their work, establishes dependencies, and identifies risks that need to be addressed.

SPRINT	TOTAL STORY	DURATION	SPRINT START	SPRINT END	STORY POINT	SPRINT RELEASE

	POINT		DATE	DATE	COMPLETED	DATE
SPRINT1	20	6	24OCT	29OCT	20	29OCT
SPRINT2	20	6	31OCT	05NOV	20	05NOV
SPRINT3	20	6	07NOV	12NOV	20	12NOV
SPRINT4	20	6	17NOV	19NOV	20	19NOV

VELOCITY

A large displacement in a small amount of time means a large velocity and that velocity has units of distance divided by time, such as miles per hour or kilometer per hour.

Average velocity is defined to be the change in position divided by the time of travel.

AV=sprint duration

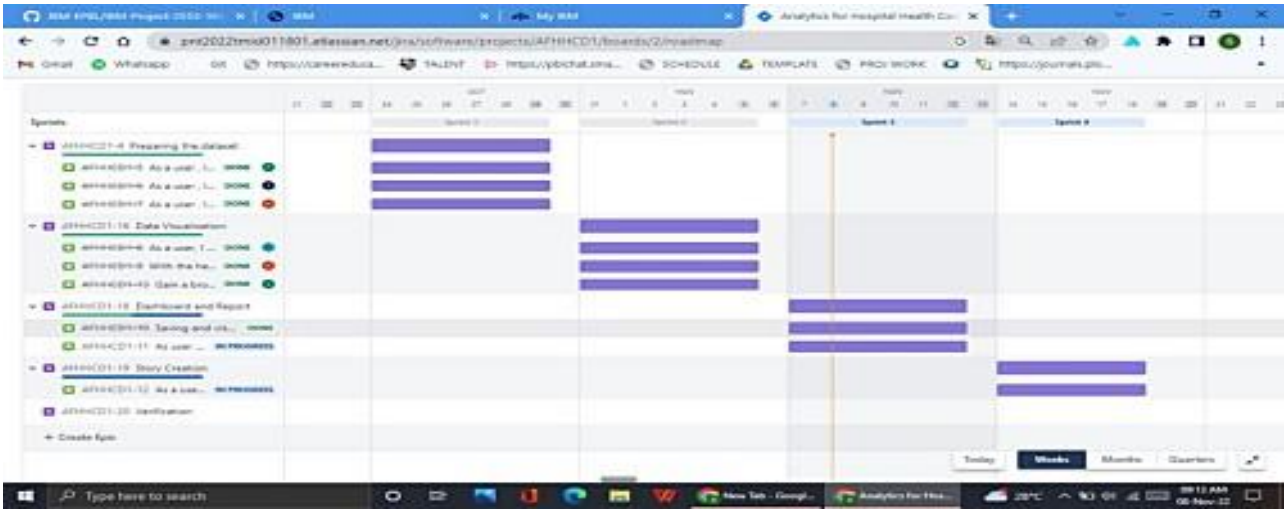
Velocity

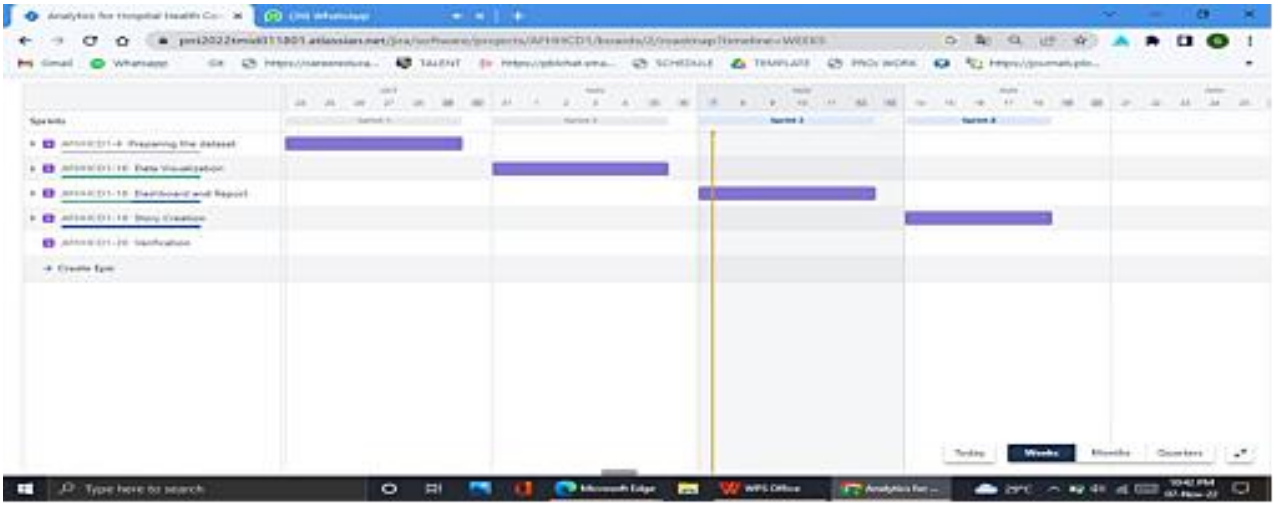
= 6/10

=0.6

6.3 REPORTS FROM JIRA

Burndown chart





JIRA is used to manage the project's entire life cycle, and it also provides different kinds of features, which that report is one of the functionalities that JIRA provides. We can track all activities of the project. In other words, we can say that the JIRA report helps us analyze the progress of the project and track issues and different timeline features of performance. JIRA provides the different types of reports within the specified project. Using the JIRA report, we can track the problems, bugs, and sprint goals

7. SOLUTIONING:

Features added

●Fetched the data from DB2 database.

● Creating responsive dashboard.

● Inserting filter for each chart

● Creating report

● Created story using multiple graphs and charts

●Creating web application using bootstrap.

● Embedded the cognos with web application.

7.1 DATA EXPLORATION AND VISUALIZATION

Tools Used : IBM COGNOS ANALYTICS

Data exploration, understanding, and visualization is a crucial aspect of data science problems. Here, I provide several methods to streamline the process.

Data exploration and visualization is a crucial aspect of data science problems.

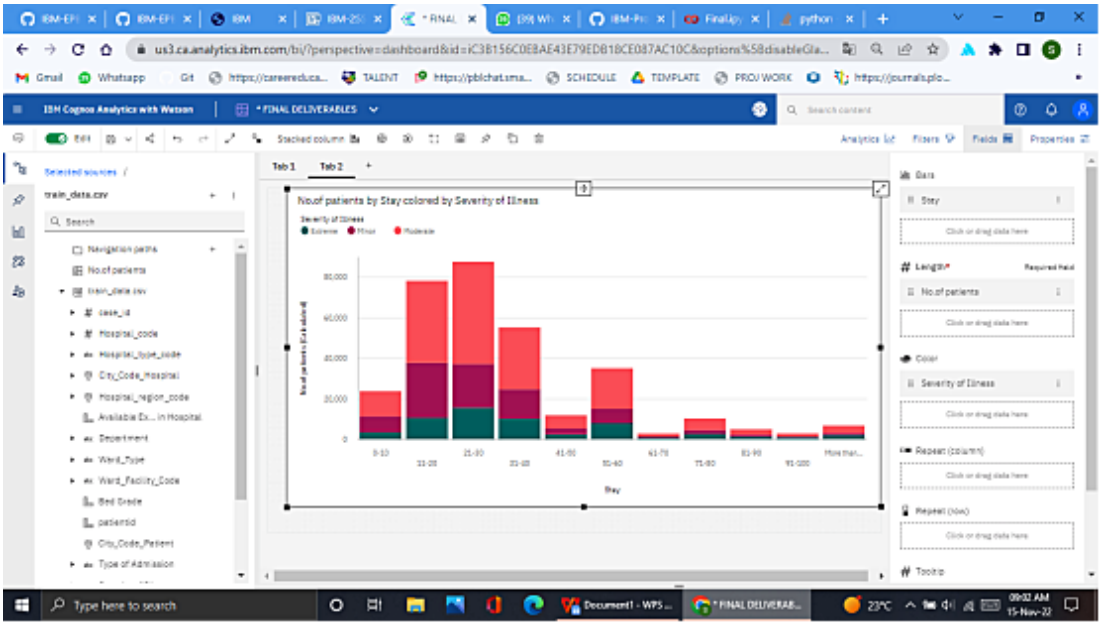
The best visualization is always related to the problem at hand and utilizes domain knowledge. However, as a data scientist, you will often find yourself repeating a lot of the same visualizations.

DATA EXPLORATION

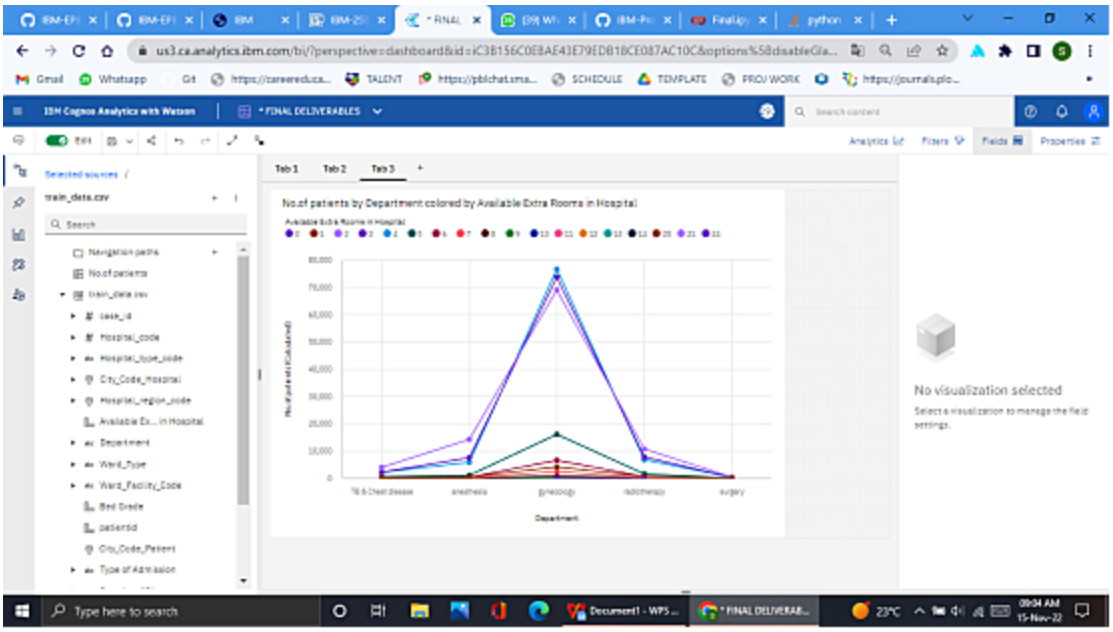
Exploration, one of the first steps in data preparation, is a way to get to know data before working with it. Through survey and investigation, large datasets are readied for deeper, more structured analysis. Exploratory Data Analysis (EDA) is similar but uses statistical graphics and other data visualization methods.

Exploration allows for deeper understanding of a datasets, making it easier to navigate and use the data later.

No.of patients by Stay colored by Severity of Illness:



No.of patients by Department colored by Available Extra Rooms in Hospital



7.1 DATA VISUALIZATION

We can use visuals to represent the data at any point in our project. Data visualization is nothing but a mapping between tables or graphs and data (inputs or outputs). Data visualization can be done in two forms – tabular and graphical.

We need visualization as a visual summary of the data, because it's easier to understand for identifying relations and patterns. Many visuals are used in the data exploration phase to find outliers, correlation between features, etc. We also use charts and graphs to check the performance of models or while categorizing or clustering the data.

1.Choosing a correct chart to communicate your findings about data is also important. Using a line chart instead of a scatter chart might not make sense.

2.While trying to make accurate assumptions, we need the best tools to explore and visualize the data. There are several tools and libraries available in the

market. It’s nearly impossible to remember all the libraries,

The aim of this article is to:

Summarize some of the best data exploration and visualization tools.

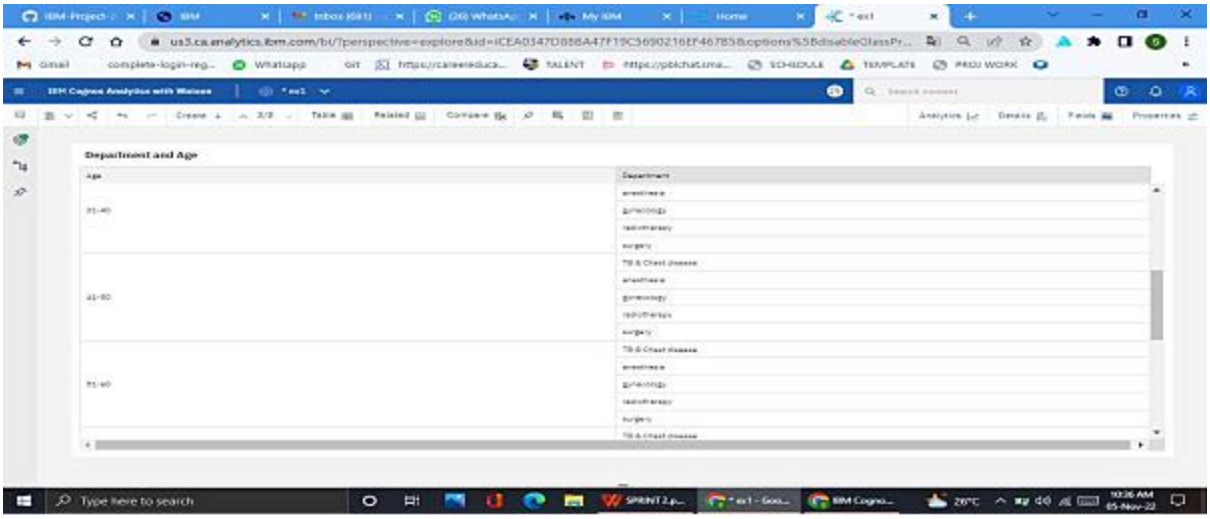
Get familiar with these tools through some examples.

Understand the need for a visualization tool.

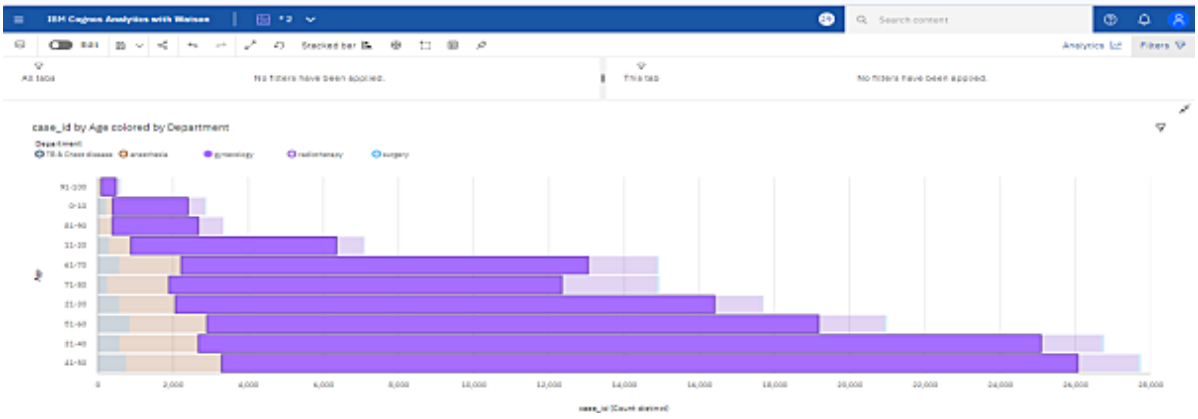
NUMBER OF PATIENTS BY WARD TYPE

The visualization has done based on the number of patients in the hospital versus ward type

AGE AND DEPARTMENT WISE PATIENT USING TABLE



CASE ID BY AGE COLOURED BY DEPARTMENT :



7.2DASHBOARD

A dashboard is a way of displaying various types of visual data in one place. Usually, a dashboard is intended to convey different, but related information in an easy-to-digest form. And oftentimes, this includes things like key performance indicators (KPI)s or other important business metrics that stakeholders need to see and understand at a glance.

Dashboards are useful across different industries and verticals because they're highly customization. They can include data of all sorts with varying date ranges to help you understand: what happened, why it happened, what may happen, and what action you should take. And since dashboards use visualizations like graphs and others who aren't as close to the data can quickly and easily understand the story it tells or the insights it reveals.

1. THE HOSPITAL'S HEALTH CARE DASHBORD

The dashboard which shows above represents many visualizations to find the length of stay of the patients.

2. Dash board with the following visuals to present various analytics of Hospitals.

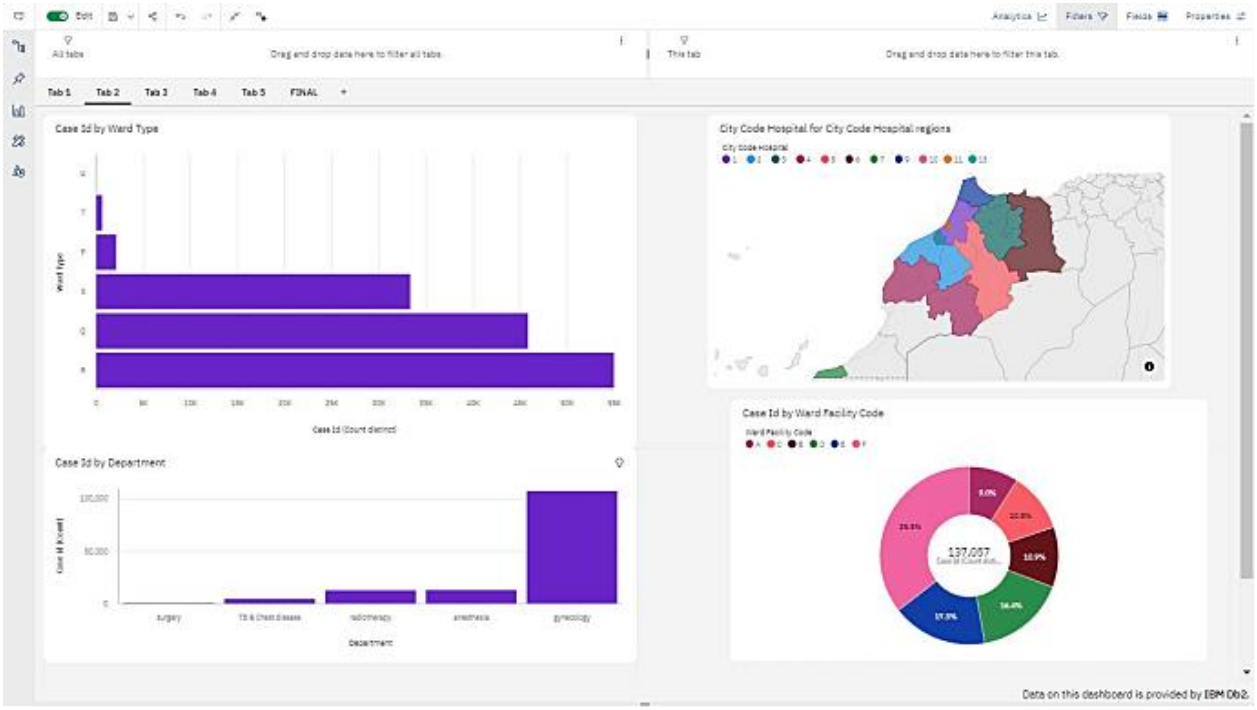
• Bar Chart to show case number of Cases based on Ward Type

• Geo Map to show case number of cases based on City, Hospital

and Region

• Column Chart to show case Number of Cases by each Department

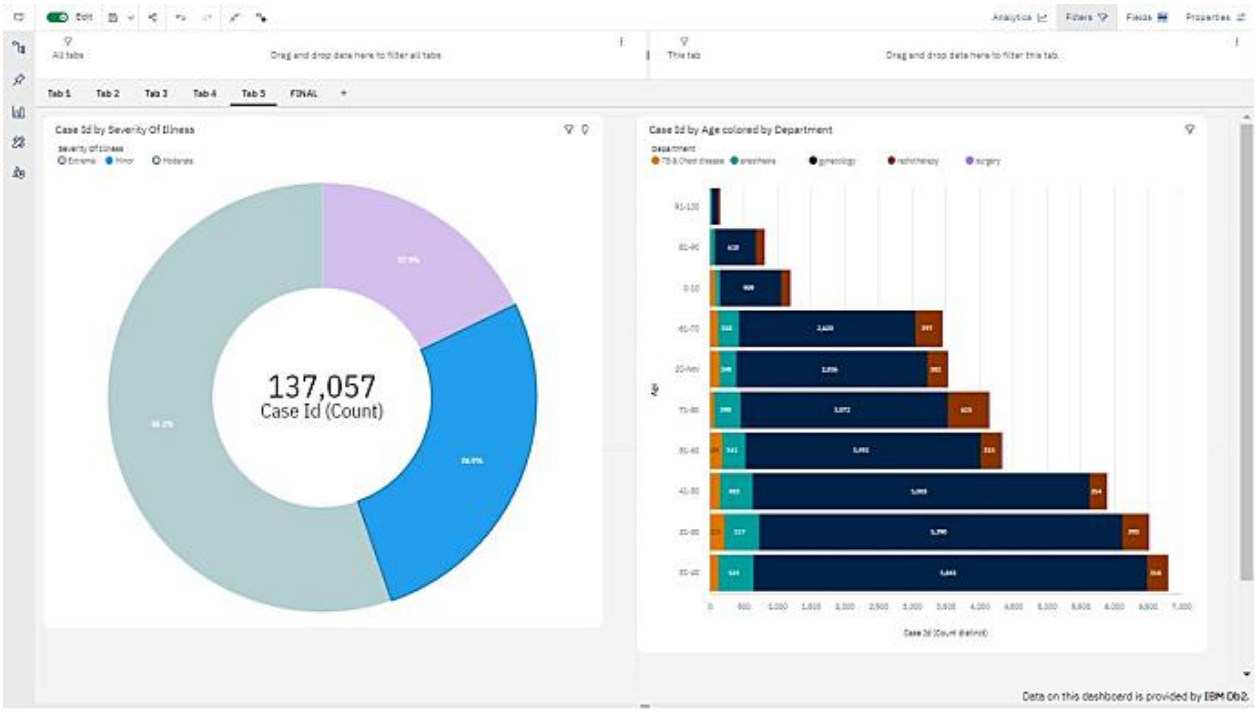
• Pie-Chart show case the Number of Cases by Ward Facility type.



3. Dashboard with Hierarchy Bubble and Radial Visuals as follows:

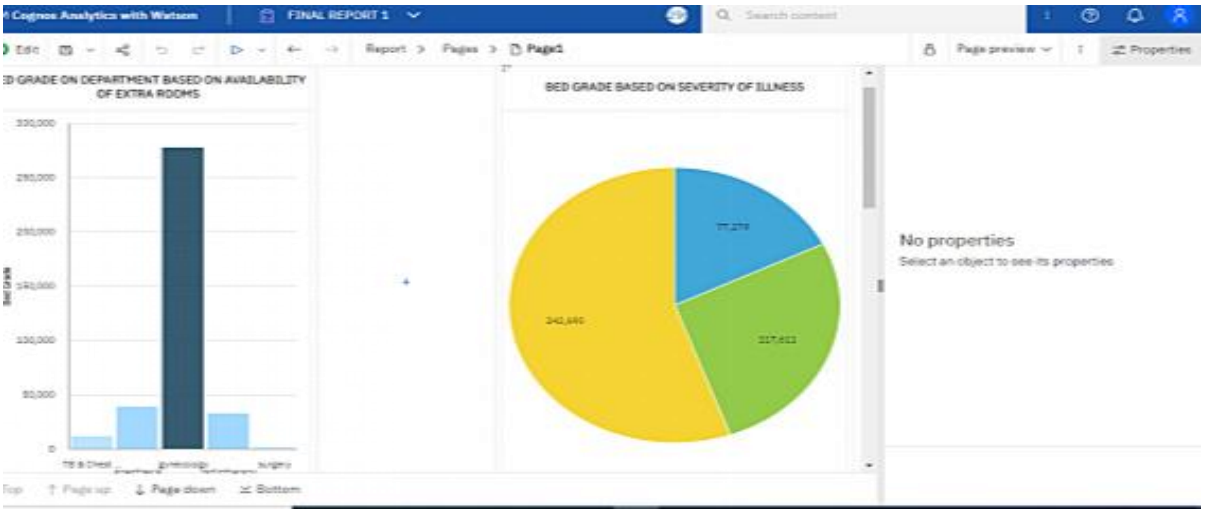
1.Hierarchy Bubble to show case Bed Grade with Number of Cases by Department and Ward-wise.

2.Radial chart to show case Department wise Admission Deposit Amount



REPORT

A data analysis report is a type of business report in which you present quantitative and qualitative data to evaluate your strategies and performance. Based on this data, you give recommendations for further steps and business decisions while using the data as evidence that backs up your evaluation



STORY

Good data story means analysing all the raw data you've gathered to confirm a hypothesis and, hopefully, the determined change you'd like see come from introducing your data story.

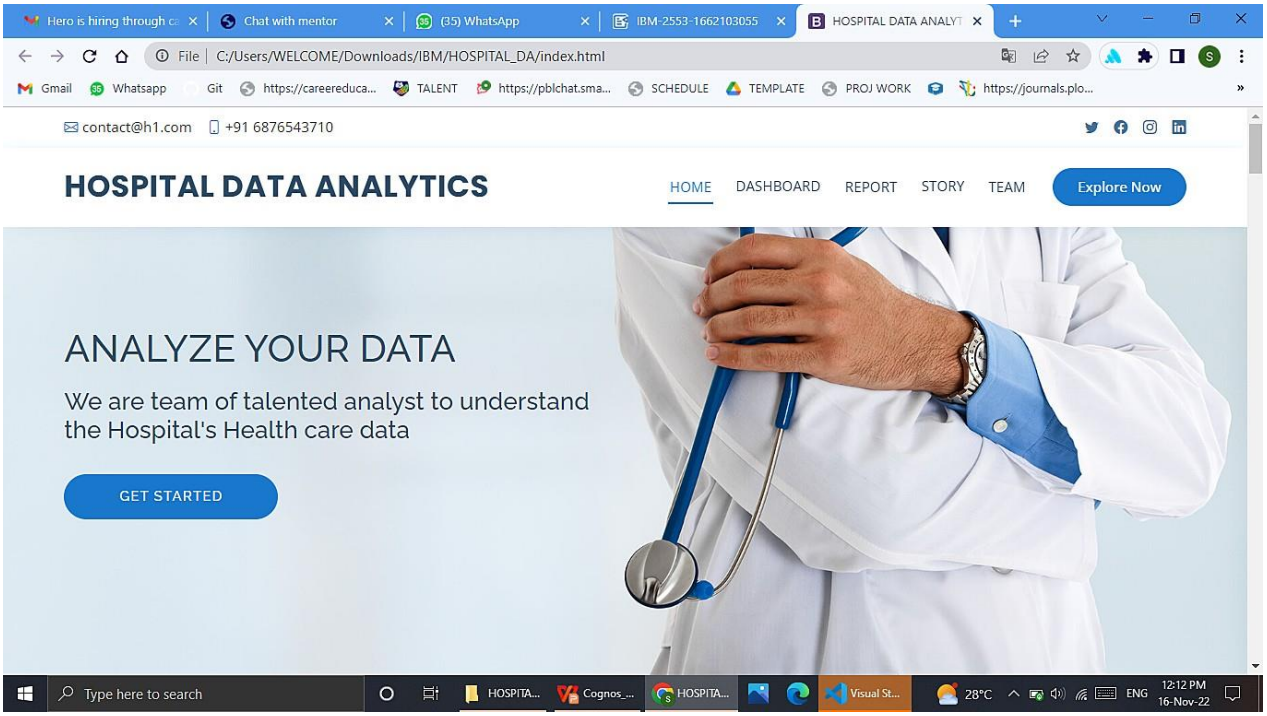
WEB APPLICATION

A web application is a client-server program. It means that it has a client-side and a server-side. The term "client" here refers to the program the individual uses to run the application. It is part of the client-server environment, where many computers share information

Here, We have created web application using HTML, CSS,Javascript,Bootstrap.

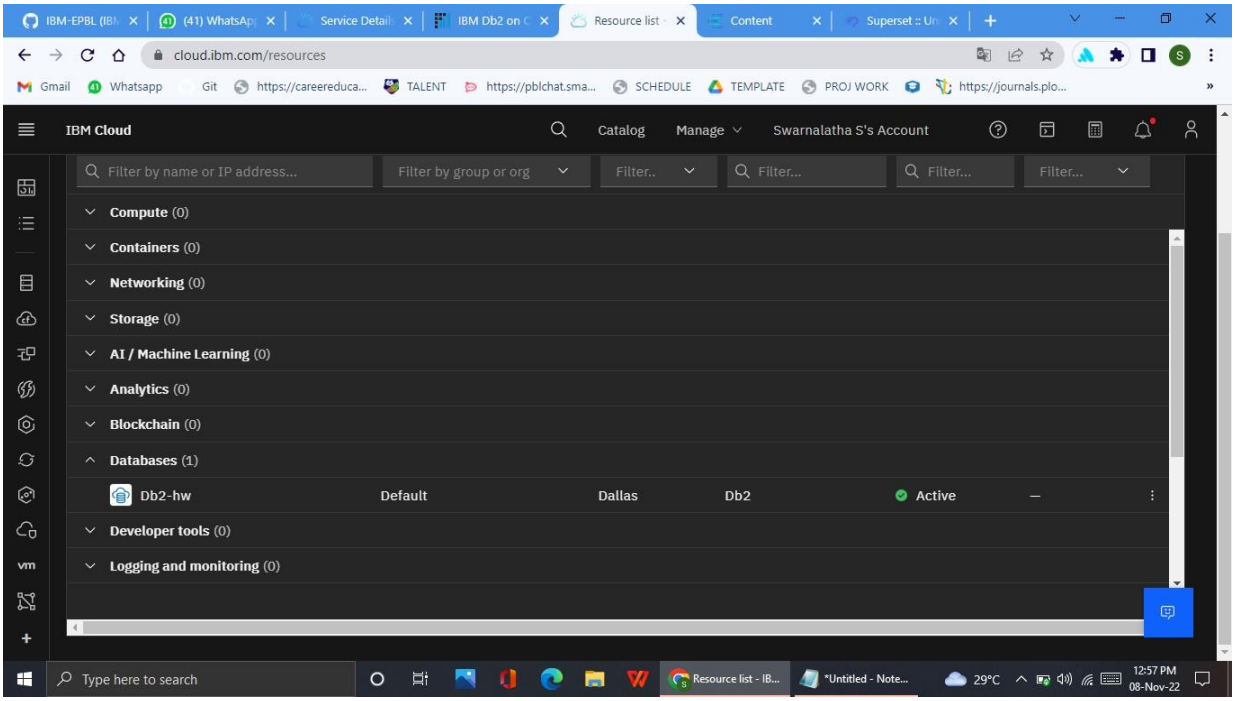
The Website is used to display the dashboard,report,Story.

Website Preview:

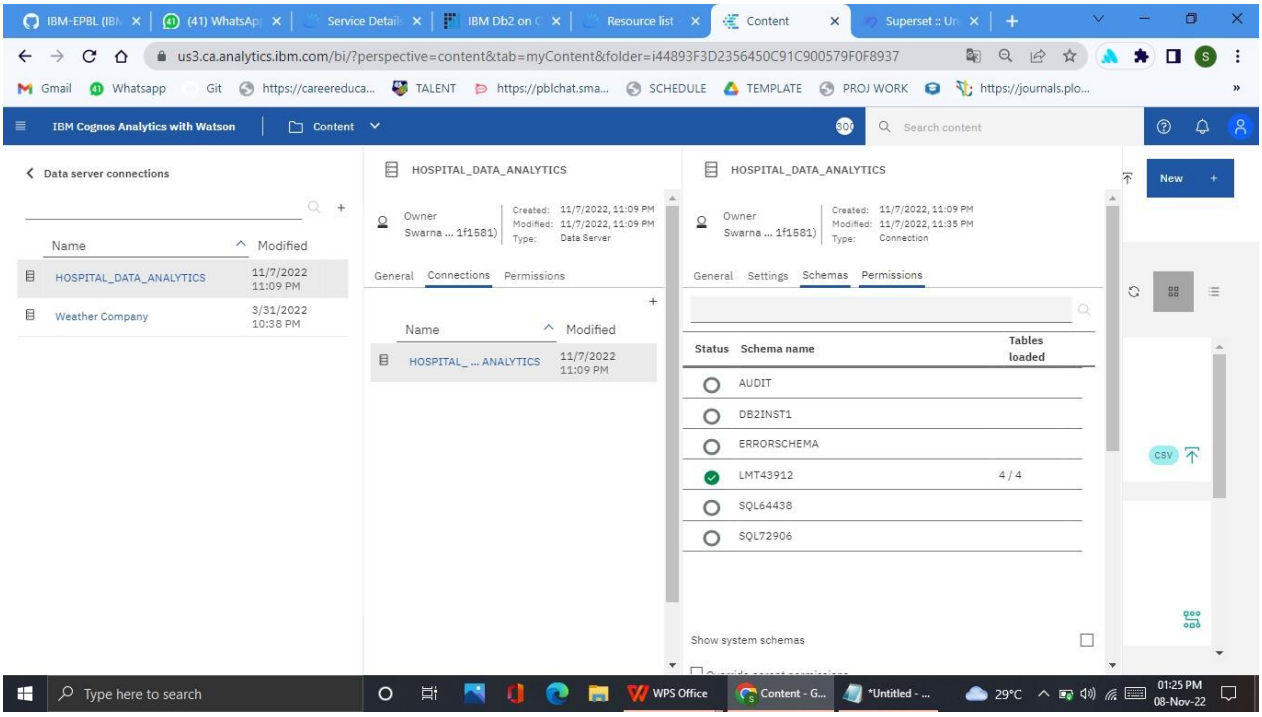


7.3 DATABASE SCHEMA

Schema name : LMT43912



SCHEMA SELECTION



8.TESTING

8.1 Test cases

1.Verify the user is able to get the responsiveness of all the graphs

2.Verify the user get the entire visualization of the dashboard,report,story.

3.Verify the user get the complete interaction with the website

4. Check if the entire dashboard, Report, Story is visible.

5.User can view the story by clicking play button

6.User can view pages in the report.

7. Verify the user is able to access the no of bed based on the region

8. Verify the user is able to access the bed grade with respect to the severity oj illness

9. Verify the user is able to access the parameters based on the length of stay

10. Verify the user is able to compare the department based on the Severity of illness

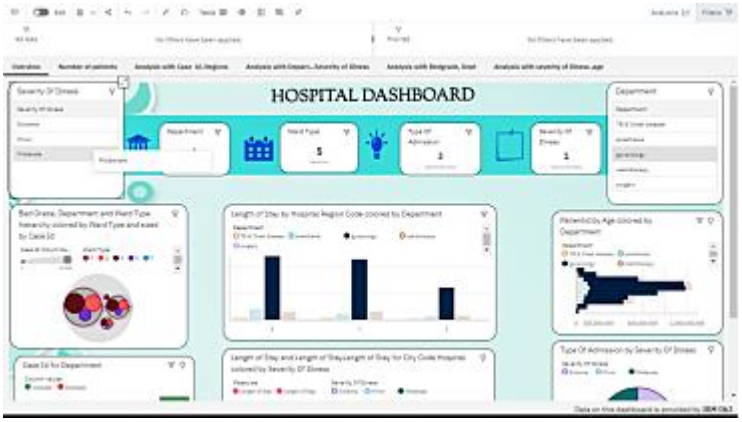
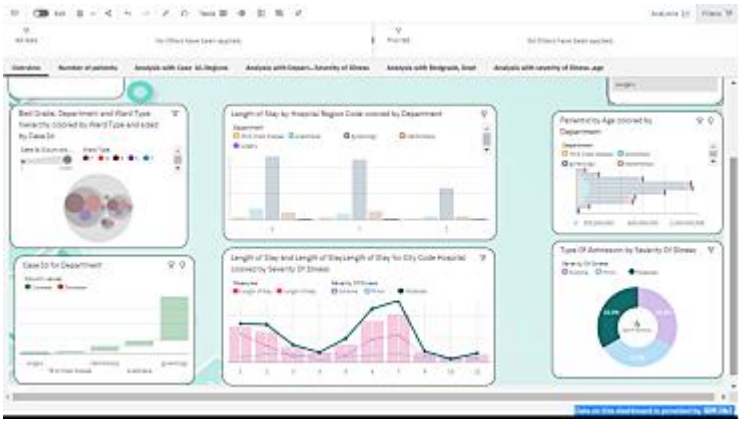
8.2 USER ACCEPTANCE TESTING

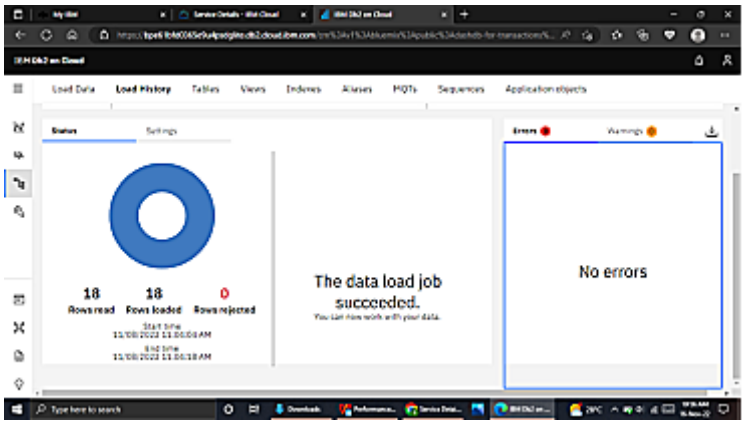
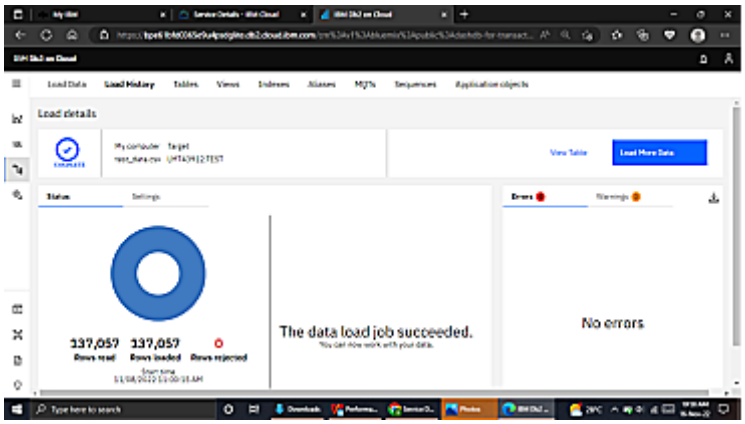
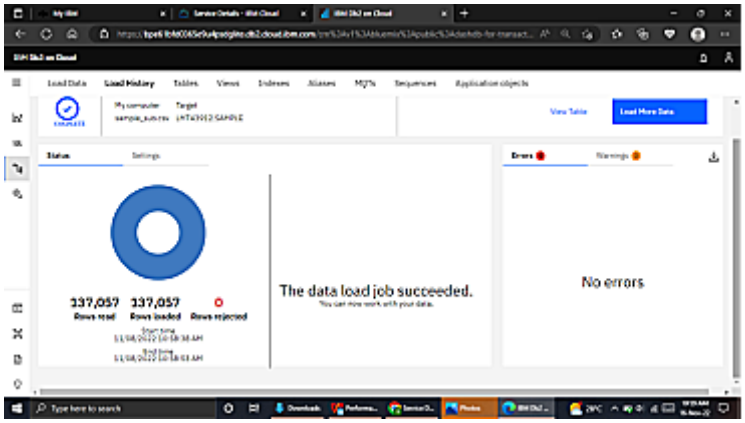
Test case ID	Feature Type	Component	Test Scenario	Actual Result	Status	TC for Automation(Y/N)	BUG ID	Executed By
Uploading the data set in the IBM CLOUD	Functional	IBM CLOUD	Loading of all data	Uploaded Successfully	Pass	Y	-	Swarna
Responsiveness of dashboard	Functional	Dashboard	Compare the departmen t based on the bed grade	Working as expected	Pass	Y	-	Swarna
Design	UI	Dashboard	Compatib le to the website	Working as expected	Pass	Y	-	Samreen

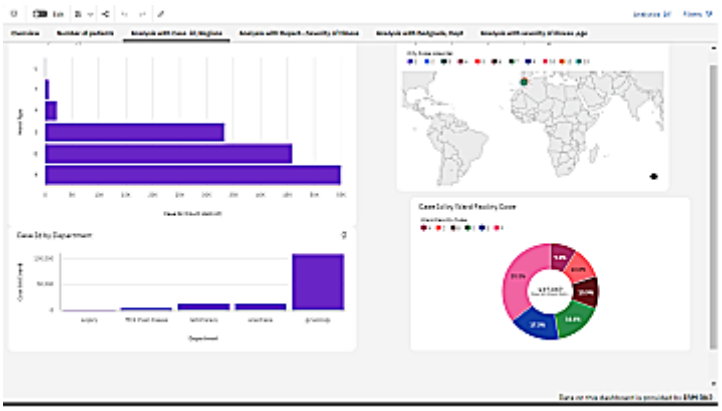
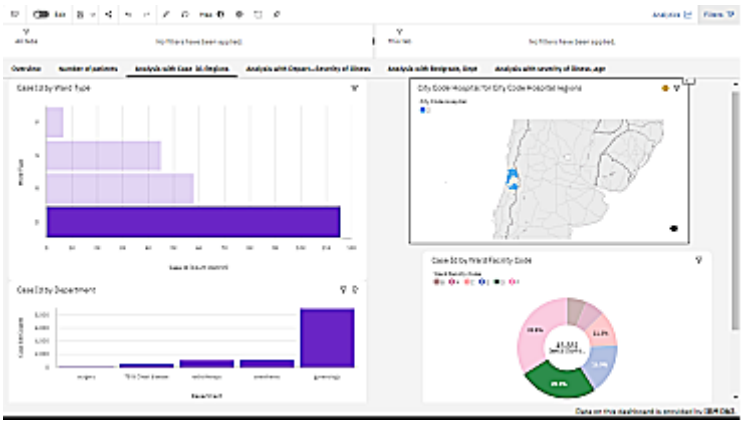
Filter_TC_001	Functional	Dashboard	Verify the working of filter	Not Working as expected	fail	N	BUG-1234	Samreen
Filter_TC_002	Functional	Dashboard	Verify availability of bed based on stay	Working as expected	pass	Y		Pooja
Responsiveness of dashboard	Functional	Dashboard	Verify the user is able to access the bed grade based on the severity of illness	Working as expected	pass	Y		Vineeta
Design	Functional	Story	User can view the story by clicking play button	Working as expected	Pass	Y		Pooja
Design	Functional	Report	User can view pages in the report	Working as expected	Pass	Y		Swarnalatha

9. RESULTS

PERFORMANCE METRICS

S.No.	Parameter	Screenshot / Values
1.	Dashboard design	No of Visulizations / Graphs - 30
2.	Data Responsiveness	 

3.	Amount Data to Rendered (DB2 Metrics)	  

4.	Utilization of Data Filters	Without applying any filter  With Filter 
5.	Effective User Story	No of Scene Added - 6
6.	Descriptive Reports	No of Visulizations / Graphs - 8 Pages - 3

10 .ADVANTAGES AND DISADVANTAGES :

1.Length of stay in hospitals (LOS) is often used as an indicator of efficiency.
2.Early detection of disease.
3.Prevention of unnecessary doctor's visits.
4.Once identified, patients with high LOS risk can have their treatment plan optimized to minimize LOS and lower the chance of staff/visitor infection.
5.Prior knowledge of LOS can aid in logistics such as room and bed allocation planning.
6.More accurate calculation of health insurance rates.
7. More effective sharing of patient data.

DISADVANTAGES:

Man Power

Applying data solutions in healthcare requires special skills, and such kills are scarce. Handling of big data requires the combination of medical, technological and statistical knowledge.

Privacy

One of the major drawbacks in the application of big data in healthcare industry is the issues

11 . CONCLUSION

Data analytics is the science of analysing raw datasets in order to derive a conclusion regarding the information they hold. It enables us to discover patterns in the raw data and draw valuable information from them. To some, the domain of healthcare data analytics may look new, but it has a lot of potential and build a strong data analytics profile in the upcoming years. In this project, The length of stay is visualized based on the various parameters.

Parameter helps hospitals to identify patients of high LOS-risk (patients who will stay longer) at the time of admission. Once identified, patients with high LOS risk can have their treatment plan optimized to minimize LOS and lower the chance of staff/visitor infection. Also, prior knowledge of LOS can aid in logistics such as room and bed allocation planning.

12. FUTURE SCOPE

The Future of Healthcare, Intel provides a foundation for big data platforms and AI to advance health analytics. Predictive data analytics is helping health organizations enhance patient care, improve outcomes, and reduce costs by anticipating when, where, and how care should be provided. The future of big data in healthcare will be determined by technological breakthroughs from 2022 to 2030. Complete patient care and cost-effective prescription procedures are required for population health management. To assess clinical and claims data, they must be combined on the same platform.

Countries around the world have started to invest more capital in medical infrastructure, pharmaceuticals, and healthcare smart analytics solutions. The market is growing and will continue to expand, given the

benefits of healthcare data analytics. It has also risen as a good career option for fresh data science and data analytics graduates or professionals who wish to build their career in the healthcare sector. Due to the sensitivity of the profession, the salary offers for healthcare data analysts are lucrative around the world. Apart from the remuneration, the opportunities to work with some of the biggest names in the healthcare sector is also worth mentioning. Hence, healthcare data analytics is growing to be one of the most rewarding branches of data analytics in the coming future.

This Prediction can be improved high efficiency ,patients with high LOS risk can have their treatment plan optimized to minimize LOS and lower the chance of staff/visitor infection. Also, prior knowledge of LOS can aid in logistics such as room and bed allocation planning.

13 .APPENDIX

13.1 Data Gathering from the external API

```
! pip install -q kaggle
!mkdir ~/.kaggle/ #creating a kaggle directory
!cp kaggle.json ~/.kaggle/ #copying json file to folder
!chmod 600 ~/.kaggle/kaggle.json #changing the permision to json
!kaggle datasets download -d swarnalathas/hospital-data-analytics
!unzip /content/hospital-data-analytics.zip
```

12.2 Website code

The website is developed HTML , CSS, Java Script

HTML FILE

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

<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0" name="viewport">

  <title>HOSPITAL DATA ANALYTICS</title>
  <meta content="" name="description">
  <meta content="" name="keywords">

  <!-- Favicons -->
  <link href="assets/img/favicon.png" rel="icon">
  <link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">

  <!-- Google Fonts -->
  <link
href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i,700,700i|Raleway:300,
300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,300i,400,400i,500,500i,600,600i,700,700i"
rel="stylesheet">

  <!-- Vendor CSS Files -->
  <link href="assets/vendor/fontawesome-free/css/all.min.css" rel="stylesheet">
  <link href="assets/vendor/animate.css/animate.min.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap-icons/bootstrap-icons.css" rel="stylesheet">
  <link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
  <link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
  <link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">
  <link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">

  <!-- Template Main CSS File -->
  <link href="assets/css/style.css" rel="stylesheet">

</head>
```

```
<body>

  <!-- ======= Top Bar ======= -->
  <div id="topbar" class="d-flex align-items-center fixed-top">
    <div class="container d-flex justify-content-between">
      <div class="contact-info d-flex align-items-center">
        <i class="bi bi-envelope"></i> <a href="mailto:abc@example.com">contact@h1.com</a>
        <i class="bi bi-phone"></i> +91 6876543710
      </div>
      <div class="d-none d-lg-flex social-links align-items-center">
        <a href="#" class="twitter"><i class="bi bi-twitter"></i></a>
        <a href="#" class="facebook"><i class="bi bi-facebook"></i></a>
        <a href="#" class="instagram"><i class="bi bi-instagram"></i></a>
        <a href="#" class="linkedin"><i class="bi bi-linkedin"></i></i></a>
      </div>
    </div>
  </div>

  <!-- ======= Header ======= -->
  <header id="header" class="fixed-top">
    <div class="container d-flex align-items-center">

      <h1 class="logo me-auto"><a href="index.html">HOSPITAL DATA ANALYTICS</a></h1>
      <!-- Uncomment below if you prefer to use an image logo -->
      <!-- <a href="index.html" class="logo me-auto"><img src="assets/img/logo.png" alt="" class="img-
fluid"></a>-->

      <nav id="navbar" class="navbar order-last order-lg-0">
        <ul>
          <li><a class="nav-link scrollto active" href="#hero">HOME</a></li>
          <li><a class="nav-link scrollto" href="#about">DASHBOARD</a></li>
          <li><a class="nav-link scrollto" href="#services">REPORT</a></li>
          <li><a class="nav-link scrollto" href="#appointment">STORY</a></li>
          <li><a class="nav-link scrollto" href="#doctors"> TEAM</a></li>
        </ul>

          </li>
                <i class="bi bi-list mobile-nav-toggle"></i>
      </nav><!-- .navbar -->

      <a href="#appointment" class="appointment-btn scrollto"><span class="d-none d-md-
inline">Explore</span> Now</a>
```

```
  </div>
</header><!-- End Header -->

<!-- ======= Hero Section ======= -->
<section id="hero" class="d-flex align-items-center">
  <div class="container">
    <h1>Analyze your Data</h1>
    <h2>We are team of talented analyst to understand <br>the Hospital's Health care data </h2>
    <a href="#about" class="btn-get-started scrollto">Get Started</a>
  </div>
</section><!-- End Hero -->

<main id="main">

  <!-- ======= Why Us Section ======= -->
  <section id="why-us" class="why-us">
    <div class="container">

      <div class="row">
        <div class="col-lg-4 d-flex align-items-stretch">
          <div class="content">
            <h3>Problem Statement</h3>
            <p>
              Patient length of stay is one critical parameter
              to observe and predict if one wants to improve the efficiency
              of the healthcare management in a hospital.

              The parameters helps hospitals to identify patients of high LOS-risk
              (patients who will stay longer) at the time of admission.
              Once identified, patients with high LOS risk can have their treatment
             plan optimized to minimize LOS and lower the chance of staff/visitor infection.

.
            </p>
            <div class="text-center">
              <a href="#" class="more-btn">Learn More <i class="bx bx-chevron-right"></i></a>
            </div>
          </div>
        </div>
        <div class="col-lg-8 d-flex align-items-stretch">
          <div class="icon-boxes d-flex flex-column justify-content-center">
```

```
          <div class="row">
            <div class="col-xl-4 d-flex align-items-stretch">
              <div class="icon-box mt-4 mt-xl-0">
                <i class="bx bx-receipt"></i>
                            <h4>GOAL</h4>
                <p>The goal is to accurately predict the Length of Stay
                  for each patient on case by case basis
                  The length of stay is divided into 11 different
                  classes ranging from 0-10 days to more than 100 days.
                </p>
              </div>
            </div>
            <div class="col-xl-4 d-flex align-items-stretch">
              <div class="icon-box mt-4 mt-xl-0">
                <i class="bx bx-cube-alt"></i>
                <h4>SKILLS REQUIRED</h4>
                <p>Exploratory Data Analysis,IBM Cloud</p>
              </div>
            </div>
            <div class="col-xl-4 d-flex align-items-stretch">
              <div class="icon-box mt-4 mt-xl-0">
                <i class="bx bx-images"></i>
                <h4>ACTIVITIES</h4>
                <p>1.IBM Cloud Account<br>
                  2.Login to Cognos Analytics<br>
                  3.Working with the Dataset<br>
                  4.Understanding the Dataset<br>
                  5. Create multiple analytical Visualizations.<br>
                  6. Using the Analytical Visualizations, build the required Dashboard,Report,
                  Story.<br>
                </p>
              </div>
            </div>
          </div>
        </div><!-- End .content-->
      </div>
    </div>

  </div>
</section><!-- End Why Us Section -->

<!-- ======= About Section ======= -->
```

```
  <section id="about" class="about">

    <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FFINAL%2BPROJ
ECT%2FDASHBOARD&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=e
mbedded&action=view&mode=dashboard&subView=model00000184572ff23e_00000000" width="1360"
height="900" frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>

  </section><!-- End About Section -->

  <! ----Services Section ======= -->
  <section id="services" class="services">
    <div class="container">

      <div class="section-title">
        <h2>REPORT</h2>
      </div>
      <iframe
src="https://us3.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FFINAL%2BPROJECT%2FFINAL%2BRE
PORT%2B1&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&ac
tion=run&format=HTML&prompt=false" width="1350" height="700" frameborder="0" gesture="media"
allow="encrypted-media" allowfullscreen=""></iframe>
  </section><!-- End Services Sectio////n -->

  <!-- ======= Appointment Section ======= -->
  <section id ="appointment">
    <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2FFINAL%2BPROJECT
%2FFINAL_STORY&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embe
dded&action=view&sceneId=model000001846ef56634_00000000&sceneTime=0" width="1360"
height="900" frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
  </section>
  <!-- End Appointment Section -->

  <!-- ======= Departments Section ======= -->
  <section id="departments" class="departments">
    <div class="container">

      <div class="section-title">
        <h2>HOSPITAL HEALTH CARE</h2>
        <p>Data analytics in the healthcare industry represents the automation of collection, processing, and
analysis the
```

```
        complex healthcare data, to gain better insights and enable healthcare practitioners to make well-informed decisions</p>
      </div>

      <div class="row gy-4">
        <div class="col-lg-3">
          <ul class="nav nav-tabs flex-column">
            <li class="nav-item">
              <a class="nav-link active show" data-bs-toggle="tab" href="#tab-1">Data Collection</a>
            </li>
            <li class="nav-item">
              <a class="nav-link" data-bs-toggle="tab" href="#tab-2">Visualizations</a>
            </li>
            <li class="nav-item">
              <a class="nav-link" data-bs-toggle="tab" href="#tab-3">Dashboard</a>
            </li>
            <li class="nav-item">
              <a class="nav-link" data-bs-toggle="tab" href="#tab-4">Report</a>
            </li>
            <li class="nav-item">
              <a class="nav-link" data-bs-toggle="tab" href="#tab-5">Story</a>
            </li>
          </ul>
        </div>
        <div class="col-lg-9">
          <div class="tab-content">
            <div class="tab-pane active show" id="tab-1">
              <div class="row gy-4">
                <div class="col-lg-8 details order-2 order-lg-1">
                  <h3>Data Collection</h3>
                  <p class="fst-italic">The impact COVID-19 has had on the health care industry is evident to anyone and everyone.With digital data collection, there is more and more health care data to be analyzed every second. </p>
                    <p>Collecting healthcare data is the systematic collection, analysis, and interpretation of health information. Data is essential for action planning, implementation, and evaluation of public health practice. Data is beneficial for doctors or analysts who study statistics or attempt to discover more effective treatments.</p>
                </div>
                <div class="col-lg-4 text-center order-1 order-lg-2">
                  <img src="assets/img/qw/1..jpg" alt="" class="img-fluid">
                </div>
              </div>
            </div>
```

```
<div class="tab-pane" id="tab-2">
  <div class="row gy-4">
    <div class="col-lg-8 details order-2 order-lg-1">
      <h3>Data Visualization</h3>
      <p class="fst-italic">Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data. Additionally, it provides an excellent way
        for employees or business owners to present data to non-technical audiences without confusion.</p>
    </div>
    <div class="col-lg-4 text-center order-1 order-lg-2">
      <img src="assets/img/qw/2.jpg" alt="" class="img-fluid">
    </div>
  </div>
</div>
<div class="tab-pane" id="tab-3">
  <div class="row gy-4">
    <div class="Dashboard">
      <h3>Dashboard</h3>

      <p>A dashboard for data analytics is a tool used to multi-task, organize, visualize, analyze, and track data. The overall purpose of a data analytics dashboard is to make it easier for data analysts, decision makers, and average users to understand their data, gain deeper insights, and make better data-driven decisions.</p>
    </div>
    <div class="col-lg-4 text-center order-1 order-lg-2">
      <img src="assets/img/qw/3.png" alt="" class="img-fluid">
    </div>
  </div>
</div>
<div class="tab-pane" id="tab-4">
  <div class="row gy-4">
    <div class="col-lg-8 details order-2 order-lg-1">
      <h3>Report</h3>
        <p>A data analysis report is a type of business report in which you present quantitative and qualitative data to evaluate your strategies and performance. Based on this data, you give recommendations for further steps and business decisions while using the data as evidence that backs up your evaluation.</p>
    </div>
    <div class="col-lg-4 text-center order-1 order-lg-2">
      <img src="assets/img/qw/4.jpg" alt="" class="img-fluid">
    </div>
  </div>
```

```
            </div>
            <div class="tab-pane" id="tab-5">
              <div class="row gy-4">
                <div class="col-lg-8 details order-2 order-lg-1">
                  <h3>STORY</h3>

                  <p>Data storytelling is the ability to effectively communicate insights from a dataset using narratives and visualizations. It can be used to put data insights into context for and inspire action from your audience</p>
                </div>
                <div class="col-lg-4 text-center order-1 order-lg-2">
                  <img src="assets/img/qw/5.png" alt="" class="img-fluid">
                </div>
              </div>
            </div>
          </div>
        </div>
      </div>

    </div>
  </section><!-- End Departments Section -->

  <!-- ======= Doctors Section ======= -->
  <section id="doctors" class="doctors">
    <div class="container">

      <div class="section-title">
        <h2>TEAM </h2>
        </div>

      <div class="row">

        <div class="col-lg-6">
          <div class="member d-flex align-items-start">
            <div class="pic"><img src="assets/img/doctors/215_PHOTO.jpeg" class="img-fluid" alt=""></div>
            <div class="member-info">
              <h4>SWARNALATHA S</h4>
              <span>TEAM LEAD</span>

              <div class="social">
                <a href=""><i class="ri-twitter-fill"></i></a>
                <a href=""><i class="ri-facebook-fill"></i></a>
```

```
        <a href=""><i class="ri-instagram-fill"></i></a>
        <a href=""> <i class="ri-linkedin-box-fill"></i> </a>
      </div>
    </div>
  </div>
</div>

<div class="col-lg-6 mt-4 mt-lg-0">
  <div class="member d-flex align-items-start">
    <div class="pic"><img src="assets/img/doctors/3.jpeg" class="img-fluid" alt=""></div>
    <div class="member-info">
      <h4>SADAR SOGHRA SAMREEN</h4>
      <span>TEAM MEMBER 1</span>

      <div class="social">
        <a href=""><i class="ri-twitter-fill"></i></a>
        <a href=""><i class="ri-facebook-fill"></i></a>
        <a href=""><i class="ri-instagram-fill"></i></a>
        <a href=""> <i class="ri-linkedin-box-fill"></i> </a>
      </div>
    </div>
  </div>
</div>

<div class="col-lg-6 mt-4">
  <div class="member d-flex align-items-start">
    <div class="pic"><img src="assets/img/doctors/1.jpg" class="img-fluid" alt=""></div>
    <div class="member-info">
      <h4>POOJA K</h4>
      <span>TEAM MEMBER 2</span>

      <div class="social">
        <a href=""><i class="ri-twitter-fill"></i></a>
        <a href=""><i class="ri-facebook-fill"></i></a>
        <a href=""><i class="ri-instagram-fill"></i></a>
        <a href=""> <i class="ri-linkedin-box-fill"></i> </a>
      </div>
    </div>
  </div>
</div>

<div class="col-lg-6 mt-4">
```

```
          <div class="member d-flex align-items-start">
            <div class="pic"><img src="assets/img/doctors/67.jpg" class="img-fluid" alt=""></div>
            <div class="member-info">
              <h4>VINEETA M.R</h4>
              <span>TEAM MEMBER 3</span>

              <div class="social">
                <a href=""><i class="ri-twitter-fill"></i></a>
                <a href=""><i class="ri-facebook-fill"></i></a>
                <a href=""><i class="ri-instagram-fill"></i></a>
                <a href=""> <i class="ri-linkedin-box-fill"></i> </a>
              </div>
            </div>
          </div>
        </div>

      </div>

    </div>
  </section><!-- End Doctors Section -->

<!-- ======= Footer ======= -->
<footer id="footer">

  <div class="footer-top">
    <div class="container">
      <div class="row">

        <div class="col-lg-3 col-md-6 footer-contact">
          <h3>Data Analytics</h3>

            <strong>Phone:</strong> +1 5589 55488 55<br>
            <strong>Email:</strong> info@example.com<br>
          </p>
        </div>

        <div class="col-lg-2 col-md-6 footer-links">
          <h4>Useful Links</h4>
          <ul>
            <li><i class="bx bx-chevron-right"></i> <a href="#">Home</a></li>
            <li><i class="bx bx-chevron-right"></i> <a href="#">Dashboard</a></li>
            <li><i class="bx bx-chevron-right"></i> <a href="#">Report</a></li>
```

```
          <li><i class="bx bx-chevron-right"></i> <a href="#">Story</a></li>
          <li><i class="bx bx-chevron-right"></i> <a href="#">Team</a></li>
        </ul>
      </div>
</div>
  </div>
 </div>

 <div class="container d-md-flex py-4">

  <div class="me-md-auto text-center text-md-start">
   <div class="copyright">
    © Copyright <strong><span>Hospital's Health Care Data</span></strong>. All Rights Reserved
   </div>
   <div class="credits">

    Designed by SWARNALATHA S
   </div>
  </div>
  <div class="social-links text-center text-md-right pt-3 pt-md-0">
   <a href="#" class="twitter"><i class="bx bxl-twitter"></i></a>
   <a href="#" class="facebook"><i class="bx bxl-facebook"></i></a>
   <a href="#" class="Github"><i class="bx bxl-instagram"></i></a>
   <a href="#" class="google-plus"><i class="bx bxl-skype"></i></a>
   <a href="#" class="linkedin"><i class="bx bxl-linkedin"></i></a>
  </div>
 </div>
</footer><!-- End Footer -->

<div id="preloader"></div>
<a href="#" class="back-to-top d-flex align-items-center justify-content-center"><i class="bi bi-arrow-up-short"></i></a>

<!-- Vendor JS Files -->
<script src="assets/vendor/purecounter/purecounter_vanilla.js"></script>
<script src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="assets/vendor/php-email-form/validate.js"></script>

<!-- Template Main JS File -->
<script src="assets/js/main.js"></script>
```

```
</body>

</html>
```

CSS FILE :

```
/*----------------------------------------------------------
# General
----------------------------------------------------------*/
body {
  font-family: "Open Sans", sans-serif;
  color: #444444;
}

a {
  color: #1977cc;
  text-decoration: none;
}

a:hover {
  color: #3291e6;
  text-decoration: none;
}

h1,
h2,
h3,
h4,
h5,
h6 {
  font-family: "Raleway", sans-serif;
}

/*----------------------------------------------------------
# Preloader
----------------------------------------------------------*/
#preloader {
  position: fixed;
  top: 0;
```

```
  left: 0;
  right: 0;
  bottom: 0;
  z-index: 9999;
  overflow: hidden;
  background: #fff;
}

#preloader:before {
  content: "";
  position: fixed;
  top: calc(50% - 30px);
  left: calc(50% - 30px);
  border: 6px solid #1977cc;
  border-top-color: #d1e6f9;
  border-radius: 50%;
  width: 60px;
  height: 60px;
  -webkit-animation: animate-preloader 1s linear infinite;
  animation: animate-preloader 1s linear infinite;
}

@-webkit-keyframes animate-preloader {
  0% {
    transform: rotate(0deg);
  }

  100% {
    transform: rotate(360deg);
  }
}

@keyframes animate-preloader {
  0% {
    transform: rotate(0deg);
  }

  100% {
    transform: rotate(360deg);
  }
}
```

```
/*--------------------------------------------------------------
# Back to top button
--------------------------------------------------------------*/
.back-to-top {
  position: fixed;
  visibility: hidden;
  opacity: 0;
  right: 15px;
  bottom: 15px;
  z-index: 996;
  background: #1977cc;
  width: 40px;
  height: 40px;
  border-radius: 4px;
  transition: all 0.4s;
}

.back-to-top i {
  font-size: 28px;
  color: #fff;
  line-height: 0;
}

.back-to-top:hover {
  background: #298ce5;
  color: #fff;
}

.back-to-top.active {
  visibility: visible;
  opacity: 1;
}

.datepicker-dropdown {
  padding: 20px !important;
}

/*--------------------------------------------------------------
# Top Bar
--------------------------------------------------------------*/
#topbar {
  background: #fff;
```

```
  height: 40px;
  font-size: 14px;
  transition: all 0.5s;
  z-index: 996;
}

#topbar.topbar-scrolled {
  top: -40px;
}

#topbar .contact-info a {
  line-height: 1;
  color: #444444;
  transition: 0.3s;
}

#topbar .contact-info a:hover {
  color: #1977cc;
}

#topbar .contact-info i {
  color: #1977cc;
  padding-right: 4px;
  margin-left: 15px;
  line-height: 0;
}

#topbar .contact-info i:first-child {
  margin-left: 0;
}

#topbar .social-links a {
  color: #437099;
  padding-left: 15px;
  display: inline-block;
  line-height: 1px;
  transition: 0.3s;
}

#topbar .social-links a:hover {
  color: #1977cc;
}
```

```
#topbar .social-links a:first-child {
  border-left: 0;
}

/*--------------------------------------------------------------
# Header
--------------------------------------------------------------*/
#header {
  background: #fff;
  transition: all 0.5s;
  z-index: 997;
  padding: 15px 0;
  top: 40px;
  box-shadow: 0px 2px 15px rgba(25, 119, 204, 0.1);
}

#header.header-scrolled {
  top: 0;
}

#header .logo {
  font-size: 30px;
  margin: 0;
  padding: 0;
  line-height: 1;
  font-weight: 700;
  letter-spacing: 0.5px;
  font-family: "Poppins", sans-serif;
}

#header .logo a {
  color: #2c4964;
}

#header .logo img {
  max-height: 40px;
}

/**
* Appointment Button *
*/
```

```
.appointment-btn {
  margin-left: 25px;
  background: #1977cc;
  color: #fff;
  border-radius: 50px;
  padding: 8px 25px;
  white-space: nowrap;
  transition: 0.3s;
  font-size: 14px;
  display: inline-block;
}

.appointment-btn:hover {
  background: #166ab5;
  color: #fff;
}

@media (max-width: 768px) {
  .appointment-btn {
    margin: 0 15px 0 0;
    padding: 6px 18px;
  }
}

/*--------------------------------------------------------------
# Navigation Menu
--------------------------------------------------------------*/
/**
* Desktop Navigation
*/
.navbar {
  padding: 0;
}

.navbar ul {
  margin: 0;
  padding: 0;
  display: flex;
  list-style: none;
  align-items: center;
}
```

```
.navbar li {
  position: relative;
}

.navbar>ul>li {
  position: relative;
  white-space: nowrap;
  padding: 8px 0 8px 20px;
}

.navbar a,
.navbar a:focus {
  display: flex;
  align-items: center;
  justify-content: space-between;
  font-size: 14px;
  color: #2c4964;
  white-space: nowrap;
  transition: 0.3s;
  border-bottom: 2px solid #fff;
  padding: 5px 2px;
}

.navbar a i,
.navbar a:focus i {
  font-size: 12px;
  line-height: 0;
  margin-left: 5px;
}

.navbar a:hover,
.navbar .active,
.navbar .active:focus,
.navbar li:hover>a {
  color: #1977cc;
  border-color: #1977cc;
}

.navbar .dropdown ul {
  display: block;
  position: absolute;
  left: 20px;
```

```
  top: calc(100% + 30px);
  margin: 0;
  padding: 10px 0;
  z-index: 99;
  opacity: 0;
  visibility: hidden;
  background: #fff;
  box-shadow: 0px 0px 30px rgba(127, 137, 161, 0.25);
  transition: 0.3s;
}

.navbar .dropdown ul li {
  min-width: 200px;
}

.navbar .dropdown ul a {
  padding: 10px 20px;
  font-size: 14px;
  font-weight: 500;
  text-transform: none;
  color: #082744;
  border: none;
}

.navbar .dropdown ul a i {
  font-size: 12px;
}

.navbar .dropdown ul a:hover,
.navbar .dropdown ul .active:hover,
.navbar .dropdown ul li:hover>a {
  color: #1977cc;
}

.navbar .dropdown:hover>ul {
  opacity: 1;
  top: 100%;
  visibility: visible;
}

.navbar .dropdown .dropdown ul {
  top: 0;
```

```
  left: calc(100% - 30px);
  visibility: hidden;
}

.navbar .dropdown .dropdown:hover>ul {
  opacity: 1;
  top: 0;
  left: 100%;
  visibility: visible;
}

@media (max-width: 1366px) {
  .navbar .dropdown .dropdown ul {
    left: -90%;
  }

  .navbar .dropdown .dropdown:hover>ul {
    left: -100%;
  }
}

/**
* Mobile Navigation
*/
.mobile-nav-toggle {
  color: #2c4964;
  font-size: 28px;
  cursor: pointer;
  display: none;
  line-height: 0;
  transition: 0.5s;
}

.mobile-nav-toggle.bi-x {
  color: #fff;
}

@media (max-width: 991px) {
  .mobile-nav-toggle {
    display: block;
  }
```

```
  .navbar ul {
    display: none;
  }
}

.navbar-mobile {
  position: fixed;
  overflow: hidden;
  top: 0;
  right: 0;
  left: 0;
  bottom: 0;
  background: rgba(28, 47, 65, 0.9);
  transition: 0.3s;
  z-index: 999;
}

.navbar-mobile .mobile-nav-toggle {
  position: absolute;
  top: 15px;
  right: 15px;
}

.navbar-mobile ul {
  display: block;
  position: absolute;
  top: 55px;
  right: 15px;
  bottom: 15px;
  left: 15px;
  padding: 10px 0;
  background-color: #fff;
  overflow-y: auto;
  transition: 0.3s;
}

.navbar-mobile>ul>li {
  padding: 0;
}

.navbar-mobile a,
.navbar-mobile a:focus {
```

```
  padding: 10px 20px;
  font-size: 15px;
  color: #2c4964;
  border: none;
}

.navbar-mobile a:hover,
.navbar-mobile .active,
.navbar-mobile li:hover>a {
  color: #1977cc;
}

.navbar-mobile .getstarted,
.navbar-mobile .getstarted:focus {
  margin: 15px;
}

.navbar-mobile .dropdown ul {
  position: static;
  display: none;
  margin: 10px 20px;
  padding: 10px 0;
  z-index: 99;
  opacity: 1;
  visibility: visible;
  background: #fff;
  box-shadow: 0px 0px 30px rgba(127, 137, 161, 0.25);
}

.navbar-mobile .dropdown ul li {
  min-width: 200px;
}

.navbar-mobile .dropdown ul a {
  padding: 10px 20px;
}

.navbar-mobile .dropdown ul a i {
  font-size: 12px;
}

.navbar-mobile .dropdown ul a:hover,
```

```
.navbar-mobile .dropdown ul .active:hover,
.navbar-mobile .dropdown ul li:hover>a {
  color: #1977cc;
}

.navbar-mobile .dropdown>.dropdown-active {
  display: block;
}

/*--------------------------------------------------------------
# Hero Section
--------------------------------------------------------------*/
#hero {
  width: 100%;
  height: 90vh;
  background: url("../img/hero-bg.jpg") top center;
  background-size: cover;
  margin-bottom: -10px;
}

#hero .container {
  position: relative;
}

#hero h1 {
  margin: 0;
  font-size: 38px;
  font-weight: 500;
  line-height: 56px;
  text-transform: uppercase;
  color: #2c4964;
}

#hero h2 {
  color: #2c4964;
  margin: 10px 0 0 0;
  font-size: 24px;
}

#hero .btn-get-started {
  font-family: "Raleway", sans-serif;
  text-transform: uppercase;
```

```
  font-weight: 500;
  font-size: 14px;
  letter-spacing: 1px;
  display: inline-block;
  padding: 12px 55px;
  margin-top: 30px;
  border-radius: 50px;
  transition: 0.5s;
  color: #fff;
  background: #1977cc;
}

#hero .btn-get-started:hover {
  background: #3291e6;
}

@media (min-width: 1024px) {
  #hero {
    background-attachment: fixed;
  }
}

@media (max-width: 992px) {
  #hero {
    margin-bottom: 0;
    height: 100vh;
  }

  #hero .container {
    padding-bottom: 63px;
  }

  #hero h1 {
    font-size: 28px;
    line-height: 36px;
  }

  #hero h2 {
    font-size: 18px;
    line-height: 24px;
    margin-bottom: 30px;
  }
```

```
}

@media (max-height: 600px) {
  #hero {
    height: 110vh;
  }
}

/*--------------------------------------------------------------
# Sections General
--------------------------------------------------------------*/
section {
  padding: 60px 0;
  overflow: hidden;
}

.section-bg {
  background-color: #f1f7fd;
}

.section-title {
  text-align: center;
  padding-bottom: 30px;
}

.section-title h2 {
  font-size: 32px;
  font-weight: bold;
  margin-bottom: 20px;
  padding-bottom: 20px;
  position: relative;
  color: #2c4964;
}

.section-title h2::before {
  content: "";
  position: absolute;
  display: block;
  width: 120px;
  height: 1px;
  background: #ddd;
  bottom: 1px;
```

```
  left: calc(50% - 60px);
}

.section-title h2::after {
  content: "";
  position: absolute;
  display: block;
  width: 40px;
  height: 3px;
  background: #1977cc;
  bottom: 0;
  left: calc(50% - 20px);
}

.section-title p {
  margin-bottom: 0;
}

/*--------------------------------------------------------------
# Breadcrumbs
--------------------------------------------------------------*/
.breadcrumbs {
  padding: 20px 0;
  background-color: #f1f7fd;
  min-height: 40px;
  margin-top: 120px;
}

@media (max-width: 992px) {
  .breadcrumbs {
    margin-top: 100px;
  }
}

.breadcrumbs h2 {
  font-size: 24px;
  font-weight: 300;
  margin: 0;
}

@media (max-width: 992px) {
  .breadcrumbs h2 {
```

```
    margin: 0 0 10px 0;
  }
}

.breadcrumbs ol {
  display: flex;
  flex-wrap: wrap;
  list-style: none;
  padding: 0;
  margin: 0;
  font-size: 14px;
}

.breadcrumbs ol li+li {
  padding-left: 10px;
}

.breadcrumbs ol li+li::before {
  display: inline-block;
  padding-right: 10px;
  color: #6c757d;
  content: "/";
}

@media (max-width: 768px) {
  .breadcrumbs .d-flex {
    display: block !important;
  }

  .breadcrumbs ol {
    display: block;
  }

  .breadcrumbs ol li {
    display: inline-block;
  }
}

/*--------------------------------------------------------------
# Why Us
--------------------------------------------------------------*/
.why-us .content {
```

```
  padding: 10px;
  background: #1977cc;
  border-radius: 4px;
  color: #fff;
}

.why-us .content h3 {
  font-weight: 700;
  font-size: 34px;
  margin-bottom: 30px;
}

.why-us .content p {
  margin-bottom: 30px;
}

.why-us .content .more-btn {
  display: inline-block;
  background: rgba(255, 255, 255, 0.2);
  padding: 6px 30px 8px 30px;
  color: #fff;
  border-radius: 50px;
  transition: all ease-in-out 0.4s;
}

.why-us .content .more-btn i {
  font-size: 14px;
}

.why-us .content .more-btn:hover {
  color: #1977cc;
  background: #fff;
}

.why-us .icon-boxes .icon-box {
  text-align: center;
  border-radius: 10px;
  background: #fff;
  box-shadow: 0px 2px 15px rgba(0, 0, 0, 0.1);
  padding: 10px 30px;
  width: 100%;
}
```

```
.why-us .icon-boxes .icon-box i {
  font-size: 40px;
  color: #1977cc;
  margin-bottom: 30px;
}

.why-us .icon-boxes .icon-box h4 {
  font-size: 20px;
  font-weight: 700;
  margin: 0 0 30px 0;
}

.why-us .icon-boxes .icon-box p {
  font-size: 15px;
  color: #848484;
}

*----------------------------------------------------------
# Services
----------------------------------------------------------*/
.services .icon-box {
  text-align: center;
  border: 1px solid #d5e1ed;
  padding: 80px 20px;
  transition: all ease-in-out 0.3s;
}

.services .icon-box .icon {
  margin: 0 auto;
  width: 64px;
  height: 64px;
  background: #1977cc;
  border-radius: 5px;
  transition: all 0.3s ease-out 0s;
  display: flex;
  align-items: center;
  justify-content: center;
  margin-bottom: 20px;
  transform-style: preserve-3d;
}
```

```
.services .icon-box .icon i {
  color: #fff;
  font-size: 28px;
}

.services .icon-box .icon::before {
  position: absolute;
  content: "";
  left: -8px;
  top: -8px;
  height: 100%;
  width: 100%;
  background: #badaf7;
  border-radius: 5px;
  transition: all 0.3s ease-out 0s;
  transform: translateZ(-1px);
}

.services .icon-box h4 {
  font-weight: 700;
  margin-bottom: 15px;
  font-size: 24px;
}

.services .icon-box h4 a {
  color: #2c4964;
}

.services .icon-box p {
  line-height: 24px;
  font-size: 14px;
  margin-bottom: 0;
}

.services .icon-box:hover {
  background: #1977cc;
  border-color: #1977cc;
}

.services .icon-box:hover .icon {
  background: #fff;
}
```

```
.services .icon-box:hover .icon i {
  color: #1977cc;
}

.services .icon-box:hover .icon::before {
  background: #3291e6;
}

.services .icon-box:hover h4 a,
.services .icon-box:hover p {
  color: #fff;
}

/*--------------------------------------------------------------
# Departments
--------------------------------------------------------------*/
.departments {
  overflow: hidden;
}

.departments .nav-tabs {
  border: 0;
}

.departments .nav-link {
  border: 0;
  padding: 12px 15px 12px 0;
  transition: 0.3s;
  color: #2c4964;
  border-radius: 0;
  border-right: 2px solid #ebf1f6;
  font-weight: 600;
  font-size: 15px;
}

.departments .nav-link:hover {
  color: #1977cc;
}

.departments .nav-link.active {
  color: #1977cc;
```

```
  border-color: #1977cc;
}

.departments .tab-pane.active {
  -webkit-animation: fadeIn 0.5s ease-out;
  animation: fadeIn 0.5s ease-out;
}

.departments .details h3 {
  font-size: 26px;
  font-weight: 600;
  margin-bottom: 20px;
  color: #2c4964;
}

.departments .details p {
  color: #777777;
}

.departments .details p:last-child {
  margin-bottom: 0;
}

@media (max-width: 992px) {
  .departments .nav-link {
    border: 0;
    padding: 15px;
  }

  .departments .nav-link.active {
    color: #fff;
    background: #1977cc;
  }
}

/*--------------------------------------------------------------
# Doctors
--------------------------------------------------------------*/
.doctors {
  background: #fff;
}
```

```
.doctors .member {
  position: relative;
  box-shadow: 0px 2px 15px rgba(44, 73, 100, 0.08);
  padding: 30px;
  border-radius: 10px;
}

.doctors .member .pic {
  overflow: hidden;
  width: 190px;
  border-radius: 50%;
}

.doctors .member .pic img {
  transition: ease-in-out 0.3s;
}

.doctors .member:hover img {
  transform: scale(1.1);
}

.doctors .member .member-info {
  padding-left: 30px;
}

.doctors .member h4 {
  font-weight: 700;
  margin-bottom: 5px;
  font-size: 20px;
  color: #2c4964;
}

.doctors .member span {
  display: block;
  font-size: 15px;
  padding-bottom: 10px;
  position: relative;
  font-weight: 500;
}

.doctors .member span::after {
  content: "";
```

```
  position: absolute;
  display: block;
  width: 50px;
  height: 1px;
  background: #b2c8dd;
  bottom: 0;
  left: 0;
}

.doctors .member p {
  margin: 10px 0 0 0;
  font-size: 14px;
}

.doctors .member .social {
  margin-top: 12px;
  display: flex;
  align-items: center;
  justify-content: flex-start;
}

.doctors .member .social a {
  transition: ease-in-out 0.3s;
  display: flex;
  align-items: center;
  justify-content: center;
  border-radius: 50px;
  width: 32px;
  height: 32px;
  background: #a0bcd5;
}

.doctors .member .social a i {
  color: #fff;
  font-size: 16px;
  margin: 0 2px;
}

.doctors .member .social a:hover {
  background: #1977cc;
}
```

```
.doctors .member .social a+a {
  margin-left: 8px;
}

/*--------------------------------

/*------------------------------------------------------------

/*------------------------------------------------------------
# Contact
------------------------------------------------------------*/
.contact .info {
  width: 100%;
  background: #fff;
}

.contact .info i {
  font-size: 20px;
  color: #1977cc;
  float: left;
  width: 44px;
  height: 44px;
  background: #d6e9fa;
  display: flex;
  justify-content: center;
  align-items: center;
  border-radius: 50px;
  transition: all 0.3s ease-in-out;
}

.contact .info h4 {
  padding: 0 0 0 60px;
  font-size: 22px;
  font-weight: 600;
  margin-bottom: 5px;
  color: #2c4964;
}

.contact .info p {
  padding: 0 0 0 60px;
  margin-bottom: 0;
  font-size: 14px;
```

```
  color: #4b7dab;
}

.contact .info .email,
.contact .info .phone {
  margin-top: 40px;
}

.contact .info .email:hover i,
.contact .info .address:hover i,
.contact .info .phone:hover i {
  background: #1977cc;
  color: #fff;
}

.contact .php-email-form {
  width: 100%;
  background: #fff;
}

.contact .php-email-form .form-group {
  padding-bottom: 8px;
}

.contact .php-email-form .error-message {
  display: none;
  color: #fff;
  background: #ed3c0d;
  text-align: left;
  padding: 15px;
  font-weight: 600;
}

.contact .php-email-form .error-message br+br {
  margin-top: 25px;
}

.contact .php-email-form .sent-message {
  display: none;
  color: #fff;
  background: #18d26e;
  text-align: center;
```

```
  padding: 15px;
  font-weight: 600;
}

.contact .php-email-form .loading {
  display: none;
  background: #fff;
  text-align: center;
  padding: 15px;
}

.contact .php-email-form .loading:before {
  content: "";
  display: inline-block;
  border-radius: 50%;
  width: 24px;
  height: 24px;
  margin: 0 10px -6px 0;
  border: 3px solid #18d26e;
  border-top-color: #eee;
  -webkit-animation: animate-loading 1s linear infinite;
  animation: animate-loading 1s linear infinite;
}

.contact .php-email-form input,
.contact .php-email-form textarea {
  border-radius: 0;
  box-shadow: none;
  font-size: 14px;
}

.contact .php-email-form input {
  height: 44px;
}

.contact .php-email-form textarea {
  padding: 10px 12px;
}

.contact .php-email-form button[type=submit] {
  background: #1977cc;
  border: 0;
```

```
  padding: 10px 35px;
  color: #fff;
  transition: 0.4s;
  border-radius: 50px;
}

.contact .php-email-form button[type=submit]:hover {
  background: #1c84e3;
}

@-webkit-keyframes animate-loading {
  0% {
    transform: rotate(0deg);
  }

  100% {
    transform: rotate(360deg);
  }
}

@keyframes animate-loading {
  0% {
    transform: rotate(0deg);
  }

  100% {
    transform: rotate(360deg);
  }
}

/*--------------------------------------------------------------
# Footer
--------------------------------------------------------------*/
#footer {
  color: #444444;
  font-size: 14px;
  background: #f1f7fd;
}

#footer .footer-top {
  padding: 60px 0 30px 0;
  background: #fff;
```

```
  box-shadow: 0px 2px 15px rgba(25, 119, 204, 0.1);
}

#footer .footer-top .footer-contact {
  margin-bottom: 30px;
}

#footer .footer-top .footer-contact h4 {
  font-size: 22px;
  margin: 0 0 30px 0;
  padding: 2px 0 2px 0;
  line-height: 1;
  font-weight: 700;
}

#footer .footer-top .footer-contact p {
  font-size: 14px;
  line-height: 24px;
  margin-bottom: 0;
  font-family: "Raleway", sans-serif;
  color: #777777;
}

#footer .footer-top h4 {
  font-size: 16px;
  font-weight: bold;
  color: #444444;
  position: relative;
  padding-bottom: 12px;
}

#footer .footer-top .footer-links {
  margin-bottom: 30px;
}

#footer .footer-top .footer-links ul {
  list-style: none;
  padding: 0;
  margin: 0;
}

#footer .footer-top .footer-links ul i {
```

```
  padding-right: 2px;
  color: #1c84e3;
  font-size: 18px;
  line-height: 1;
}

#footer .footer-top .footer-links ul li {
  padding: 10px 0;
  display: flex;
  align-items: center;
}

#footer .footer-top .footer-links ul li:first-child {
  padding-top: 0;
}

#footer .footer-top .footer-links ul a {
  color: #777777;
  transition: 0.3s;
  display: inline-block;
  line-height: 1;
}

#footer .footer-top .footer-links ul a:hover {
  text-decoration: none;
  color: #1977cc;
}
```

JAVASCRIPT FILE :

```
(function() {
  "use strict";

  /**
   * Easy selector helper function
   */
  const select = (el, all = false) => {
    el = el.trim()
    if (all) {
```

```
    return [...document.querySelectorAll(el)]
  } else {
    return document.querySelector(el)
  }
}

/**
 * Easy event listener function
 */
const on = (type, el, listener, all = false) => {
  let selectEl = select(el, all)
  if (selectEl) {
    if (all) {
      selectEl.forEach(e => e.addEventListener(type, listener))
    } else {
      selectEl.addEventListener(type, listener)
    }
  }
}

/**
 * Easy on scroll event listener
 */
const onscroll = (el, listener) => {
  el.addEventListener('scroll', listener)
}

/**
 * Navbar links active state on scroll
 */
let navbarlinks = select('#navbar .scrollto', true)
const navbarlinksActive = () => {
  let position = window.scrollY + 200
  navbarlinks.forEach(navbarlink => {
  if (!navbarlink.hash) return
    let section = select(navbarlink.hash)
    if (!section) return
    if (position >= section.offsetTop && position <= (section.offsetTop + section.offsetHeight)) {
      navbarlink.classList.add('active')
    } else {
      navbarlink.classList.remove('active')
    }
```

```
  })
}
window.addEventListener('load', navbarlinksActive)
onscroll(document, navbarlinksActive)

/**
 * Scrolls to an element with header offset
 */
const scrollto = (el) => {
  let header = select('#header')
  let offset =header.offsetHeight

  let elementPos = select(el).offsetTop
  window.scrollTo({
    top: elementPos - offset,
    behavior: 'smooth'
  })
}

/**
 * Toggle .header-scrolled class to #header when page is scrolled
 */
let selectHeader = select('#header')
let selectTopbar = select('#topbar')
if (selectHeader) {
  const headerScrolled = () => {
    if (window.scrollY > 100) {
      selectHeader.classList.add('header-scrolled')
      if (selectTopbar) {
      selectTopbar.classList.add('topbar-scrolled')
      }
    } else {
      selectHeader.classList.remove('header-scrolled')
      if (selectTopbar) {
      selectTopbar.classList.remove('topbar-scrolled')
      }
    }
  }
  window.addEventListener('load', headerScrolled)
  onscroll(document, headerScrolled)
}
```

```
/**
 * Back to top button
 */
let backtotop = select('.back-to-top')
if (backtotop) {
  const toggleBacktotop = () => {
    if (window.scrollY > 100) {
      backtotop.classList.add('active')
    } else {
      backtotop.classList.remove('active')
    }
  }
  window.addEventListener('load', toggleBacktotop)
  onscroll(document, toggleBacktotop)
}

/**
 * Mobile nav toggle
 */
on('click', '.mobile-nav-toggle', function(e) {
  select('#navbar').classList.toggle('navbar-mobile')
  this.classList.toggle('bi-list')
  this.classList.toggle('bi-x')
})

/**
 * Mobile nav dropdowns activate
 */
on('click', '.navbar .dropdown > a', function(e) {
  if (select('#navbar').classList.contains('navbar-mobile')) {
    e.preventDefault()
    this.nextElementSibling.classList.toggle('dropdown-active')
  }
}, true)

/**
 * Scrool with ofset on links with a class name .scrollto
 */
on('click', '.scrollto', function(e) {
  if (select(this.hash)) {
  e.preventDefault()
```

```
    let navbar = select('#navbar')
    if (navbar.classList.contains('navbar-mobile')) {
      navbar.classList.remove('navbar-mobile')
      let navbarToggle = select('.mobile-nav-toggle')
      navbarToggle.classList.toggle('bi-list')
      navbarToggle.classList.toggle('bi-x')
    }
    scrollto(this.hash)
  }
}, true)

/**
 * Scroll with ofset on page load with hash links in the url
 */
window.addEventListener('load', () => {
  if (window.location.hash) {
    if (select(window.location.hash)) {
      scrollto(window.location.hash)
    }
  }
});

/**
 * Preloader
 */
let preloader = select('#preloader');
if (preloader) {
  window.addEventListener('load', () => {
    preloader.remove()
  });
}

/**
 * Initiate glightbox
 */
const glightbox = GLightbox({
  selector: '.glightbox'
});

/**
 * Initiate Gallery Lightbox
 */
```

```
const galelryLightbox = GLightbox({
  selector: '.galelry-lightbox'
});

/**
 * Testimonials slider
 */
new Swiper('.testimonials-slider', {
  speed: 600,
  loop: true,
  autoplay: {
  delay: 5000,
    disableOnInteraction: false
  },
  slidesPerView: 'auto',
  pagination: {
    el: '.swiper-pagination',
    type: 'bullets',
    clickable: true
  },
  breakpoints: {
    320: {
      slidesPerView: 1,
      spaceBetween: 20
    },

    1200: {
      slidesPerView: 2,
      spaceBetween: 20
    }
  }
});

new PureCounter();
})()
```

GITHUB LINK

https://github.com/IBM-EPBL/IBM-Project-2553-1658474400

DEMO LINK

https://drive.google.com/file/d/1caEGHJem78ekHgTEdEkKxdjRmnS3eXae/view?usp=sharing