COLLEGE OF COMPUTING AND INFORMATION SCIENCES

DEPARTMENT OF NETWORKS

BACHELOR OF SCIENCE IN SOFTWARE ENGINEERING(YEAR 2)

RECESS TERM 2 (BSE 2301)

Software Requirements Specification For:

FIFA WORLD RANKING SYSTEM

GROUP 19

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1. Introduction

1. Purpose

The purpose of this document is to give a detailed description of the requirements for the “FIFA World Ranking System ” (FWRS) software. It will illustrate the purpose and complete declaration for the development of system. It will also explain system constraints, interface and interactions with other external applications.
The FIFA world ranking system , release 1.0 ,the system will be able to rank the best national men’s football teams in world according to points acquired from the international matches played since August 1993 to April 2018 as recognized FIFA .

1.1 Document Conventions

SRS – Software Requirements Specification
FWRS – FIFA World Ranking System.
This document in new times roman , font-size 12 ,line spacing 1.5

1.2 Intended Audience and Reading Suggestions

This document is intended for the software developers , project manager and the user .
The Software Requirements Specification shall help the software developers to understand the scope of the project, system requirements both functional and non-functional requirements , system features as described using diagrams such as use case ,data flow and activity diagrams.

The project manager will be able understand what the whole system is about through the product scope , system requirements , system features.

The users include football analysts , fans and the players etc . The Software Requirement Specification will help the users to use the FIFA world ranking system.

This document contains the following sections:

Product scope

Provide a short description of the software being specified and its purpose, including relevant benefits, objectives, and goals.

overall description

- Product Perspective

  Describes the context and origin of the product being specified .
- Product Functions

  Summarizes the major functions the product performs or lets the user perform.
- User classes and characteristics

  Identifies the various user classes that anticipate the use the FIFA world ranking system.
- Operating environment

  Describes the environment in which the FIFA world ranking operates , including the hardware platform ,operating systems and any other software components or application it must peacefully co-exist.
- Design and implementation constraints

  Describes items that limit the options available to the developer .
- User documentation

  Lists the user documentation components that are delivered along with the system.
- Assumptions and dependencies

Lists any assumed factors that could after the requirements stated in this document.

External interface requirements

The contains user interfaces that describe logical characteristics of each interface between the FIFA world ranking system and the users , the hardware interfaces that describe the logical and physical characteristics of each interface between FWRS,
hardware components and the software interface that describes the connection between the FWRS and the other specific software components, and the communication interface describes the requirements associated with any communications functions of the FWRS.

system features
These illustrates the function requirements of the FWRS

other non-functional requirements
This consists the performance requirements , Safety and security requirements

1.3 Product Scope

The FIFA world ranking system ranks the best teams ,visualizes graphs and predictions using the points acquired from the international games played.

Benefits:

I. The FWRS enables users to easily understand information provided through visualizations
II. The FWRS provides awareness of the national teams performances .
III. It enables predictions of the next ranking according to the data

Objectives:

- *To determine the best teams in the world* from August 1993 to April 2018.
- To predict the country's position in the next rankings.

Goal:

- To be able to determine the best teams in the world .

References

[1] IEEE Software Engineering Standards Committee, "IEEE Std 830-1998, IEEE Recommended
Practice for Software Requirements Specifications", October 20, 1998.

[2] Davis M A, "Just Enough Requirements Management: Where Software Development Meets
Marketing", New York, Dorset House Publishing, 2005.

[3] Karlsson J, "A Cost-Value Approach for Prioritizing Requirements", Norges Teknisk-
Naturvitenskapelige Uni. 1997

2. Overall Description

2.1. Product Perspective

The FWRS is new system that runs on the internet and it uses the fifa-ranking csv file as the source of information .The fifa-ranking csv file provides data which is analyzed and displayed in form of graphs ,histograms ,bar charts and summaries. All the graphical diagrams will be displayed on the user interface which seemingly will be a web page.

Below is a diagram to display the various system components.

The Context Diagram

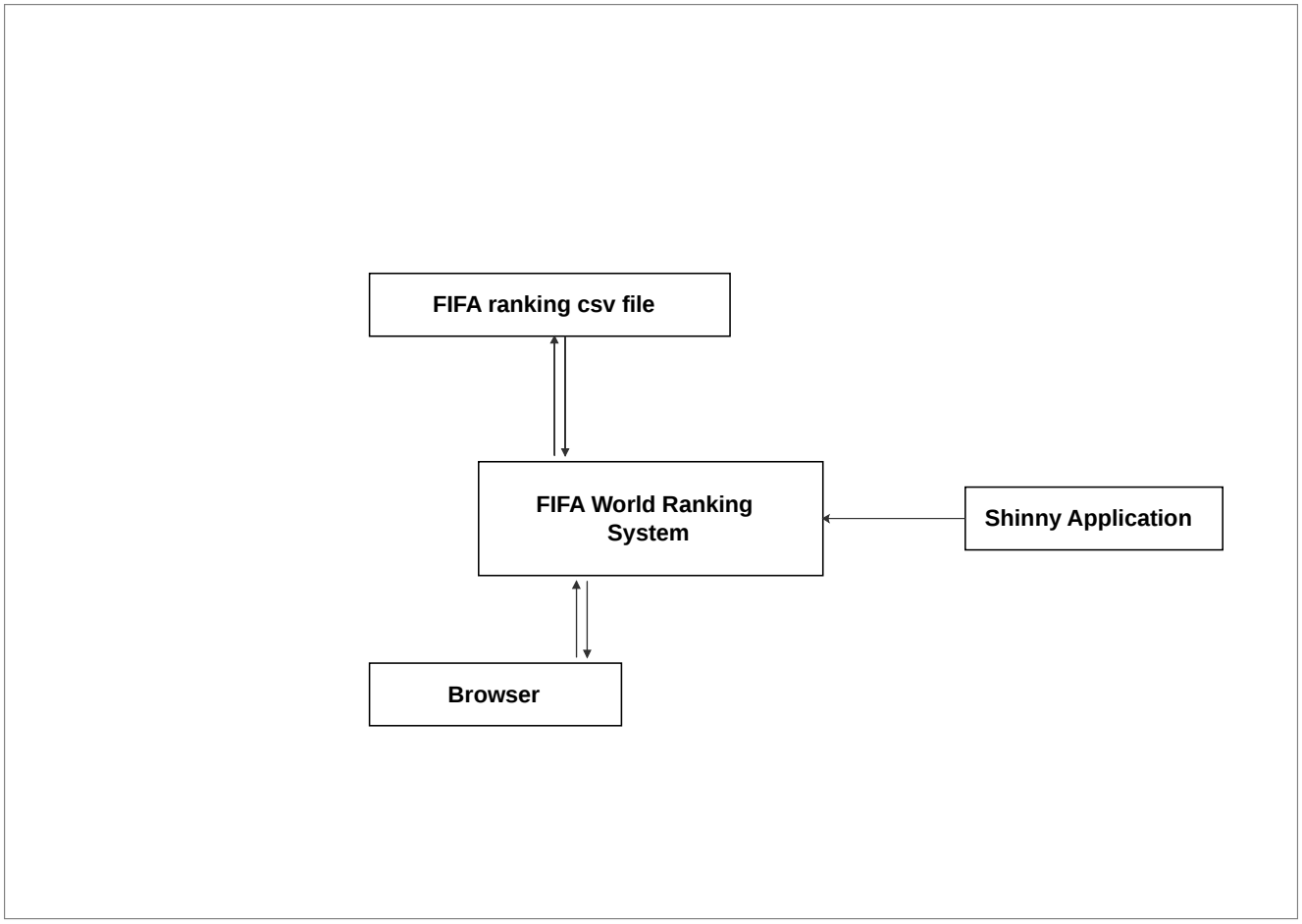

Figure 1.0

2.2. Product Functions

With the mobile phone or computer a user will be able to:

- View the all time best National teams in the world according their points
- View the best National teams in various football confederations for-example the best team in Europe depending on the UEFA data
- View every National team’s performance depending on the current and previous rankings and change in points
- View a country’s data in accordance to years and dates

Below is the top-level diagram to show processes

The Data Flow Diagram

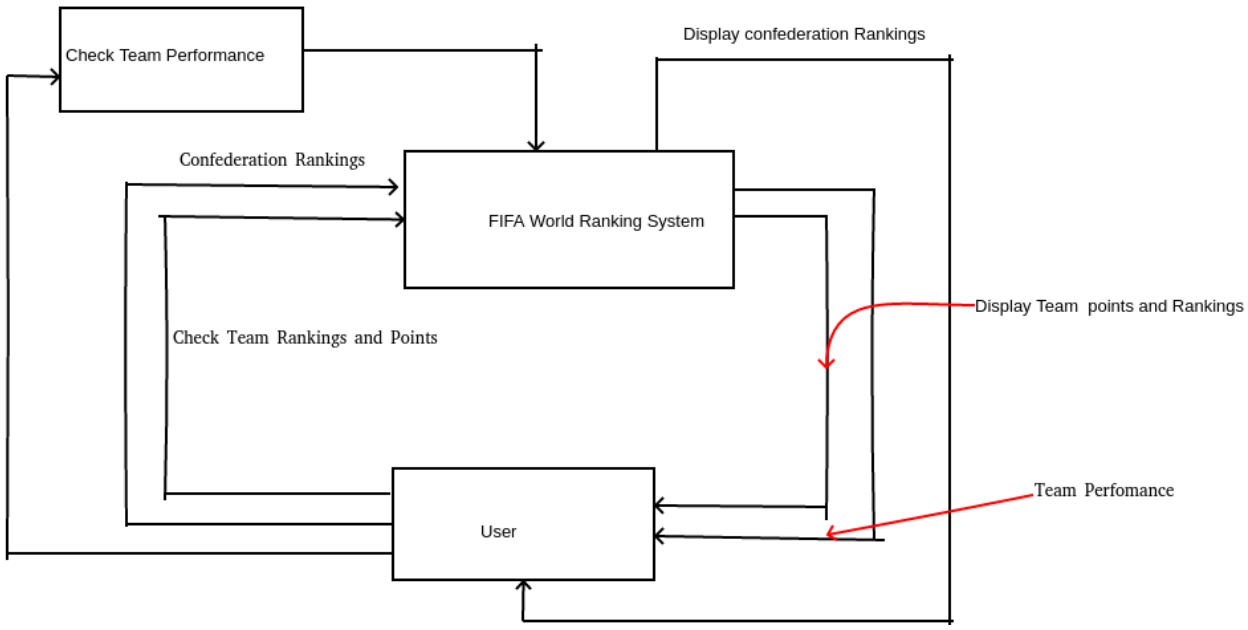

Figure 1.1

2.3. **User Classes and Characteristics**

There are three types of user of the FWRS system the analysts of the sports , the football fans and the national teams who may need to know their status in the world rankings.
Each of these three types of users has different use of the system so each of them has their own requirements.
The fans can use the system to get knowledge about the rankings of their countries , the football analysts use the system to analyze and because it’s their job and many others.

Users of the FWRS require simple computer skills because the system is a select and click system.
The FWRS is a single user class system whereby its users do the following :

- Loads the website
- Navigates the menu to choose the desired information
- Selects the required data of the specific team to visualize
- Views the information data

2.4. **Operating Environment**

The system will require an internet connection to operate .
FWRS will be able to run on every computer system of a given hardware
The system will be able to run on windows version,Linux and mac so long as they have a web browser.

2.5. **Design and Implementation Constraints**

- The project is constrained to the fifa-ranking csv file as the source data to be used for analysis and the ranking is done on points collected from the international games played by the particular national teams.

- The project is also constrained to an internet connection because its a web based system and users will need to access it remotely .

2.6. **User Documentation**

User documentations such as the project scope so far have been given in hand.

The system is under development stage and requires a complete implemented prototype to explain the user documentation. Once the prototype is designed and implemented online manuals, user manuals shall be provided.

2.7. **Assumptions and Dependencies**

Assumptions

- The project will need full time commitment, hard work, research and team work.
- The system will take 3 weeks including implementation.
- An internet connection will be required to enable testing and clear loading of the generated visual graphs.
- The existing software will be used such as R studio.

Dependencies

- The system will depend on a fifa-ranking CSV file which contains all the data that will be analyzed and displayed in form of charts and graphs .
- The system will depend on the internet connection because it will be a web based application

3. External Interface Requirements

3.1. User Interfaces

The Graphical User Interface (GUI) entails page to help the user interact with the system though use of button made using R -Studio. The layout is designed with a headings to identify current component and separate the plots from actions
The different buttons including navigation bar for navigating through the data.
Shiny is a package from R -Studio that makes it incredibly easy to build interactive web applications with R and create dashboard.

A sample image to show the main interface is pasted below.

The Main Interface

figure 2.2

3.2. Software Interfaces

Software interfaces used are browser to be used by the user to interact with the system.

3.3. Communications Interfaces

For communications interfaces we to use (HTTP) Hyper Text Transfer Protocol this protocol is supported by browser.

4. System Features

4.1. Ranking of the best Teams

Only high priorities Use Case are mentioned.

Description and Priority

The ranking of the best team will use the points of the national teams earned through all the international matches played by the teams.
The ranking of the best team feature shall compute the total points of the teams and determine the best of all the national teams.
This is the high priority functional requirement.

Stimulus/Response Sequences

The feature will display the lists of all teams in the descending order from the best to the worst teams . This will be a web page where the users shall browse to check on the rankings.
The points collected from the various national teams are put in the csv file and imported to the system for analysis and positions are determined the user is able to see.

Functional Requirements

- The software shall be able to collect the points of the points of the teams collected for each international games from 1993 to 2018.
- The system shall be able to compute the total points collected from the international games played by each national teams .

- The system (FWRS) determines the rank score in points and determine the best teams from 1993 to 2018.
- The system shall output the sorted lists of the teams in order agreed upon as a web page for the users .
- The system shall also be able to display the number of times the national teams have participated in the FIFA world cup since 1993 to 2018 .
- The shall determine the number of international games played by each national teams .

1. **Summary**

REQ-1:

Use case	Compute total points
Description	The system shall compute the total points automatically
Actors	The system
Steps	The system shall use the points collected in the csv file to compute the total points a national team has earned from the international games played

REQ-2:

Use case	Rank the national teams
Description	The system shall rank the national teams automatically using the total points earned from 1993 to 2018
Actors	The system
Steps	The system shall use the total points in the csv file to rank the national teams

REQ-3:

Use case	Points collection
Description	The points shall be collected from a csv file from the international games played by each national teams.
Actors	The software manager , maintainer
Steps	The points shall be put in a csv file and upload or points shall be collected from another website through a link.

5. Other Nonfunctional Requirements

5.1. Performance Requirements

The system shall be available 24x7 unless during irregular updates periods and unforeseen down times. It will be accessed by at least one hundred people per hour.
It shall be able to operate on any operating system.

The FIFA World Ranking System (FWRS) shall have an average of response time of about 0.5 seconds and processing time of at least 2 seconds. But all the timing will depend on the computer system specifications been used.

It will be allocated 4MB of hard disk space to accommodate csv (Comma Separated files) files.

5.2. Safety Requirements

Users shall not have access to the csv files. All csv files shall be backed up to avoid loss of data by use of remote servers.

Data will be stored in csv files since they are harder to manage and add new entities by the user thus promoting data consistency.

The system shall rarely breakdown even though the number of users increases.

5.3. Security Requirements

The system data shall be backup frequently and copies stored in a secure off site location for example storing important data on a remote server, usually via the Internet or through the CSV files.

5.4. **Software Quality Attributes**

Availability, the system shall be easily accessed and available for the users so long as Internet is within they reach. It will exhibit an availability of not less than 95%.

Usability, it shall be easy to use and understand for all different age groups since it will include graphical representations of different searches. Also it shall be easy to use by members of the public who shall not have used it before or got training sessions about the system due to its user friendly interface.

Adaptability, the system shall be able to run on different operating systems for example windows, Unix, Macintosh.

Maintainability, it shall be easy to maintain even though the number of users' desires increases. It will be made easy through the feed backs got from the users.

Reliability, the FIFA World Ranking System (FWRS) should breakdown on average one hour per year.

Re-usability the system shall be able to be reused for all the upcoming FIFA world cup matches.

Appendix A: Glossary

- FIFA- Federation of International Football Association
- FWRS -FIFA World Ranking System
- User – An individual who browses through the web on the system to check out on the rankings.

- UEFA – Union of European Football Association

Appendix B:

Analysis Models. The diagrams below shows the different components of the system and processes

The Use Case Diagram

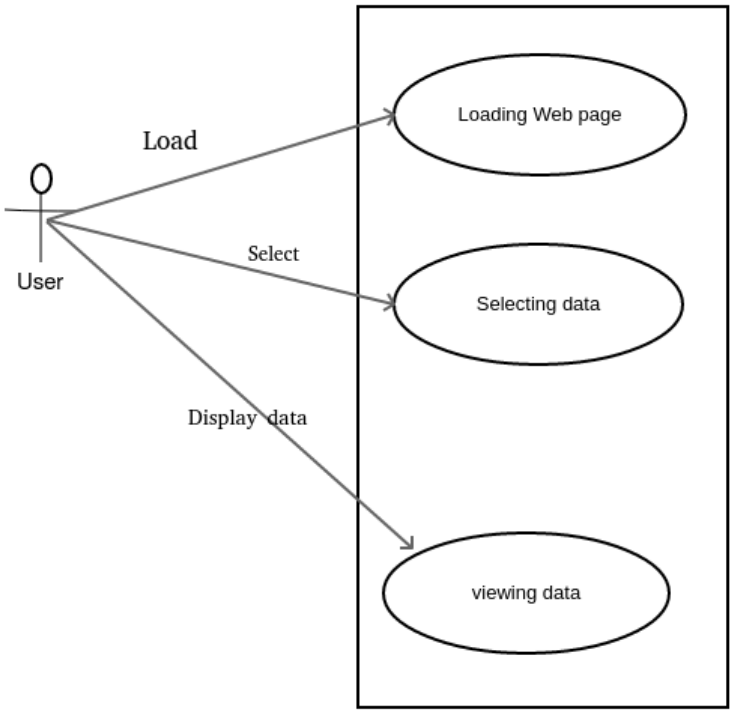

Figure 3.0