



# **MEENAKSHI SUNDARARAJAN ENGINEERING COLLEGE**

**Kodambakkam, Chennai-600024.**

## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**TOPIC: Data-Driven insights on Olympic Sports Participation and Performance**

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## **ABSTRACT**

The Olympics is considered as the most important event worldwide, which provides a common platform to players from various nations to show their talents. Olympics has been started at 1896, which is being conducted once in every four years. The goal of this paper is to analyze performance and participation of nations in Olympics from 1896 to 2012. In addition, the field of sports of particular country in particular year, in which they have contributed the maximum can be identified. The comparison of the performance of each sports with other can be done. The field of sports, that has to have more participation can be identified and necessary action can be taken by players and nations to enhance themselves in future contributions towards Olympics. The Olympic games are international sports events with more than 200 nations participating in various competitions. The Sportspersons from various countries participate in competitions and make their countries proud of their excellence in sports. Despite the massive population, many of the most populous countries fail to grab many medals at the Olympic games. The primary objective of this paper is to analyse the Olympic dataset using python to compare overall performance of countries and to evaluate the contribution of each country in the Olympics. These analyses will give deeper insight into the performance of countries in Olympics over the years and help sportspersons to quickly analyse their own and the competitor's performance. In this paper, exploratory data analysis techniques are used to provide comparison between performance of various countries and the contribution of each country in the Olympics. Visualization of Olympics dataset in many aspects provides the status of countries in Olympics and helps countries with poor performance to produce quality players and improve nation's performance in Olympics.

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# 1. INTRODUCTION

## 1.1 Project Overview

The project seeks to provide comprehensive insights into the historical evolution of Olympic sports participation and performance, leveraging data analytics. By analysing historical data sources, the project aims to achieve a deeper understanding of how the Olympics have evolved, how athletes and countries have performed, and the factors influencing participation and performance. Data source includes a historical dataset on the modern Olympic Games, including all the Games from Athens 1896 to Rio 2016. The project's methodology encompasses data cleaning, exploratory data analysis, and creation of storyboards for the same. The project's outcomes are expected to include insights into Olympic history, performance trends, and factors influencing sports participation. The "Data-Driven Insights on Olympic Sports Participation and Performance" project aims to offer a comprehensive analysis of Olympic history, participation, and performance using cutting-edge data analytics techniques. By providing valuable insights and predictions, this project will contribute to a better understanding of the ever-evolving world of the Olympic Games.

## 1.2 Purpose

The purpose of this project is to utilise data analytics to gain a deeper understanding of the historical and contemporary dynamics of Olympic sports participation and performance. By analysing a wide range of data sources, the project aims to uncover trends, factors, and insights that shed light on the evolution of the Olympic Games, athlete and country performance, and the influences shaping sports participation. By analysing internal and external factors that affect sports participation and performance, the project aims to answer questions about what drives success in the Olympic arena. Ultimately, the project seeks to provide valuable data-driven guidance for Olympic organisations, policy makers, and the general public while offering predictions for the future of the Olympic Games.

## **2. LITERATURE SURVEY**

### **2.1 Existing problem**

Performance measures for a country in the Olympics can be predicted using their past performance. By predicting their win using maximum value scored by them in previous participation, the chance of winning gold in 2016 has been identified[1]. If a person wins a medal in an Olympics during a year the chance of winning a medal in upcoming Olympics was predicted[1]. Having sports performance data, predicting one's future performance has been done [2]. Their performance can also be increased if they are not performing well in certain areas and then placing them accordingly in the training program will provide considerable measure in their outcomes[2]. Machine learning techniques were used for heuristics prediction of Olympic medals of a country[4]. Estimation of the success of a country can be done by efficiency analysis and importance of sports in society[5]. When analysing the sports categories they are mainly being more representative towards viewpoint based content rather being an viewpoint which is spatio temporal. The video content analysis has significance of providing more interior information than structured collected data [3]. In addition to these techniques, the exploratory data analysis uses visual methods to provide deep understanding and statistical summary about the data.

### **2.2 References**

Yamuna Thangam.D. Assistant Professor. Kumaraguru College of Technology, Coimbatore (Tamil Nadu), India.

Kirthicka.G, UG scholars, Kumaraguru College of Technology. Coimbatore (Tamil Nadu), India.

Shahan as Parveen.I UG Scholars. Kumaraguru College of Technology, Coimbatore (Tamil Nadu),India.

### **2.3 Problem Statement Definition**

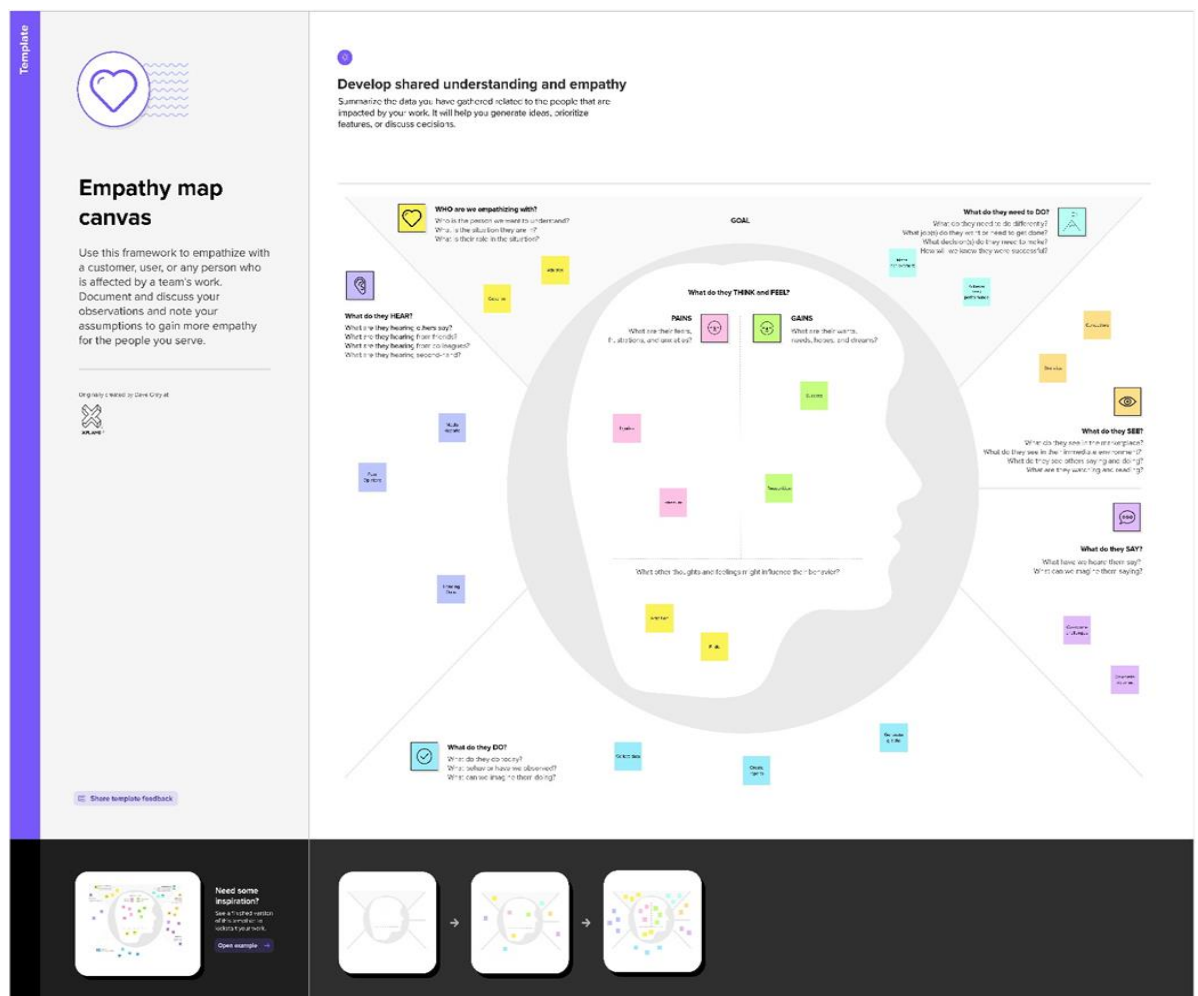
The project, "Data-Driven Insights on Olympic Sports Participation and Performance," addresses a range of persistent challenges within the Olympic sports landscape. Fragmented data sources, inadequate injury prevention measures, subjective talent identification, suboptimal performance strategies, inefficient resource allocation, gender disparities, and underdeveloped fan engagement collectively impede the realization of athletes' full potential and the optimization of Olympic events. Traditional methods have proven inadequate, necessitating the integration of data analytics and technology to provide evidence-based

solutions. By leveraging data-driven insights, this project aims to transform Olympic sports by enhancing athlete development, minimizing injuries, streamlining talent identification, optimizing performance, ensuring equitable resource distribution, promoting gender equality, and enhancing fan engagement. Through this comprehensive approach, the project aspires to usher in a new era of excellence and inclusivity in Olympic sports, benefiting athletes, coaches, administrators, and fans alike.

### 3. IDEATION & PROPOSED SOLUTION

#### 3.1 Empathy Map Canvas

As data analysts, we immerse ourselves in the world of Olympic athletes, striving to understand their experiences. We see their passion and dedication, feeling the weight of their training and sacrifices. We hear the cheers of their supporters and the silent struggles they endure. We recognize the elation of victory and the disappointment of defeat. We observe the patterns in data, helping us empathize with their journey. By visualizing their challenges, strengths, and motivations, we aim to provide insights that empower them to achieve their best in the pursuit of Olympic glory.




#### 3.2 Ideation & Brainstorming

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

## Step-1: Team Gathering, Collaboration and Select the Problem Statement

Template



### Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 🕒 10 minutes to prepare
- 🕒 1 hour to collaborate
- 👤 2-8 people recommended

Share template feedback

➔

#### Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

A

**Team gathering**  
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B

**Set the goal**  
Think about the problem you'll be focusing on solving in the brainstorming session.

C

**Learn how to use the facilitation tools**  
Use the Facilitation Superpowers to run a happy and productive session.

Open article ➔

1


#### Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

PROBLEM

The objective is to develop a robust data-driven solution for assessing participation and performance trends in Olympic sports. The aim is to leverage machine learning and data analysis to extract valuable insights from extensive datasets related to athlete participation, medal records, and performance metrics. The solution should accurately identify patterns, trends, and factors that impact Olympic success, assisting in optimizing training programs and resource allocation for athletes and National Olympic Committees. Precision and reliability are vital to support data-informed decision-making in the sports domain, ultimately enhancing Olympic performance.



#### Key rules of brainstorming

To run an smooth and productive session

🗣️ Stay in topic.

💡 Encourage wild ideas.

👂 Defer judgment.

👂 Listen to others.

🗣️ Go for volume.

👁️ If possible, be visual.



## Step-2: Brainstorm, Idea Listing and Grouping

2

### Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

#### TIP

You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

#### ANUDHINA D

Olympics	Sports analytics	Data-driven insights
Machine learning	Performance trends	Athlete participation
Medal records	Performance metrics	Data analysis

#### RAMYA RAJENDRAN

Olympic success	Training optimization	Resource allocation
National Olympic Committees	Data mining	Sports performance
Predictive modeling	Athlete development	Competitive advantage

#### TEJASHRI J

Data visualization	Historical data	Statistical analysis
Sports management	Olympic Games	Athlete preparation
Sports research	Sports data	Sports science

#### YUVASHREE S

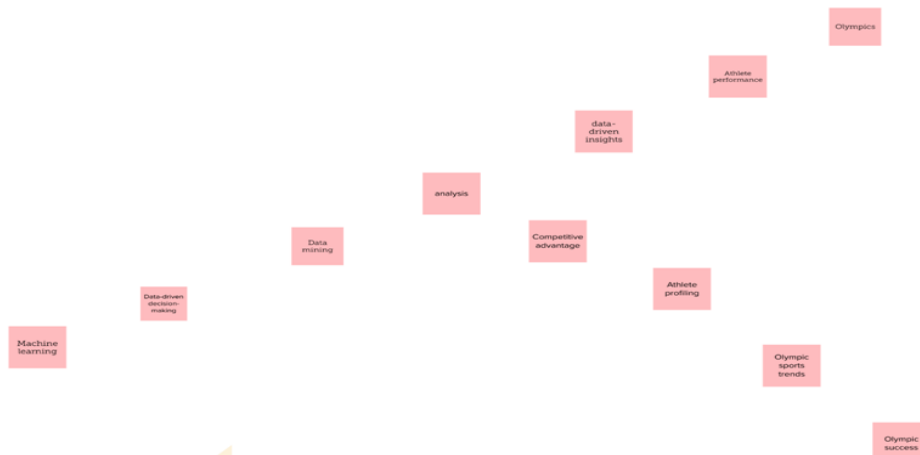
Sports technology	Athlete profiling	Olympic medals
Sports strategies	Sports coaching	Performance evaluation
Gold medal analysis	Olympic records	Data-driven decision-making

3

### Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

🕒 20 minutes



#### TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H** key on the keyboard.

## Step-3: Idea Prioritization

4

### Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes



## 4. REQUIREMENT ANALYSIS

### 4.1 Functional requirement

S.NO	CATEGORY	FUNCTIONAL REQUIREMENTS
1.	Data Collection & Processing	Collect data from various social media platforms. Process and normalize data for analysis. - Real-time data updates.
2.	Analysis and Reporting	Sentiment analysis. - Trend identification. - Misinformation detection. - User behaviour analysis. - Impact assessment. - Real-time reporting and visualisation.
3.	User Education Component	Develop educational materials. - Disseminate digital literacy resources. - Monitor and assess user engagement.
4.	Regulatory Compliance	Monitor and adhere to relevant regulations.- Implement content moderation and safety measures.
5.	Scalability	Support for increased data volume and user base.

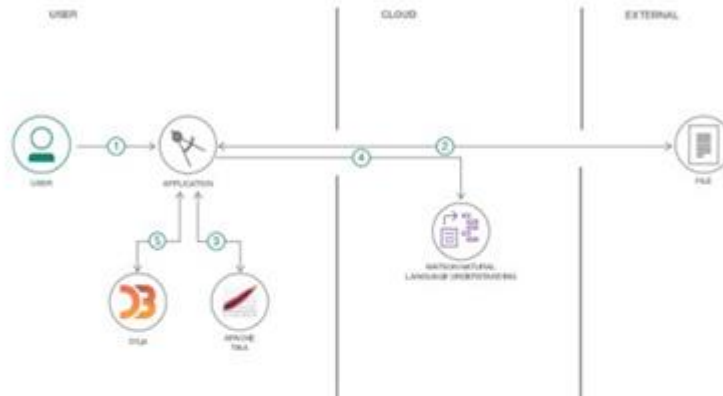
#### 4.2 Non-Functional requirements

S.NO	CATEGORY	NON FUNCTIONAL REQUIREMENTS
1.	Data Collection and Processing	High data accuracy and reliability. - Scalability to handle large datasets. - Data privacy and security compliance.
2.	Analysis and Reporting	Low-latency analysis. - High analytical accuracy. - Reporting and visualization responsiveness.
3.	User Education Component	Clear and user-friendly educational materials. - Measurable impact on user behavior. - Regular updates to educational content.
4.	Regulatory Compliance	Adherence to legal and ethical standards. - Rapid response to regulatory changes.
5.	Scalability	Minimal performance degradation with scaling.

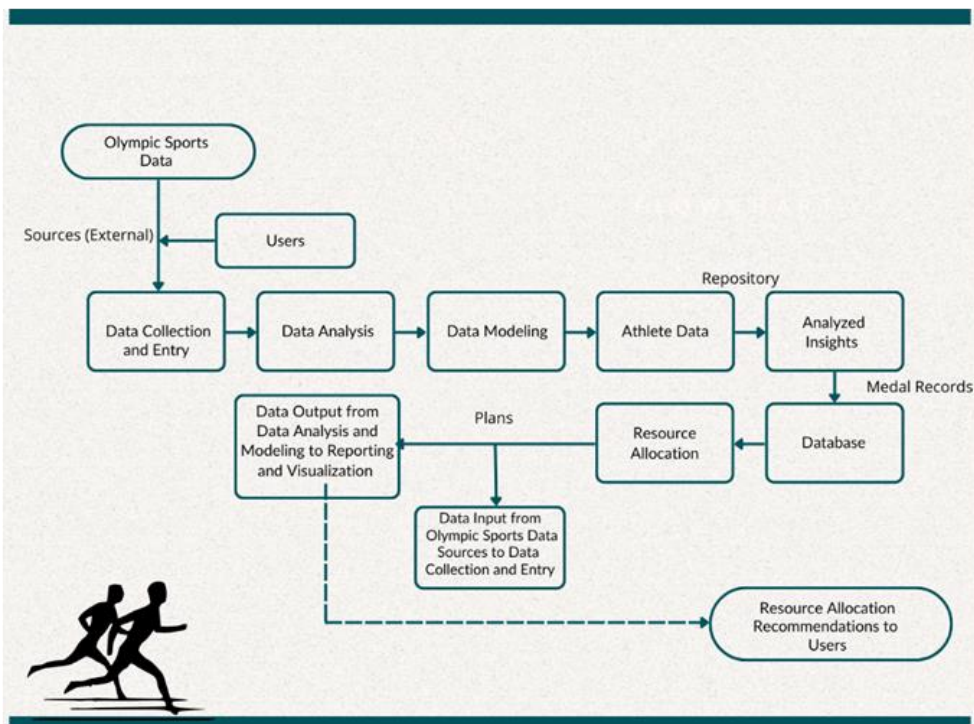
## 5. PROJECT DESIGN

### 5.1 Data Flow Diagrams & User Stories

#### Flow



1. User configures credentials for the Watson Natural Language Understanding service and starts the app.
2. User selects data file to process and load.
3. Apache Tika extracts text from the data file.
4. Extracted text is passed to Watson NLU for enrichment.
5. Enriched data is visualized in the UI using the D3.js library.



## User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Athlete Data Entry	Data Entry	USN-1	As a data analyst, I can input athlete data, including name, age, and performance metrics.	I should be able to add, edit, or delete athlete information, and the data should be stored accurately for analysis.	High	Sprint-1
Data Analysis Dashboard	Data Analysis	USN-2	As a sports manager, I want a data analysis dashboard that displays historical performance trends and insights for our athletes.	The dashboard should provide visual representations of key performance metrics, allowing for data-driven decision-making.	High	Sprint-2
Predictive Modeling	Predictive Modelling	USN-3	As a coach, I can access predictive modeling tools to forecast athlete performance	: The model should accurately predict future performance, aiding in training program design.	Medium	Sprint-3

			based on historical data.			
Resource Allocation Recommendations:	Resource Allocation	USN-4	As an Olympic committee member, I want the system to provide recommendations for resource allocation, such as funding and coaching, based on athlete performance data.	The recommendations should be data-driven, considering both individual and team needs.	High	Sprint-2
Olympic Medal Analysis	Medal Analysis	USN-5	As a sports analyst, I want to analyze Olympic medal records to identify factors contributing to our country's success.	The system should allow for in-depth analysis of medal records and highlight trends or strategies.	Medium	Sprint-3

Data Visualization	Data Virtualization	USN-6	As a data analyst, I need the ability to create custom data visualizations for athlete performance and Olympic trends.	The tool should offer various visualization options and be user-friendly for creating informative charts and graphs.	High	Sprint-2
Compliance Reporting	Compliance Reporting	USN-7	As a compliance officer, I want the system to generate compliance reports that demonstrate adherence to regulatory requirements.	The system should generate accurate and comprehensive compliance reports on a regular basis.	Medium	Sprint-4
Athlete Registration	Athlete Onboarding	USN-8	As a new athlete, I can register for the system by providing my personal information, including name,	Upon registration, I should receive a unique athlete ID and access to my performance data.	High	Sprint-1



			age, and sports discipline.			
Coach Registration	Coach Onboarding	USN-9	As a coach, I can register for the system by providing my coaching credentials and specialization.	: Registration should grant me access to athlete performance data and analytical tools.	Medium	Sprint-2
. Committee Member Registration	Committee Onboarding	USN-10	As a coach, I can register for the system by providing my coaching credentials and specialization.	Registration should grant me access to athlete performance data and analytical tools.	Medium	Sprint-2
Analyst Registration:	Data Analyst Onboarding	USN-11	As a data analyst, I can register with my analytical credentials to access the data analysis tools	Registration should grant access to data analysis and visualization features.	Medium	Sprint-3

. Admin Registration:	Admin Onboarding	USN-12	: As an administrator, I can register to manage user roles and access control within the system.	Registration should provide admin privileges for user management.	High	Sprint-4
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## 5.2 Solution Architecture

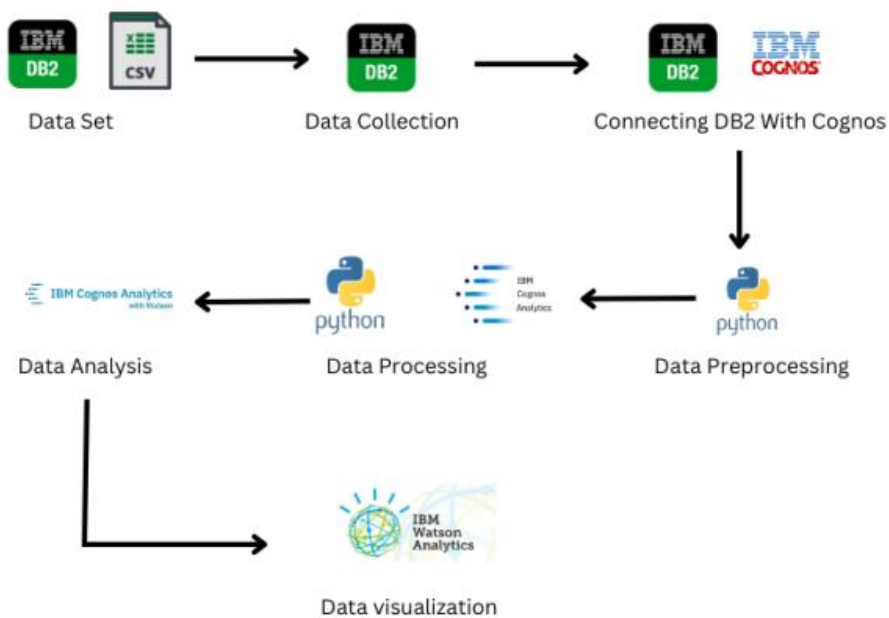
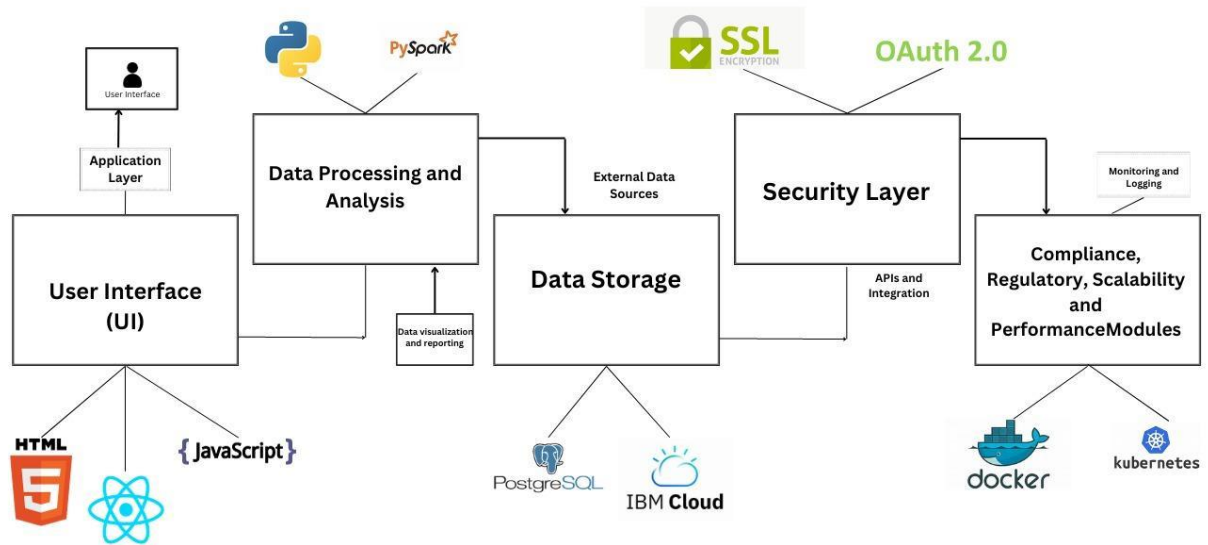


Figure 1: Architecture and data flow of a Student Performance Analysis application

## 6. PROJECT PLANNING & SCHEDULING

### 6.1 Technical Architecture



## 6.2 Sprint Planning & Estimation

<b>Sprint</b>	<b>Functional Requirement (Epic)</b>	<b>User Story Number</b>	<b>User Story / Task</b>	<b>Story Points</b>	<b>Priority</b>	<b>Team Members</b>
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Anudhina D
Sprint-1	Registration	USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Ramya Rajendran
Sprint-1	Registration	USN-3	As a user, I can register for the application through Facebook	2	Low	Tejashri J
Sprint-1	Registration	USN-4	As a user, I can register for the application through Gmail	2	Medium	Yuvashree S
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Anudhina D
Sprint-2	Dashboard	USN-6	As a user, I can view a personalized dashboard with athlete performance insights.	3	High	Ramya Rajendran
Sprint-2	Dashboard	USN-7	As a coach, I can access a dashboard displaying	3	Medium	Tejashri J

			athlete performance data and recommendations.			
Sprint-2	Data Analysis	USN-8	As a data analyst, I can upload athlete performance data for analysis.	5	High	Yuvashree S
Sprint-2	Data Analysis	USN-9	As a sports analyst, I can run historical performance analysis to identify trends and patterns.	5	Medium	Anudhina D
Sprint-3	Data Visualization	USN-10	As a data analyst, I can create custom data visualizations for athlete performance insights.	4	High	Ramya Rajendran
Sprint-3	Predictive Modeling	USN-11	As a coach, I can access predictive modeling tools to forecast athlete performance.	5	Low	Tejashri J
Sprint-4	Resource Allocation	USN-12	As an Olympic committee member, I want to receive resource allocation	5	Medium	Yuvashree S

			recommendations based on athlete data.			
Sprint-4	Compliance Reporting	USN-13	As a compliance officer, I want the system to generate compliance reports to ensure regulatory requirements.	4	High	Tejashri J

### 6.3 Sprint Delivery Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	1 Day	16 Oct 2023	16 Oct 2023	16 Oct 2023	16 Oct 2023
Sprint-2	20	1 Day	17 Oct 2023	17 Nov 2023	17 Nov 2023	17 Nov 2023
Sprint-3	20	1 Day	18 Nov 2022	19 Nov 2023	19 Nov 2023	19 Nov 2023
Sprint-4	20	1 Day	19 Nov 2022	19 Nov 2023	19 Nov 2023	19 Nov 2023

**Velocity:**

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

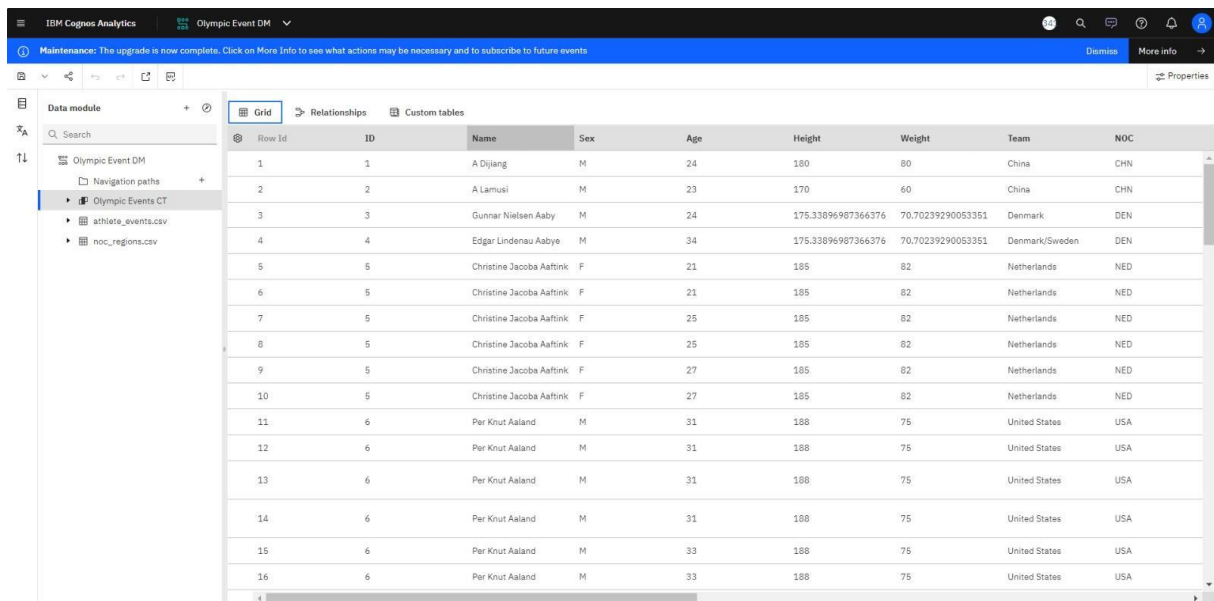
$$AV = \frac{\text{sprint duration}}{\text{velocity}} = \frac{20}{10} = 2$$

**Burndown Chart:**

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

## 7. CODING & SOLUTIONING (Explain the features added in the project along with code)

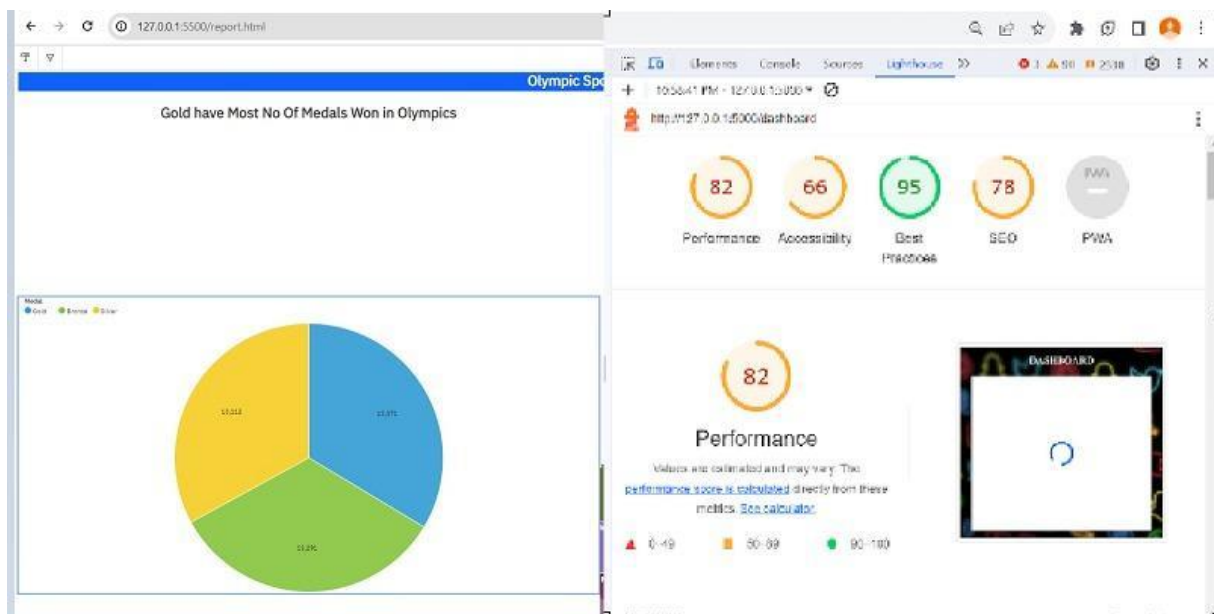
### 7.1 Feature 1



The screenshot shows the IBM Cognos Analytics interface. A maintenance message at the top states: "Maintenance: The upgrade is now complete. Click on More Info to see what actions may be necessary and to subscribe to future events." The left sidebar displays the "Data module" with a search bar and a list of items: "Olympic Event DM", "Navigation paths", "Olympic Events CT", "athletes\_events.csv", and "noc\_regions.csv". The main area shows a "Grid" view of a table with columns: Row Id, ID, Name, Sex, Age, Height, Weight, Team, and NOC. The table contains 16 rows of athlete data.

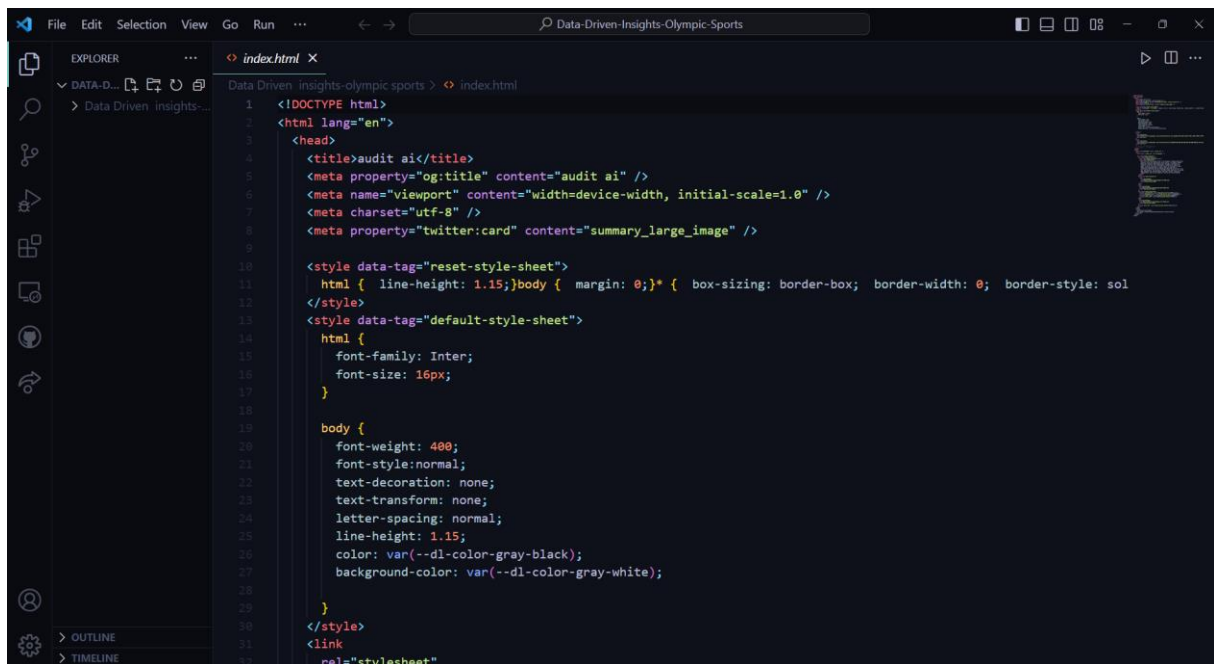
Row Id	ID	Name	Sex	Age	Height	Weight	Team	NOC
1	1	A Djang	M	24	180	80	China	CHN
2	2	A Lamusi	M	23	170	60	China	CHN
3	3	Gunnar Nilsen Aaby	M	24	175.33896987366376	70.70239290053351	Denmark	DEN
4	4	Edgar Lindenu Aabye	M	34	175.33896987366376	70.70239290053351	Denmark/Sweden	DEN
5	5	Christine Jacobsa Aaftink	F	21	185	82	Netherlands	NED
6	5	Christine Jacobsa Aaftink	F	21	185	82	Netherlands	NED
7	5	Christine Jacobsa Aaftink	F	25	185	82	Netherlands	NED
8	5	Christine Jacobsa Aaftink	F	25	185	82	Netherlands	NED
9	5	Christine Jacobsa Aaftink	F	27	185	82	Netherlands	NED
10	5	Christine Jacobsa Aaftink	F	27	185	82	Netherlands	NED
11	6	Per Knut Aaland	M	31	188	75	United States	USA
12	6	Per Knut Aaland	M	31	188	75	United States	USA
13	6	Per Knut Aaland	M	31	188	75	United States	USA
14	6	Per Knut Aaland	M	31	188	75	United States	USA
15	6	Per Knut Aaland	M	33	188	75	United States	USA
16	6	Per Knut Aaland	M	33	188	75	United States	USA

### 7.2 Feature 2



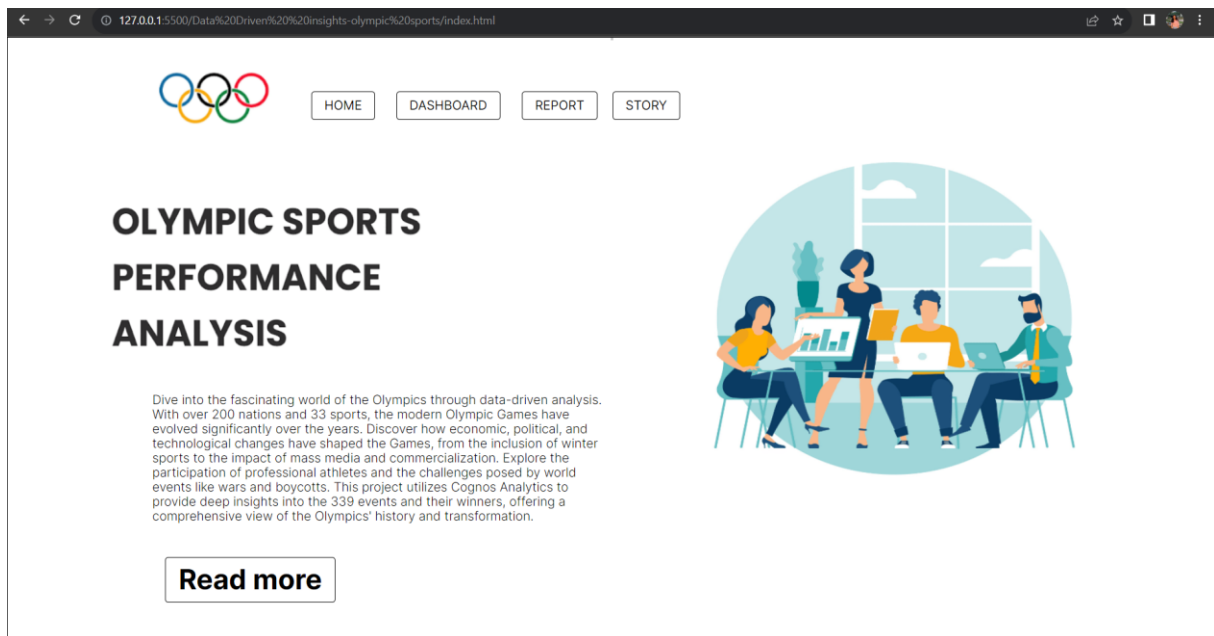


## 7.3 Feature 3



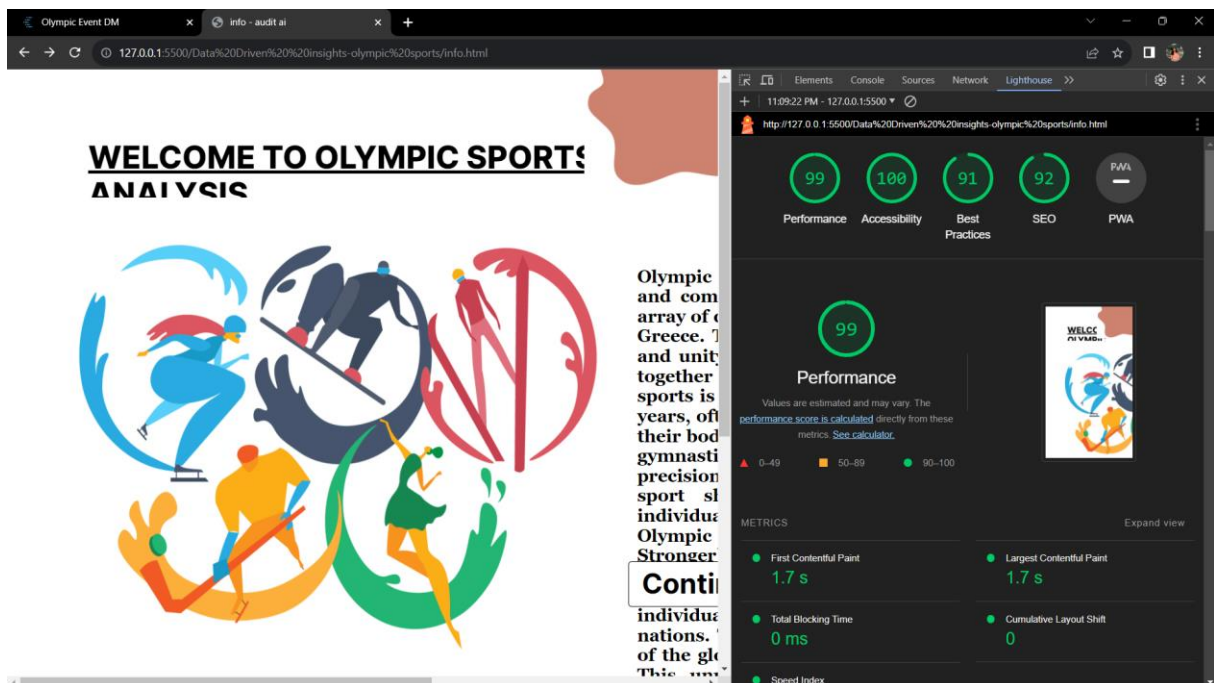
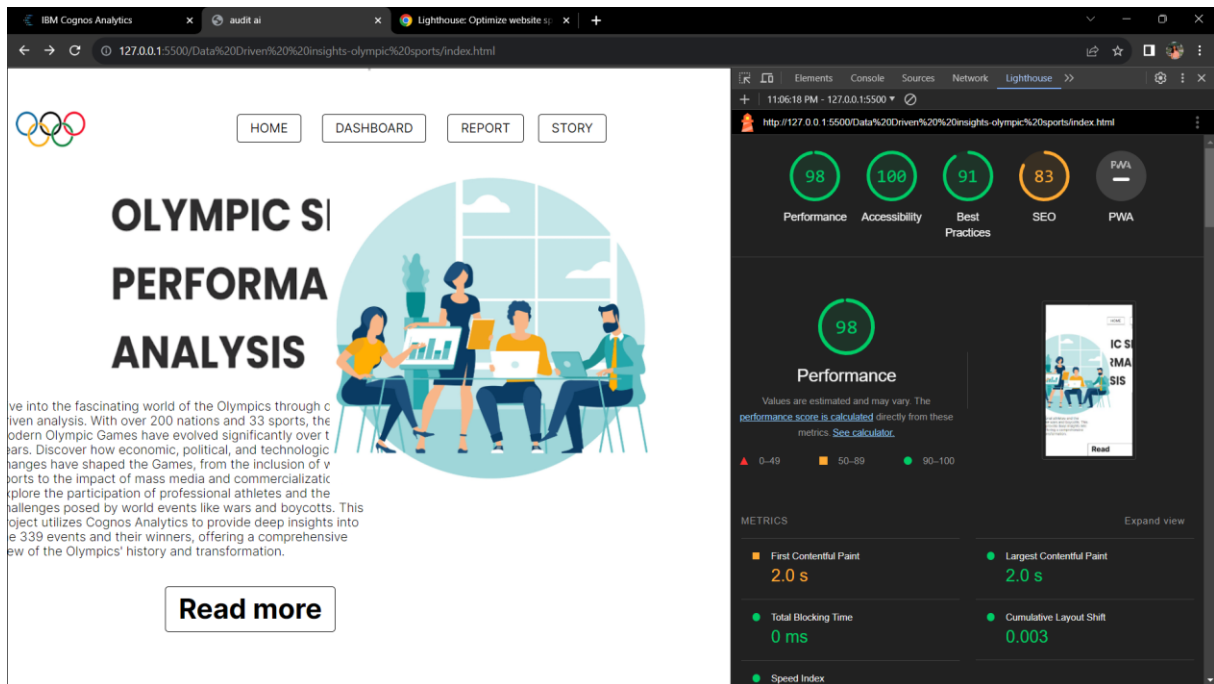
```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4 <title>audit ai</title>
5 <meta property="og:title" content="audit ai" />
6 <meta name="viewport" content="width=device-width, initial-scale=1.0" />
7 <meta charset="utf-8" />
8 <meta property="twitter:card" content="summary_large_image" />
9
10
11 <style data-tag="reset-style-sheet">
12   html { line-height: 1.15;}body { margin: 0;}* { box-sizing: border-box; border-width: 0; border-style: solid; }
13 </style>
14 <style data-tag="default-style-sheet">
15   html {
16     font-family: Inter;
17     font-size: 16px;
18   }
19   body {
20     font-weight: 400;
21     font-style:normal;
22     text-decoration: none;
23     text-transform: none;
24     letter-spacing: normal;
25     line-height: 1.15;
26     color: var(--dl-color-gray-black);
27     background-color: var(--dl-color-gray-white);
28   }
29 </style>
30 <link
31   rel="stylesheet"
```

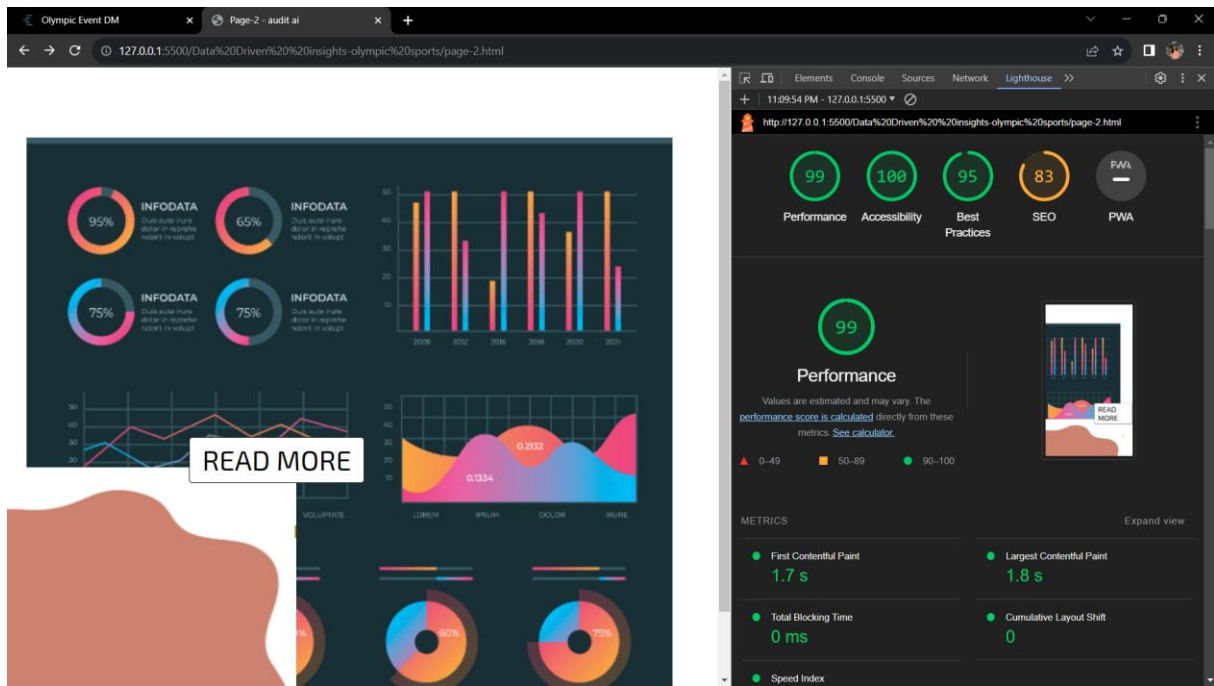
## 7.4 Feature 4



## 8. PERFORMANCE TESTING

### 8.1 Performance Metrics

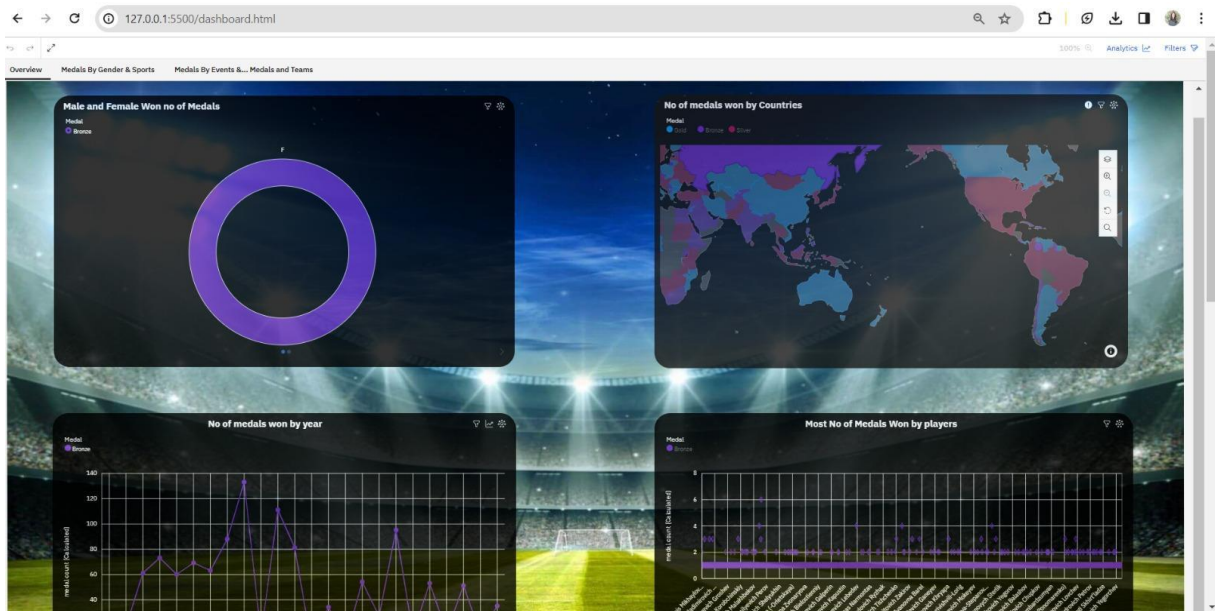




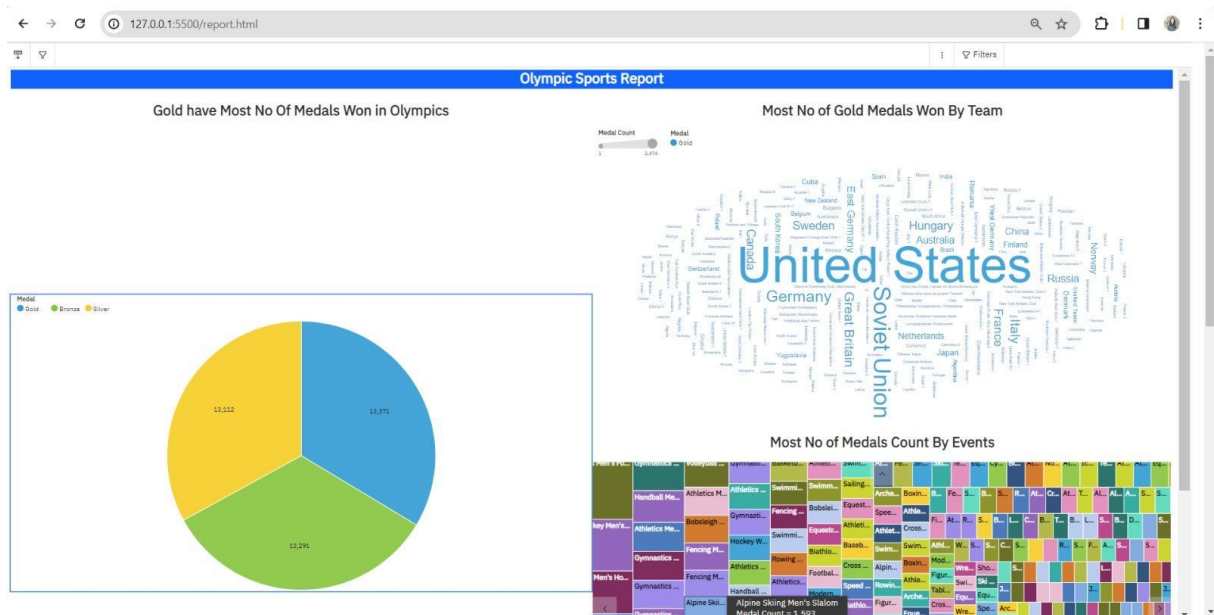
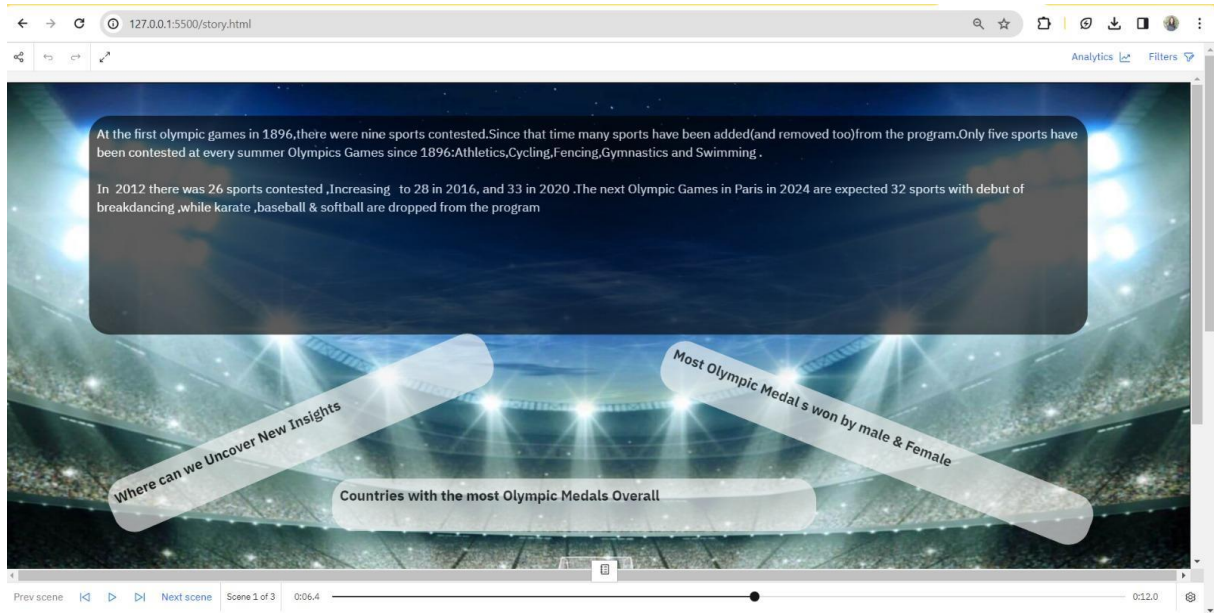
## 9. RESULTS

### 9.1 Output Screenshots









## **10. ADVANTAGES & DISADVANTAGES**

### **ADVANTAGES**

Conducting a data analysis project on the topic of "Data-Driven Insights on Olympic Sports Participation and Performance" using IBM Cognos offers several distinct advantages:

- **Comprehensive Data Integration:** IBM Cognos allows for the integration of data from diverse sources. This feature is invaluable for a project of this nature, which relies on amalgamating historical Olympic data, economic statistics, and geographic information to provide a holistic view of sports participation and performance.
- **Data Quality and Accuracy:** Cognos includes data cleaning and transformation tools, ensuring that the data used for analysis is of high quality. Clean data is essential for reliable insights and decision-making.
- **Powerful Visualization and Reporting:** Cognos excels in data visualization and reporting capabilities. It provides the means to create interactive dashboards, reports, and visualizations that effectively communicate complex data-driven insights to various stakeholders.
- **Predictive Analytics:** The platform supports predictive modeling, allowing the creation of models to forecast future Olympic outcomes. This is valuable for scenario planning and decision-making.
- **Collaboration and Data Sharing:** Cognos provides collaboration tools that facilitate team collaboration and knowledge sharing. This promotes a collective approach to data analysis and decision-making.
- **Performance Monitoring and Optimization:** IBM Cognos offers performance monitoring capabilities, which can help identify and address bottlenecks, ensuring that data analysis processes run efficiently.
- **Integration with Data Science Tools:** Integration with data science tools enables collaboration between data analysts and data scientists, expanding the scope of the analysis and allowing for more advanced analytics.

## DISADVANTAGES

While IBM Cognos offers numerous advantages for a data analysis project on Olympic sports participation and performance, there are also some potential disadvantages to consider:

- **Complexity and Learning Curve:** IBM Cognos is a powerful platform, but its capabilities can be complex and may require a steep learning curve for team members who are not already familiar with the software. This can lead to delays in project execution and the need for specialized training.
- **Cost:** Licensing and implementing IBM Cognos can be costly, particularly for small teams or organizations with limited budgets. The cost of software, hardware, and personnel training can be a significant disadvantage.
- **Resource Intensive:** IBM Cognos can be resource-intensive in terms of hardware and infrastructure requirements. It may demand powerful servers and extensive memory and processing capabilities, which can be expensive to set up and maintain.
- **Data Volume and Performance:** Handling large volumes of data in IBM Cognos can sometimes lead to performance issues. Slower query response times and report generation can be a challenge when working with extensive datasets.

**Complex Data Integration:** While Cognos supports data integration, the process can be complex, especially when dealing with data from a variety of sources and formats. Integration challenges may lead to delays and additional work.

- **Limited Open-Source Compatibility:** Cognos is a proprietary software, which may not be compatible with open-source tools and ecosystems. This can be a disadvantage if you prefer to work with open-source solutions.
- **Customization and Flexibility:** While Cognos offers customization options, it may not be as flexible as some other analytics platforms. Adapting the platform to unique project requirements may require more effort and expertise.
- **Lack of Advanced Analytics:** While Cognos provides robust reporting and dashboard capabilities, it may not offer the same level of advanced analytics and machine learning tools as other specialized data science platforms.
- **Vendor Lock-In:** Choosing IBM Cognos for a project may result in vendor lock-in, making it challenging to switch to alternative platforms in the future without incurring significant costs.



- **Compatibility and Integration Challenges:** If your organization already uses other data analysis or business intelligence tools, integrating IBM Cognos with existing systems can be challenging and may require additional development work.

## **11. CONCLUSION**

The exploratory data analysis on Olympic dataset provides statistical and visual representation of performance of nations, players in Olympics from the year 1896 to 2012. From the above analyses, it is useful to identify the country that needs more skills, the field of sports in which players are performing well and players who need practice to enhance themselves in upcoming Olympics. The contribution of women in the Olympics has to be encouraged. Countries which have the least performance have to find the steps to improve their performance. Country which has performed best so far will also consider taking measures to increase their performance.

## **12. FUTURE SCOPE**

The future scope of a data analysis project on "Data-Driven Insights on Olympic Sports Participation and Performance" performed on IBM Cognos holds tremendous potential for further exploration and impact. Here are several aspects that can define the project's future scope:

**Advanced Analytics and Machine Learning:** Expanding the project to include more advanced analytics and machine learning models can provide deeper insights. Predictive modeling could forecast athlete performance and medal outcomes with greater accuracy, taking into account changing variables such as athlete profiles and training methods.

**Real-Time Data and IoT Integration:** The project's future scope could encompass real-time data integration, particularly with the rise of the Internet of Things (IoT) in sports. This would enable the analysis of live data from wearables and sports equipment, offering dynamic insights into athlete performance.

**Sentiment Analysis and Social Media Data:** Including sentiment analysis of social media data can help gauge public sentiment and opinions about Olympic sports and athletes. This can be valuable for marketing and public relations efforts.

**Cross-Sport Analysis:** Expanding the analysis to include a cross-sport perspective can reveal trends and insights that transcend individual disciplines. For example, comparing training techniques across different sports could yield innovative strategies.

**Youth Development and Grassroots Insights:** Exploring data on youth participation and grassroots sports development can help identify trends and opportunities for nurturing talent at the grassroots level.

**Policy and Decision Support:** The project's future scope could involve developing decision support tools for sports organizations and policymakers. These tools could assist in making data-driven decisions related to sports infrastructure, funding, and athlete development programs.

**Ethical Considerations and Data Governance:** Given the increasing importance of data ethics and privacy, future projects could focus on comprehensive data governance and ethical considerations, ensuring that athlete data is handled responsibly and in compliance with regulations.

**International and Intercultural Insights:** Expanding the analysis to consider international and intercultural factors in sports participation and performance can provide a more nuanced understanding of the Olympics' global impact.

**Collaborative Research and Partnerships:** Collaborating with sports organizations, academic institutions, and international bodies can amplify the project's reach and impact. Joint research efforts could lead to more comprehensive insights.

**Virtual and Augmented Reality:** The integration of virtual and augmented reality technologies can enhance the project's visualization and presentation of data, providing a more immersive and interactive experience for users.

**Enhanced Data Visualization:** The future scope should include more advanced and interactive data visualization techniques to make insights more accessible to a wider audience, including policymakers, educators, and the general public.

Longitudinal Studies: Conducting longitudinal studies over multiple Olympic cycles can uncover trends and changes in sports participation and performance over time, providing valuable insights into the evolution of the Games.

Education and Outreach: Utilizing the project's findings for educational purposes, such as creating resources for coaches, athletes, and sports scientists, can contribute to the development of sports and the success of future Olympians.

## 13. APPENDIX

### SOURCE CODE

#### Index.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>audit ai</title>
    <meta property="og:title" content="audit ai" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <meta charset="utf-8" />
    <meta property="twitter:card" content="summary_large_image" />

    <style data-tag="reset-style-sheet">
      html { line-height: 1.15;}body { margin: 0;}* { box-sizing: border-box; border-width:
0; border-style: solid;}p,li,ul,pre,div,h1,h2,h3,h4,h5,h6,figure,blockquote,figcaption {
margin: 0; padding: 0;}button { background-color:
transparent;}button,input,optgroup,select,textarea { font-family: inherit; font-size: 100%;
line-height: 1.15; margin: 0;}button,select { text-transform:
none;}button,[type="button"],[type="reset"],[type="submit"] { -webkit-appearance:
button;}button::-moz-focus-inner,[type="button"]::-moz-focus-inner,[type="reset"]::-moz-
focus-inner,[type="submit"]::-moz-focus-inner { border-style: none; padding: 0;}button:-
moz-focus,[type="button"]:-moz-focus,[type="reset"]:-moz-focus,[type="submit"]:-moz-
focus { outline: 1px dotted ButtonText;}a { color: inherit; text-decoration: inherit;}input
{ padding: 2px 4px;}img { display: block;}html { scroll-behavior: smooth }
    </style>
    <style data-tag="default-style-sheet">
      html {
        font-family: Inter;
        font-size: 16px;
      }

      body {
        font-weight: 400;
        font-style:normal;
        text-decoration: none;
        text-transform: none;
        letter-spacing: normal;
```

```

    line-height: 1.15;
    color: var(--dl-color-gray-black);
    background-color: var(--dl-color-gray-white);

}
</style>
<link
  rel="stylesheet"

href="https://fonts.googleapis.com/css2?family=Exo+2:ital,wght@0,100;0,200;0,300;0,400;0,500;0,600;0,700;0,800;0,900;1,100;1,200;1,300;1,400;1,500;1,600;1,700;1,800;1,900&display=swap"
  data-tag="font"
/>
<link
  rel="stylesheet"

href="https://fonts.googleapis.com/css2?family=Inter:wght@100;200;300;400;500;600;700;800;900&display=swap"
  data-tag="font"
/>
<!--This is the head section-->
<!-- <style> ... </style> -->
</head>
<body>
  <link rel="stylesheet" href="/style.css" />
  <div>
    <link href="/index.css" rel="stylesheet" />

    <div class="home-container">
      <div class="home-container1">
        <div class="home-container2"></div>
        <span class="home-text">
          Dive into the fascinating world of the Olympics through data-driven analysis. With over 200 nations and 33 sports, the modern Olympic Games have evolved significantly over the years. Discover how economic, political, and technological changes have shaped the Games, from the inclusion of winter sports to the impact of mass media and commercialization. Explore the participation of professional athletes and the challenges posed by world events like wars and boycotts. This project utilizes Cognos Analytics to provide deep insights into the 339 events and their winners, offering a comprehensive view of the Olympics' history and transformation.
        </span>
      </div>
      <div class="home-container3">
        
</div>

<div class="home-container4">
  <button type="button" class="home-button button">HOME</button>
  <a href="dashboard.html" class="home-navlink button">DASHBOARD</a>
  <a href="report.html" class="home-navlink1 button">REPORT</a>
  <a href="story.html" class="home-navlink2 button">STORY</a>
</div>

  <a href="info.html" class="home-navlink3 button">Read more</a>
</div>
</div>
<script
  data-section-id="header"
  src="https://unpkg.com/@teleporthq/teleport-custom-scripts"
></script>
</body>
</html>

```

### **app.py**

```

from flask import Flask, render_template

app = Flask(__name__)

@app.route('/')
def home():
    return render_template('home.html')

@app.route('/story')
def story():
    return render_template('story.html')

@app.route('/dashboard')
def dashboard():
    return render_template('dashboard.html')

@app.route('/report')
def report():
    return render_template('report.html')

```

```
if __name__ == '__main__':  
    app.run(debug=True)
```

### **styles.css**

```
.button {  
    color: var(--dl-color-gray-black);  
    display: inline-block;  
    padding: 0.5rem 1rem;  
    border-color: var(--dl-color-gray-black);  
    border-width: 1px;  
    border-radius: 4px;  
    background-color: var(--dl-color-gray-white);  
}  
.input {  
    color: var(--dl-color-gray-black);  
    cursor: auto;  
    padding: 0.5rem 1rem;  
    border-color: var(--dl-color-gray-black);  
    border-width: 1px;  
    border-radius: 4px;  
    background-color: var(--dl-color-gray-white);  
}  
.textarea {  
    color: var(--dl-color-gray-black);  
    cursor: auto;  
    padding: 0.5rem;  
    border-color: var(--dl-color-gray-black);  
    border-width: 1px;  
    border-radius: 4px;  
    background-color: var(--dl-color-gray-white);  
}  
.list {  
    width: 100%;  
    margin: 1em 0px 1em 0px;  
    display: block;  
    padding: 0px 0px 0px 1.5rem;  
    list-style-type: none;  
    list-style-position: outside;  
}  
.list-item {  
    display: list-item;  
}  
.teleport-show {  
    display: flex !important;  
    transform: none !important;  
}  
.Content {  
    font-size: 16px;  
    font-family: Inter;  
    font-weight: 400;
```

```

line-height: 1.15;
text-transform: none;
text-decoration: none;
}
.Heading {
font-size: 32px;
font-family: Inter;
font-weight: 700;
line-height: 1.15;
text-transform: none;
text-decoration: none;
}

```

### **dashboard.html:**

```

<!DOCTYPE html>
<html lang="en">
<head>
<title>dashboard - audit ai</title>
<meta property="og:title" content="dashboard - audit ai" />
<meta name="viewport" content="width=device-width, initial-scale=1.0" />
<meta charset="utf-8" />
<meta property="twitter:card" content="summary_large_image" />

<style data-tag="reset-style-sheet">
html { line-height: 1.15;}body { margin: 0;}* { box-sizing: border-box; border-width: 0;
border-style: solid;}p,li,ul,pre,div,h1,h2,h3,h4,h5,h6,figure,blockquote,figcaption { margin: 0;
padding: 0;}button { background-color: transparent;}button,input,optgroup,select,textarea {
font-family: inherit; font-size: 100%; line-height: 1.15; margin: 0;}button,select { text-
transform: none;}button,[type="button"],[type="reset"],[type="submit"] { -webkit-
appearance: button;}button::-moz-focus-inner,[type="button"]::-moz-focus-
inner,[type="reset"]::-moz-focus-inner,[type="submit"]::-moz-focus-inner { border-style:
none; padding: 0;}button:-moz-focus,[type="button"]:-moz-focus,[type="reset"]:-moz-
focus,[type="submit"]:-moz-focus { outline: 1px dotted ButtonText;}a { color: inherit; text-
decoration: inherit;}input { padding: 2px 4px;}img { display: block;}html { scroll-behavior:
smooth }
</style>
<style data-tag="default-style-sheet">
html {
font-family: Inter;
font-size: 16px;
}

body {
font-weight: 400;
font-style:normal;
text-decoration: none;
text-transform: none;
letter-spacing: normal;
line-height: 1.15;
color: var(--dl-color-gray-black);

```

```

        background-color: var(--dl-color-gray-white);

    }
</style>
<iframe
src="https://eu1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders
%2FOlympic%2BDashboard&closeWindowOnLastView=true&ui_appbar=false&a
mp;ui_navbar=false&shareMode=embedded&action=view&mode=dashboard
&subView=model0000018b67954b78_00000000" width="100%" height="1300px"
frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
<link
rel="stylesheet"

href="https://fonts.googleapis.com/css2?family=Exo+2:ital,wght@0,100;0,200;0,300;0,400;0
,500;0,600;0,700;0,800;0,900;1,100;1,200;1,300;1,400;1,500;1,600;1,700;1,800;1,900&
display=swap"
data-tag="font"
/>
<link
rel="stylesheet"

href="https://fonts.googleapis.com/css2?family=Inter:wght@100;200;300;400;500;600;700;8
00;900&display=swap"
data-tag="font"
/>
<!--This is the head section-->
<!-- <style> ... </style> -->
</head>
<body>
<link rel="stylesheet" href="/style.css" />
<div>
<link href="/dashboard.css" rel="stylesheet" />

<div class="dashboard-container"></div>
</div>
<script
data-section-id="header"
src="https://unpkg.com/@teleporthq/teleport-custom-scripts"
></script>
</body>
</html>

```

## report.html

```

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

```



```

<head>
  <title>report - audit ai</title>
  <meta property="og:title" content="report - audit ai" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <meta charset="utf-8" />
  <meta property="twitter:card" content="summary_large_image" />

  <style data-tag="reset-style-sheet">
    html { line-height: 1.15;}body { margin: 0;}* { box-sizing: border-box; border-width: 0;
border-style: solid;}p,li,ul,pre,div,h1,h2,h3,h4,h5,h6,figure,blockquote,figcaption { margin: 0;
padding: 0;}button { background-color: transparent;}button,input,optgroup,select,textarea {
font-family: inherit; font-size: 100%; line-height: 1.15; margin: 0;}button,select { text-
transform: none;}button,[type="button"],[type="reset"],[type="submit"] { -webkit-
appearance: button;}button::-moz-focus-inner,[type="button"]::-moz-focus-
inner,[type="reset"]::-moz-focus-inner,[type="submit"]::-moz-focus-inner { border-style:
none; padding: 0;}button:-moz-focus,[type="button"]:-moz-focus,[type="reset"]:-moz-
focus,[type="submit"]:-moz-focus { outline: 1px dotted ButtonText;}a { color: inherit; text-
decoration: inherit;}input { padding: 2px 4px;}img { display: block;}html { scroll-behavior:
smooth }
  </style>
  <style data-tag="default-style-sheet">
    html {
      font-family: Inter;
      font-size: 16px;
    }

    body {
      font-weight: 400;
      font-style:normal;
      text-decoration: none;
      text-transform: none;
      letter-spacing: normal;
      line-height: 1.15;
      color: var(--dl-color-gray-black);
      background-color: var(--dl-color-gray-white);
    }
  </style>
  <iframe
src="https://eu1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FOlympic%2BSports%2B
Report&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&
&shareMode=embedded&action=run&format=HTML&prompt=false"
width="100%" height="1000px" frameborder="0" gesture="media" allow="encrypted-media"
allowfullscreen=""></iframe>
  <link
    rel="stylesheet"

href="https://fonts.googleapis.com/css2?family=Exo+2:ital,wght@0,100;0,200;0,300;0,400;0
,500;0,600;0,700;0,800;0,900;1,100;1,200;1,300;1,400;1,500;1,600;1,700;1,800;1,900&
display=swap"

```

```

    data-tag="font"
  />
  <link
    rel="stylesheet"

href="https://fonts.googleapis.com/css2?family=Inter:wght@100;200;300;400;500;600;700;800;900&amp;display=swap"
    data-tag="font"
  />
  <!--This is the head section-->
  <!-- <style> ... </style> -->
</head>
<body>
  <link rel="stylesheet" href="/style.css" />
  <div>
    <link href="/report.css" rel="stylesheet" />

    <div class="report-container"></div>
  </div>
  <script
    data-section-id="header"
    src="https://unpkg.com/@teleporthq/teleport-custom-scripts"
  ></script>
</body>
</html>

```

### story.html

```

<!DOCTYPE html>
<html lang="en">
  <head>
    <title>story - audit ai</title>
    <meta property="og:title" content="story - audit ai" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <meta charset="utf-8" />
    <meta property="twitter:card" content="summary_large_image" />

    <style data-tag="reset-style-sheet">
      html { line-height: 1.15;}body { margin: 0;}* { box-sizing: border-box; border-width: 0;
border-style: solid;}p,li,ul,pre,div,h1,h2,h3,h4,h5,h6,figure,blockquote,figcaption { margin: 0;
padding: 0;}button { background-color: transparent;}button,input,optgroup,select,textarea {
font-family: inherit; font-size: 100%; line-height: 1.15; margin: 0;}button,select { text-
transform: none;}button,[type="button"],[type="reset"],[type="submit"] { -webkit-
appearance: button;}button::-moz-focus-inner,[type="button"]::-moz-focus-
inner,[type="reset"]::-moz-focus-inner,[type="submit"]::-moz-focus-inner { border-style:
none; padding: 0;}button:-moz-focus,[type="button"]:-moz-focus,[type="reset"]:-moz-
focus,[type="submit"]:-moz-focus { outline: 1px dotted ButtonText;}a { color: inherit; text-
decoration: inherit;}input { padding: 2px 4px;}img { display: block;}html { scroll-behavior:
smooth }
    </style>
    <style data-tag="default-style-sheet">

```

```

html {
  font-family: Inter;
  font-size: 16px;
}

body {
  font-weight: 400;
  font-style:normal;
  text-decoration: none;
  text-transform: none;
  letter-spacing: normal;
  line-height: 1.15;
  color: var(--dl-color-gray-black);
  background-color: var(--dl-color-gray-white);
}
</style>
<iframe
src="https://eu1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2Fstories%2FOlympic%2BStory&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=view&sceneId=model000018b6b153843_00000000&sceneTime=0" width="100%" height="800px"
frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
<link
  rel="stylesheet"

href="https://fonts.googleapis.com/css2?family=Exo+2:ital,wght@0,100;0,200;0,300;0,400;0,500;0,600;0,700;0,800;0,900;1,100;1,200;1,300;1,400;1,500;1,600;1,700;1,800;1,900&
display=swap"
  data-tag="font"
/>
<link
  rel="stylesheet"

href="https://fonts.googleapis.com/css2?family=Inter:wght@100;200;300;400;500;600;700;800;900&
display=swap"
  data-tag="font"
/>
<!--This is the head section-->
<!-- <style> ... </style> -->
</head>
<body>
  <link rel="stylesheet" href="/style.css" />
  <div>
    <link href="/story.css" rel="stylesheet" />

    <div class="story-container"></div>
  </div>
  <script
    data-section-id="header"

```

```
src="https://unpkg.com/@teleporthq/teleport-custom-scripts"  
></script>  
</body>  
</html>
```

**GitHub Link :**

<https://github.com/AnudhinaDhanabalan/Naan-Mudhalvan.git>

**Project Demo video Link:**

[https://drive.google.com/file/d/1DnMC\\_ksEoyLZqnd2w111Bt3E8A9I8Dux/view?usp=sharing](https://drive.google.com/file/d/1DnMC_ksEoyLZqnd2w111Bt3E8A9I8Dux/view?usp=sharing)