120 years of Olympic History Analysis

*Lovely Professional University*

Requirements Specification

Version 1.0

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**1. Executive Summary**

**1.1 Project Overview**

This project is to develop a web application that allows users to explore and analyze the Olympic Games dataset from Kaggle. The application will provide users with information on medals won, athletes, and events.

**1.2 Purpose and Scope of this Specification**

This specification defines the functional and non-functional requirements for the web application. The functional requirements describe the features and functionality that the application must provide. The non-functional requirements describe the performance, reliability, security, and other aspects of the application.

**2. Product/Service Description**

**2.1 User Characteristics**

The target users of the web application are people, who are interested in the Olympic Games. This includes sports fans, researchers, and students.

**2.2 Assumptions**

The following assumptions are made about the users of the web application:

* Users have access to a computer with an internet connection.
* Users have a basic understanding of how to use a web browser.
* Users are interested in learning about the Olympic Games.

**2.3 Constraints**

The following constraints apply to the development of the web application:

* The application must be developed within a budget of $10,000.
* The application must be developed within a timeframe of 6 months.
* The application must be compatible with all major web browsers.

**2.4 Dependencies**

The web application will depend on the following software and hardware:

Software: Python, Streamlit, Pandas, Plotly, Matplotlib, Seaborn

Hardware: Web server, database server

**3. Requirements**

**3.1 Functional Requirements**

The web application must provide the following features:

* Allow users to view the medal tally for each Olympic Games.
* Allow users to filter the medal tally by country, year, and sport.
* Allow users to view the top athletes for each Olympic Games.
* Allow users to filter the top athletes by country, year, and sport.
* Allow users to view the top events for each Olympic Games.
* Allow users to filter the top events by country, year, and sport.
* Allow users to create custom visualizations of the Olympic Games data.

|  |  |  |
| --- | --- | --- |
| Requirement no. | Requirement name | Requirement description |
| 1 | Medal Tally | Allow users to view the medal tally for each Olympic Games. |
| 2 | Overall Analysis | Allow users to view the top athletes and events for each Olympic Games. |
| 3 | Country-wise Analysis | Allow users to filter the medal tally, athletes, and events by country. |
| 4 | Athlete wise Analysis | Allow users to filter the medal tally, athletes, and events by athlete. |
| 5 | Create Custom Visualizations | Allow users to create custom visualizations of the Olympic Games data. |

**Non-Functional Requirements:**

**Hardware Requirements:**

Processor: Intel Dual-Core or above

RAM: 4 GB or above

Software Requirements:

Python 3.6 or above

Streamlit 1.2 or above

Pandas 1.2 or above

Plotly 5.1 or above

Matplotlib 3.5 or above

Seaborn 0.11 or above

Web server (e.g., Apache, Nginx)

Database server (e.g., MySQL, PostgreSQL)

3.2 User Interface Requirements

The web application must have a user-friendly interface that is easy to navigate. The interface should be consistent and visually appealing.

**3.3 Performance**

The web application must be able to handle a large number of concurrent users without sacrificing performance. The application should also be responsive and load quickly.

**3.3.1 Capacity**

The web application must be able to handle up to 100 concurrent users.

**3.3.2 Availability**

The web application must be available 99% of the time.

**3.3.3 Latency**

The web application must respond to user requests within 1 second.

**3.4 Manageability/Maintainability**

The web application must be easy to manage and maintain. The application should be well-documented and modular in design.

**3.4.1 Monitoring**

The web application must be monitored for performance and errors.

**3.4.2 Maintenance**

The web application must be easy to update and maintain. New features and bug fixes should be released on a regular basis.

**3.4.3 Operations**

The web application should be easy to deploy and operate.

**3.5 System Interface/Integration**

The application should interface with external data files ('athlete\_events.csv' and 'noc\_regions.csv').

**3.6 Security**

**3.6.1 Protection**: The application should protect user data and prevent unauthorized access.

**3.6.2 Authorization** and Authentication: User access should be controlled and authenticated.

**3.7 Data Management**

The application must efficiently manage and process Olympic data.

**3.8 Standards Compliance**

The application should adhere to coding and design standards.

**4. User Scenarios/Use Cases**

Users can select different analysis options (Medal Tally, Overall Analysis, etc.) and specify years and countries for analysis.

Users can view graphical representations of Olympic data.

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**| User |**

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**| View Medal | | Filter Medal Tally | | View Top |**

**| Tally | | by Country, Year, | | Athletes for |**

**| | | and Sport | | each Game |**

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**| View Top | | Filter Top Athletes| | View Top |**

**| Events | | by Country, Year, | | Events for |**

**| | | and Sport | | each Game |**

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**| User |**

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**| Create Custom Visualizations |**

**| of Olympic Games Data |**

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In this use case diagram:

* The "User" interacts with the system through various use cases, such as "View Medal Tally," "Filter Medal Tally," "View Top Athletes," "Filter Top Athletes," "View Top Events," and "Create Custom Visualizations."
* Arrows represent the interaction between the user and the system through these use cases.
* The use cases are organized based on their functionalities.
* This diagram provides an overview of how users interact with the system to perform specific tasks related to Olympic Games data analysis. You can create a visual representation of this diagram using various diagramming tools or software like Lucidchart, draw.io, or similar tools.

**5. About Dataset**

**Context**

This is a historical dataset on the modern Olympic Games, including all the Games from Athens 1896 to Rio 2016.

Note that the Winter and Summer Games were held in the same year up until 1992. After that, they staggered them such that Winter Games occur on a four year cycle starting with 1994, then Summer in 1996, then Winter in 1998, and so on. A common mistake people make when analyzing this data is to assume that the Summer and Winter Games have always been staggered.

**Content**

The file athlete\_events.csv contains 271116 rows and 15 columns. Each row corresponds to an individual athlete competing in an individual Olympic event (athlete-events). The columns are:

ID - Unique number for each athlete

Name - Athlete's name

Sex - M or F

Age - Integer

Height - In centimeters

Weight - In kilograms

Team - Team name

NOC - National Olympic Committee 3-letter code

Games - Year and season

Year - Integer

Season - Summer or Winter

City - Host city

Sport - Sport

Event - Event

Medal - Gold, Silver, Bronze, or NA

**5. Deleted or Deferred Requirements**

No requirements have been deleted or deferred at this time.

This Software Requirements Specification (SRS) provides an overview of the "120 Years of Olympic History" project, its functional and non-functional requirements, and user scenarios. It serves as a reference for the development and evaluation of the application.

**APPENDIX A. REFERENCES**

The Olympic data on [www.sports-reference.com](http://www.sports-reference.com/) is the result of an incredible amount of research by a group of Olympic history enthusiasts and self-proclaimed 'statistorians'. Check out their [blog](http://olympstats.com/) for more information. All I did was consolidated their decades of work into a convenient format for data analysis.  
  
Dataset link: https://www.kaggle.com/datasets/heesoo37/120-years-of-olympic-history-athletes-and-results