Predicting League of Legends Game Analytics

_IT314_: _SOFTWARE ENGINEERING_

MENTOR: _Professor Saurabh Tiwari_

GROUP 18

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1. GROUP MEMBERS

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2. PROBLEM STATEMENT

An analysis tool for the popular online game League of Legends. The system is designed to help players analyze previous games and, using personalized trends, generate suggestions on the optimal way to approach a current game or how best to improve in the future.

3. REQUIREMENTS

3.1 FUNCTIONAL REQUIREMENTS:

- User Login: Allow users to sign in through their game IDs and link their game data to the software for better analytics
- User Signup: Allow Users to Register to the website for accessing more functionalities.
- Password Change Functionality: The user should be able to change and if required recover their password whenever they want
- Custom Lookup: Allow users to look up statistical data about particulate game mechanics and builds without having to log in or link their data
- Team Lookup: Allow users to look up data and builds for a team of 5 users
- Tier List: Interface will show the Tier list based on rate and no of matches played by the champion.
- Real-time analysis: This shows you the real-time strength of your teams and your builds by downloading the app on our website.
- Comparison: users can compare their stats with another user. This comparison will be based on champion lane and number of matches the user played.
- Personal stats: user can see their data(match history(death assist,kill),win rate,lane, role, etc.)

- Upcoming League information: Website will show you information about upcoming league.
- Play style based suggestions: Users can input the type of game/role they want to play in the game and based on that they can receive
- Build compare: Compares your build with other expert players and their games
- Champion data: Users can find all the champions in the champion page. If they want to see details of each champion then they do that as well
- Items data: Users can find all the items used in the game in the items page.
- Leaderboard: website will show you the leaderboard based on region,queue type and league(e.g: na1,solo Rank,Grandmaster league)
- Suggestions : This page will show you suggestions based on which player you should choose to win the match.

3.2 NON-FUNCTIONAL REQUIREMENTS:

- System should be flexible to run on any platforms like android, iOS and PC.
- The system will be responsive for mobile compatibility.
- The system should be easy to use by the end users.
- The system should be reliable and robust.
- The system should have very less latency.
- The system should be available 24/7
- The system must be accessible to 1000-1200 users at a time.
- The system should protect the private information of the users.
- The system should include scalability optimizations, to support our application on a larger scale.

4. REQUIREMENTS ELICITATION TECHNIQUES

4.1 INTERVIEW (DOMAIN EXPERT):

Interviewee Name : Darsh Shah

Youtube Game streaming channel : Gravity 2k

Channel Link: https://www.youtube.com/channel/UCMO-iuBLr7AmoO12SlbwW0w

Date : 27 March 2021

Interviewer : Dhruv Chavda, Parth Bhoi

Place : Google Meet

Interview:

Question : As a streamer what kind of games do you think people like to watch ?

Answer : Viewers are mostly interested in watching multiplayer games where many people can compete together in a single arena, also games which have an essence of competitiveness are preferred.

Question : What according to you are the skills required to play these games ?

Answer : You have to be skillful enough to use your reflexes and hand eye coordination well, also the game analytics and team strategy is very important, as, a powerful team with poor coordination could be crushed by a relatively weak team with good coordination, also knowing your game well is very important, what conditions will arise if a player takes a certain action and how will it affect the game, a player has to be aware of these things and chicken dinner is yours.

Question : Are you aware of online gaming analysis tools which are available for various games? Do you personally use them?

Answer : Yes I am aware of such kinds of tools but, I have used some tools to improve my game but I don't fully rely on such tools for my game as I think that if we only rely on such tools to play our games then we are no better than bots, so there

has to be some human touch to the game, but those tools are immensely helpful if you want to improve your game.

Question : What according to you are the must required things in these types of platforms?
Answer : So these types of platforms could be useful if they provide some kind of insight about the game strategies, what is effective against what and how it should be played.

Question : Do you play League of Legends?
Answer : Yes, of course I play League Of Legends, it is one of my favourites but unfortunately not many people play LOL in India, so we have to play on European and American servers.

Questions : Will you use our site once it's deployed?
**Answer** : Of course, I am waiting to see what product you'll come up with.

Takeaway : To focus more on the statistical analysis of the game and try to provide the inherent mechanic of how the game works for new players , as of experienced players, they already know how to approach a game situation, so the website should also focus on giving experienced player a statistical result, from the past played matches with similar situation, which resulted in a win.
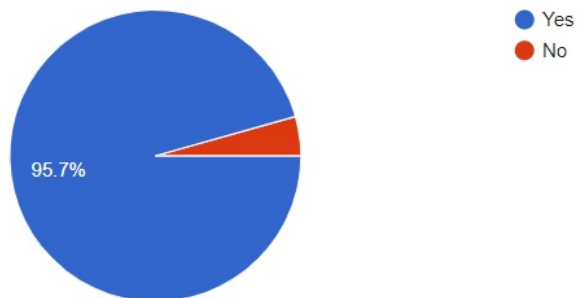
4.2 GOOGLE FORM:

Do you like to play Mobile/PC/Console games?

- Yes
- No

17.4%

82.6%
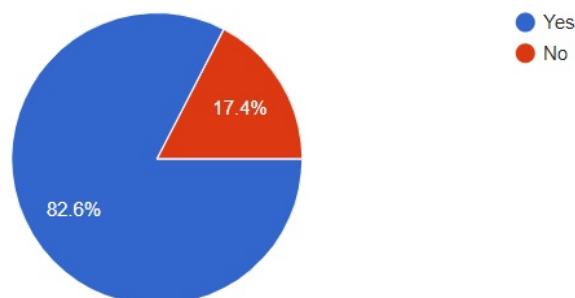
Which type of games do you like to play?

- Arcade
- Online Multiplyer
- Fun
- Hypercasual

26.1%

47.8%

21.7%
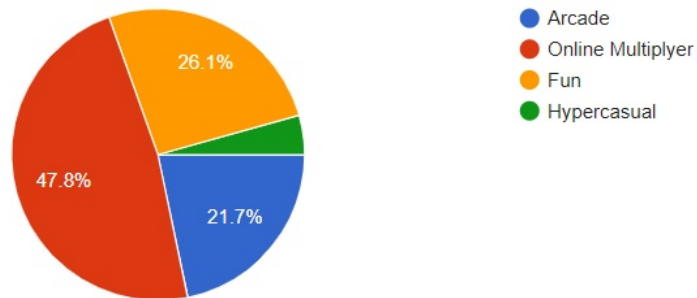
Have you ever heard of PvP games (like PUBG, CS:GO, Valorant etc)?


- Yes
- No

95.7%

Are you aware of the fact that there are online websites and apps that are specifically designed to provide statistical and analytical data for these type of PvP games (like Gameleap, Blitz etc)?


- Yes
- No

34.8%

65.2%
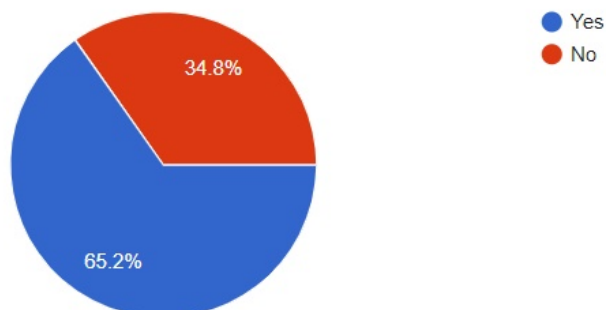
These platforms provide various type of information based on your previous performance. Do you feel that by examining your previous performance, can make you find errors in your gameplay that you might have oversighted otherwise and improve your overall gaming experience?

- Yes
- No
- Maybe

39.1%
13%
47.8%
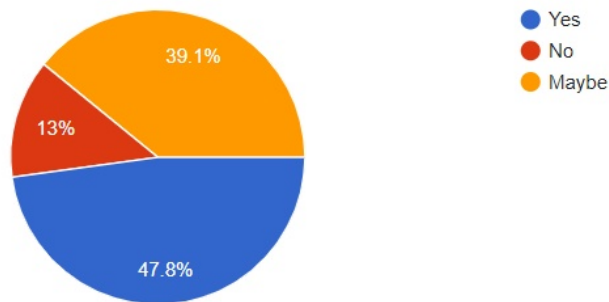
On the scale of 1 to 10, how much do you think it can improve your performance?
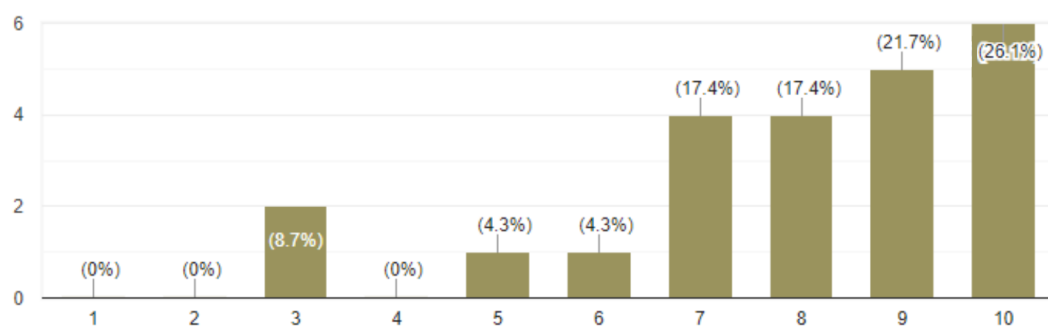
Have you heard of the game "League of Legends"?

- Yes and I've played it
- Yes but I haven't played it
- No

43.5%
17.4%
39.1%
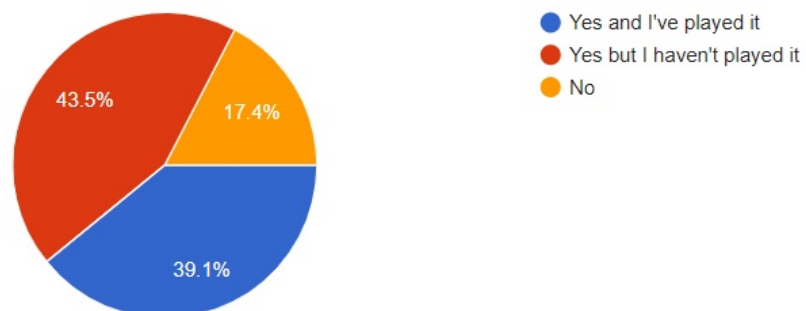
If you have played "League of Legends". What is your personal experience?

General Response:- "League of Legends" is a difficult game to learn at first but it's fun to play once you get the hang of it.

4.3 LITERATURE REVIEW:

In this section we have gone through applications that already exist in the market and different studies which have tried to analyze the game in order to make conclusions about it. The main purpose of this study is to see what implementation has already been done, how it is done and what is lacking in the same.

- Prediction using Logistic Regression: https://medium.com/analytics-vidhya/analyzing-league-of-legends-bacc71f45026
- Playstyle analysis: https://saas.berkeley.edu/rp/league-of-legends
- Already existing applications/websites with similar goals we can derive from:
    - https://www.leaguespy.gg/
    - https://app.mobalytics.gg/
    - https://app.senpai.gg/lol/champions
    - https://u.gg/faq

5. <u>USER STORIES</u>

- As a user, I should be able to create a new account on the website.
- As a gamer, I want to be able to see the leaderboard.
- As a gamer, I want to be able to see the statistics of my previous games.
- As a user, I want to be able to access the system from any device.
- As a user, I want to be able to login using my Gmail ID.
- As a gamer, I want to be able to see the statistics of a particular player playstyle.

- As a user, I want to be able to access the system anytime
- As a gamer, I want to be able to compare my builds with other players.
- As a gamer, I want to be able to see the statistics of a particular match.
- As a gamer, I want to be able to get suggestions based on my past performance.
- As a user, I want to be able to change my password.
- As a user, I want to be able to recover my password.
- As a gamer, I want to be able to see the builds for a team of 5 users.
- As a gamer, I want to be able to get suggestions based on playstyle.

6. <u>REQUIREMENTS PRIORITIZATION</u>

Note:-

   User Stories are prioritized according to MoSCoW method

   Must have - **'M'**

   Should have - **'S'**

   Could have - **'C'**

   Would have - **'W'**

MUST HAVE

- As a user, I should be able to create a new account on the website.
- As a gamer, I want to be able to see the leaderboard.
- As a gamer, I want to be able to see the statistics of my previous games.
- As a gamer, I want to be able to see the statistics of a particular match.
- As a gamer, I want to be able to get suggestions based on my past performance.
- As a user, I want to be able to change my password.
- As a user, I want to be able to recover my password.
- As a gamer, I want to be able to see the builds for a team of 5 users.
- As a gamer, I want to be able to get suggestions based on playstyle.
- As a user, I want to be able to login using my Gmail ID.

SHOULD HAVE

- As a user, I want to be able to access the system from any device.
- As a gamer, I want to be able to see the statistics of a particular player playstyle.
- As a gamer, I want to be able to compare my builds with other players.
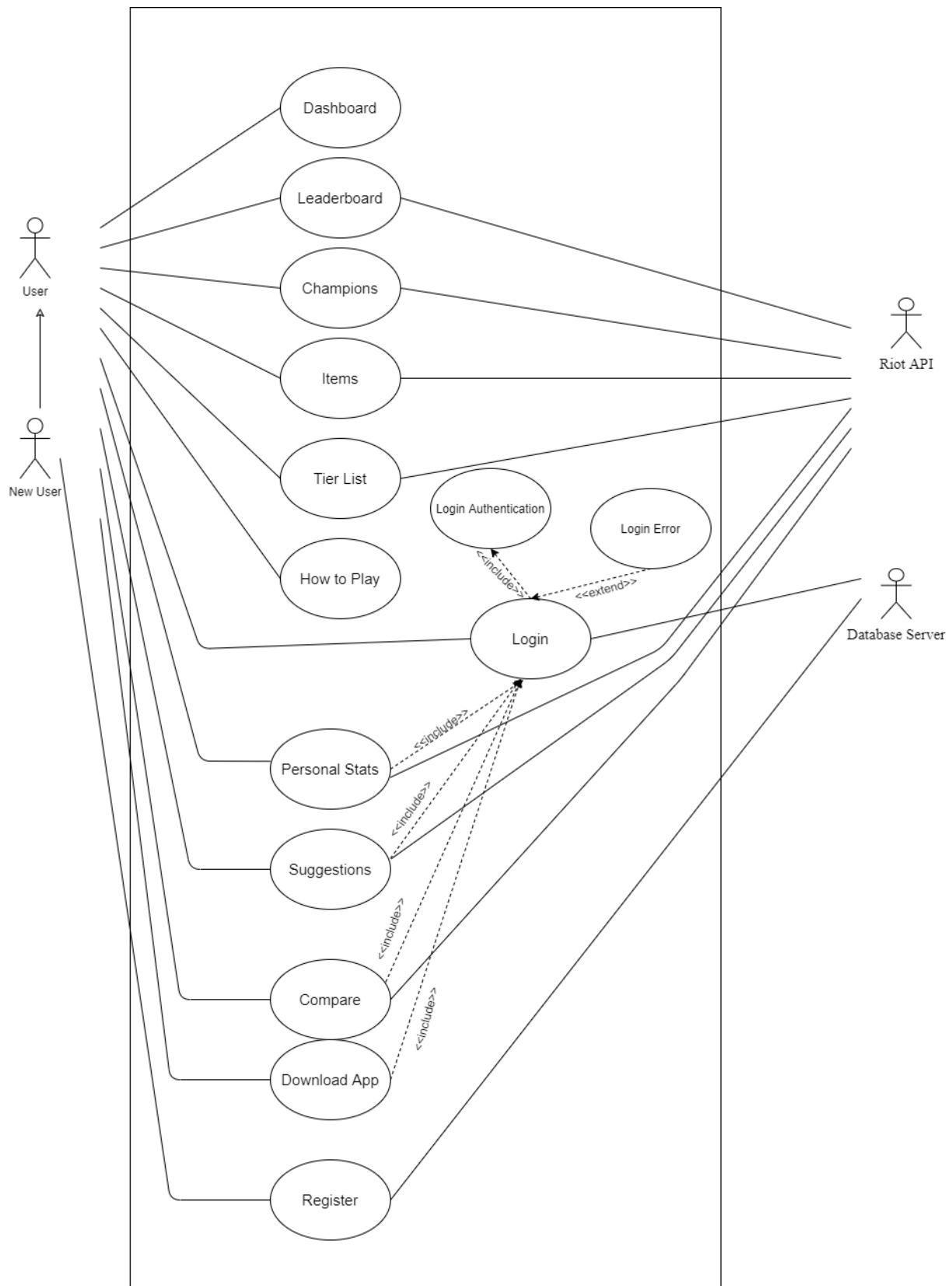
WOULD HAVE

- As a user, I want to be able to access the system anytime.

7. ANALYSIS OF SYSTEM USING DIAGRAMS
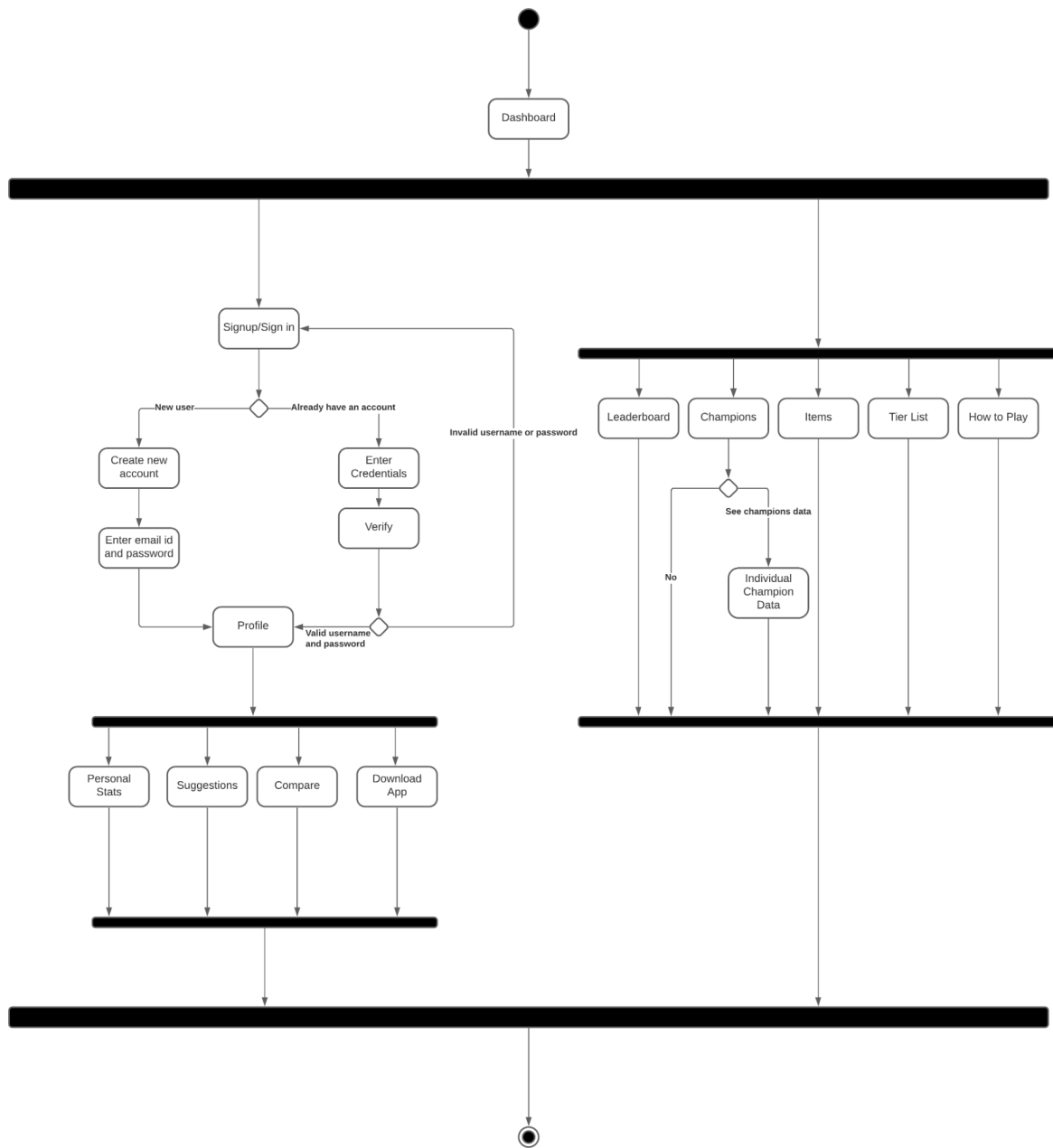## 7.1 CONCEPT MAP
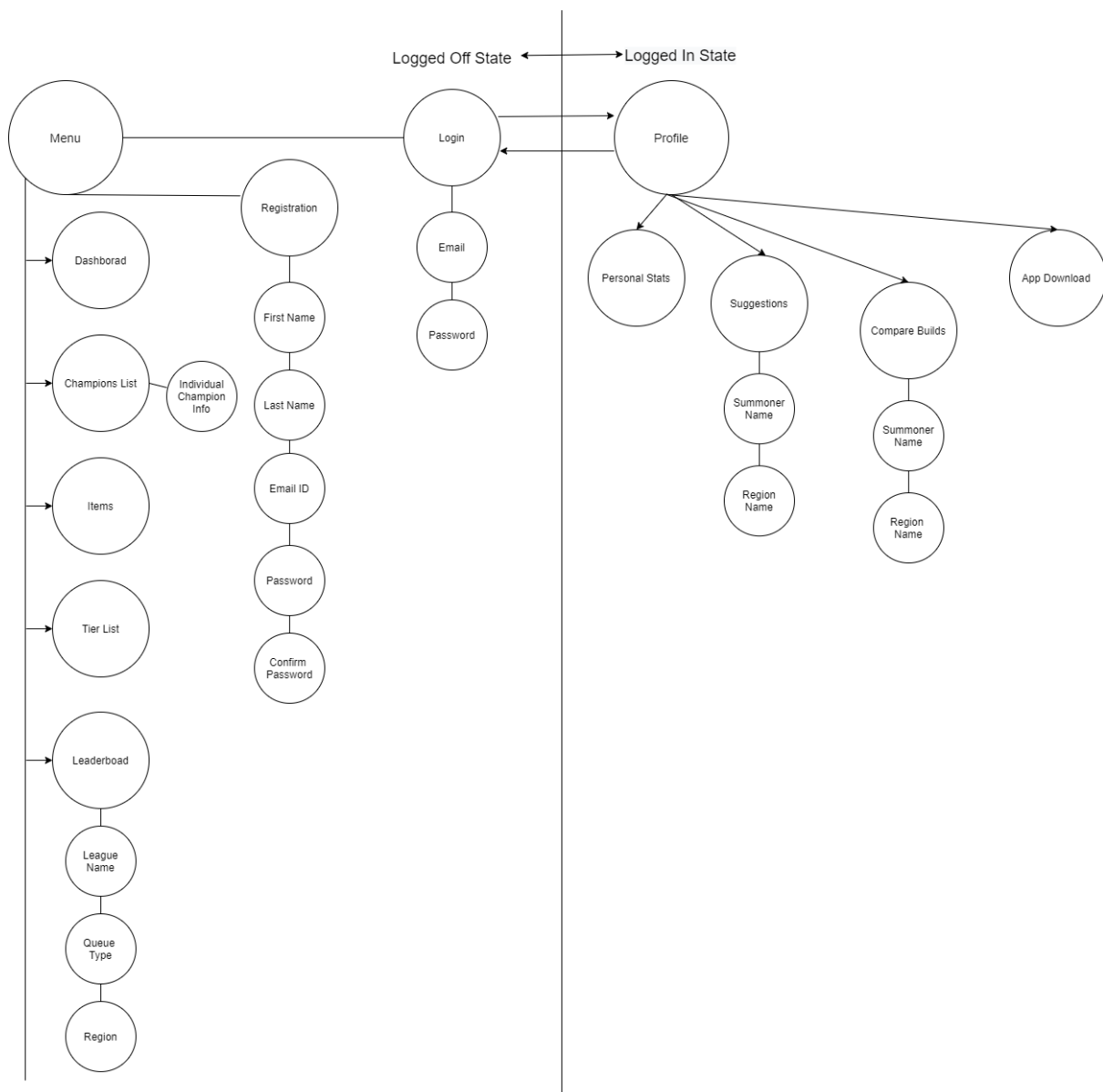
7.2 USE CASE DIAGRAM

7.2.1 Stakeholders
- Game Corporations
- Gamers/End Users
- Software Developers
- Database Providers
- Game Developers
- Hosting Service Provider

7.2.2 Actors
- Gamers/End Users
- Game Analysts
- Data Miners
- Other websites/softwares
- ESports Organizations

7.3 ACTIVITY DIAGRAM

Dashboard

Signup/Sign in

New user ◇ Already have an account

Create new account

Enter email id and password

Enter Credentials

Verify

Invalid username or password

Profile

Valid username and password

Personal Stats

Suggestions

Compare

Download App

Leaderboard

Champions

Items

Tier List

How to Play

◇ See champions data

No

Individual Champion Data

7.4 STATE DIAGRAM
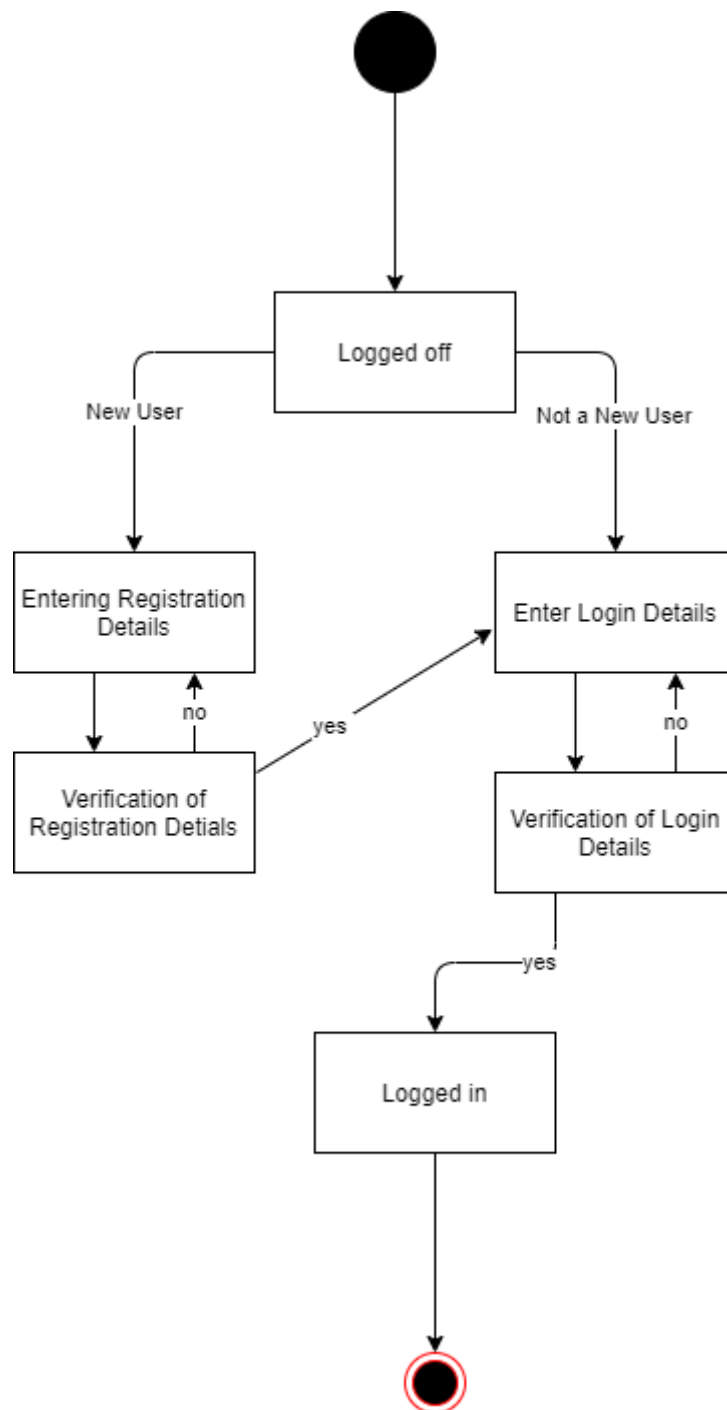
7.5 SEQUENCE DIAGRAM
7.5.1 Before Login

User

System UI

Riot API

Authentication Server

Database

Alt

Dashboard

See Dashboard

Show Dashboard

Champions

See Champions Detials

Fetch Champions Details

Retrived Champions Details

Show Champions Details

See Individual Champions

Fetch Individual Champions Data

Retrieved Champions Data

Show Individual Champions Details

Items

See Items Details

Fetch Items Details

Retrieved Items Details

Show Items Details

Tier List

See Tier List

Show Tier List

How To Play

See How to Play

Show How to Play

Register

New User?
Enter Credentials
for Registration

Send Registration Details

Validate Registration
Details

Registration Details = Valid
Save User to the Database

Return

return

Login

Not a new User?
Enter Credentials
for Login

Send Login Details

Validate Login
Details

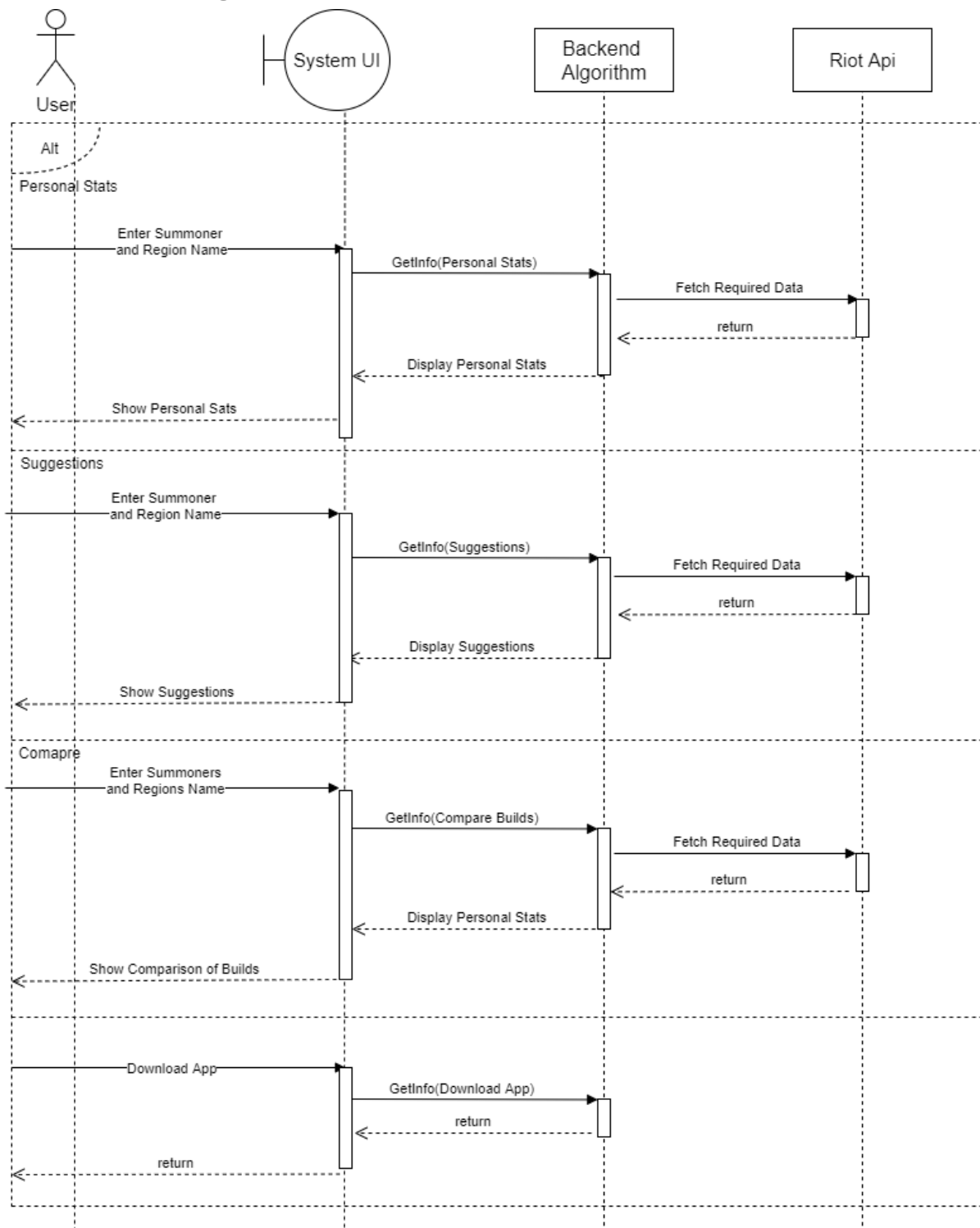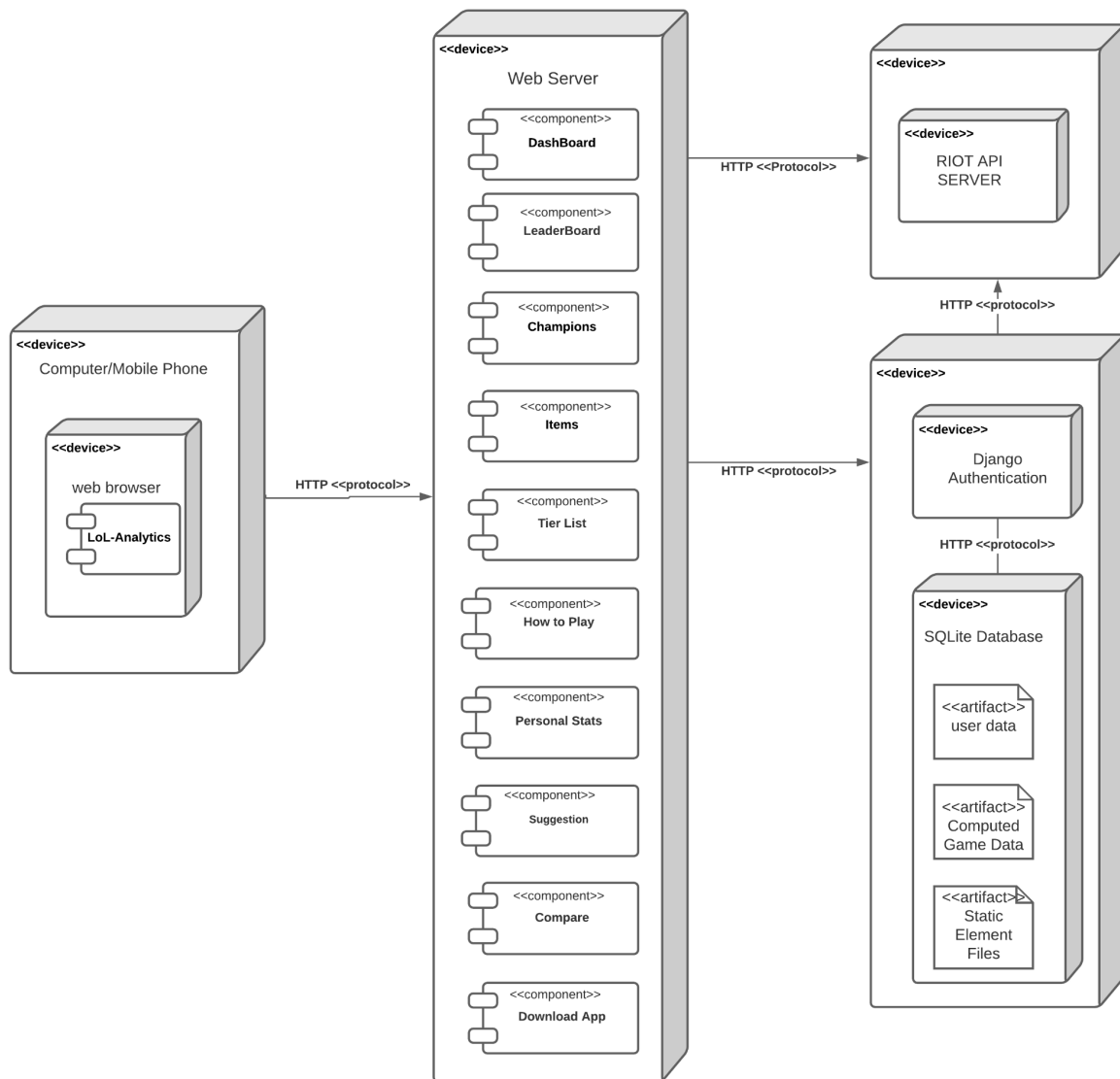return

return

7.5.2 After Login

7.6 Deployment Diagram

8. FUNCTIONALITIES NOT IMPLEMENTED

- Password Change Functionality: The user should be able to change and if required recover their password whenever they want
- Custom Lookup: Allow users to look up statistical data about particulate game mechanics and builds without having to log in or link their data
- Team Lookup: Allow users to look up data and builds for a team of 5 users
- Play style based suggestions: Users can input the type of game/role they want to play in the game and based on that they can receive
- Build compare: Compares your build with other expert players and their games.
- Player Personal Database: A database for every user which stores its previous search history.

9. ISSUES WHICH ARE OPEN

- Forgot Password
- API change