FANTASY CRICKET PREDICTOR

A Project Report
Submitted in partial fulfillment of the
Requirements for the award of the Degree
of

MASTERS OF SCIENCE (COMPUTER SCIENCE)
By

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Seat No: 03

Under the esteemed guidance of

Dr. Vivek Sharma

DEPARTMENT OF COMPUTER SCIENCE

NAGINDAS KHANDWALA COLLEGE
(Affiliated to University of Mumbai)
MUMBAI, 400064
MAHARASHTRA

2022-2023

GR No**: ……89006……** Roll no**:** 03

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2. Title of the Project: Fantasy Cricket Predictor
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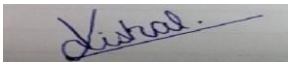
4. Teaching/Industry experience of the Guide:
5. Is this your first submission? Yes

Signature of the Student: Signature of the Guide:



Date: …… Date: …….

Signature of the Coordinator:

Date: ……

NAGINDAS KHANDWALA COLLEGE
(Affiliated to University of Mumbai)

MUMBAI-MAHARASHTRA-400068

DEPARTMENT OF COMPUTER SCIENCE

CERTIFICATE

This is to certify that the project titled, **"Fantasy Cricket Predictor"**, is bonafide work of **Vishal Omanakuttan** bearing Seat No: (**03**) submitted in partial fulfillment of the requirements for the award of degree of MASTERS OF SCIENCE in COMPUTER SCIENCE from University of Mumbai.

Internal Guide **Coordinator**

External Examiner

Date: **College Seal**

ABSTRACT

Cricket is one of the most famous sports around the world. The growing interest in cricket in recent years has given rise to various formats such as T20, T10 from test and ODI formats. All these forms of cricket match madness are present in today's online fantasy cricket league games. In recent years, the fantasy sports platform has taken the Indian gaming landscape by storm and in 2021 he has a valuation of Rs 34600 crore. One of the key aspects of participating in fantasy cricket is team selection. Fantasy Cricket is gaining more users due to its popularity in India. Cricket is also one of the sports that generates a lot of data, so there are many opportunities for data analysis. Fantasy Cricket users must select the right mix of players to maximize points and earn cash rewards. This project describes a retrospective team selection approach that proposes a fantasy cricket team for the next match using real historical data collected from player performance in the last 10 matches. The technique used is linear programming implemented in Python using the Pulp library. Player points are calculated using an exponentially weighted average and then added fantasy cricket constraints using linear programming for team selection.

ACKNOWLEDGEMENT

The project of **“Fantasy Cricket Predictor”** has been a unique experience for me. I am very thankful to the Department of Computer Science Nagindas Khandwala College, who gave us the opportunity to accomplish this project.

I would like to thank all those who guided and associated me in the completion of this project. I express my sincere gratitude to our Head of Department and my project guide Ms. Elizabeth George for her invaluable support and guidance during the course of the project. I am also very much thankful to the “UNIVERSITY OF MUMBAI ” for including the project work as part of the syllabus, without which I would not have gained the experience of developing software as this.

Finally I would like to express my gratitude to my friends for their support and guidance throughout this venture. Last but not the least i would thank my family without whose support, motivation and encouragement this would not have been possible.

Thanking you,

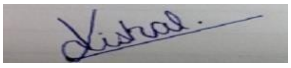
Vishal Omanakuttan

DECLARATION

I hereby declare that the project entitled, "**Fantasy Cricket Predictor**" done at the place **where the project is done**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university.

The project is done in partial fulfillment of the requirements for the award of degree of **MASTERS OF SCIENCE (COMPUTER SCIENCE)** to be submitted as a final semester project as part of our curriculum.

Name and signature of the student



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Chapter 1

Introduction

1.1 Background

Fantasy Cricket Predictor as the name suggests is a Fantasy game prediction website. This website predicts a team that proposes a fantasy cricket team for the next match using real historical data collected from player performance in the last 10 matches.
In this website the user has to select Team A and Team B and then click on the predict button to get a list of top 11 players and there are charts which show No. of Batsmen, No. of Bowlers and No. of All-Rounders selected and also total no of players selected from team A and team B.

1.2 Objectives

- Historical Data Driven result of top 11 players in two teams.
- Selecting top performing players from a pool of 30 players.
- Using the models results to earn maximum reward in fantasy cricket games.

1.3 Purpose, Scope and Applicability

1.3.1 Purpose

Fantasy Sports is a new and exciting game where players can select fantasy teams from real-world professional sports. The aim is to build a team that can score the most points compared to another team. Fantasy sports allow users to make the best use of their sports knowledge and earn real cash by taking part in fantasy sports leagues. Fantasy cricket predictor uses historical data to predict top 11 performing players and then user can use this result to take part in fantasy cricket games and earn maximum reward.

1.3.2 Scope

The scope of the project is already pressed on a laptop, pc or mobile phone with an internet connection. First the user, need to access the website
After that user has to select two teams and then click on the predict button and the algorithm spits out the Dream team that maximizes the probability of scoring the highest points. In addition to that, it also conveys the estimated points that can be accrued through the selected team. The value would help us check the accuracy of the system.

1.3.3 Applicability

Fantasy Cricket Predictor as the name suggests is a Fantasy game prediction website. This website predicts a team that proposes a fantasy cricket team for the next match using real historical data collected from player performance in the last 10 matches.

1.4 Organization of Report

Fantasy Cricket Predictor is a Web Application which is used to provide a Dream team that maximizes the probability of scoring the highest points. In addition to that, it also conveys the estimated points that can be accrued through the selected team. The value would help us check the accuracy of the system.

Chapter 2

System Analysis

2.1 Existing System

- It doesn't focus on historical data driven approach
- Does not support all the platforms.
- Doesn’t show graphical representation of predicted data

2.2 Proposed System

- Predicts the output of top 11 players from the pool of 30 players
- It is easy to use
- Produce Charts which show graphical representation of the data

2.3 Requirement Analysis

Existing system of Fantasy Predictor doesn't show the Graphical Representation of Predicted data.

2.4 Hardware Requirements

The most well-known arrangement of necessities characterized by any working framework or programming application is the physical PC assets, otherwise called equipment. An equipment necessities list is frequently joined by an equipment similarity list (HCL), particularly in the event of working frameworks.

A HCL records tried, similarity and now and again incongruent equipment gadgets for a specific working framework or application. The accompanying sub-segments talk about the different parts of equipment prerequisites

- 2.90Ghz Intel core i3 processor or other compatible
- Minimum 1GB RAM

2.5 Software Requirements

Programming Requirements manage characterizing programming asset necessities and essentials that should be introduced on a PC to give ideal working of an application. These necessities or pre-essentials are commonly excluded from the product establishment bundle and should be introduced independently before the product is introduced

Programming languages: Django, Python, HTML, CSS.
Browser: Google Chrome
Front End Technology: VS Code
Back End Technology: Python

2.6 Justification of selection of Technology

Django is a high-level Python web framework that enables rapid development of secure and maintainable websites. Built by experienced developers, Django takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. It is free and open source, has a thriving and active community, great documentation, and many options for free and paid-for support.

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed.

Chapter 3

System Design

3.1 Module Division

User modules:

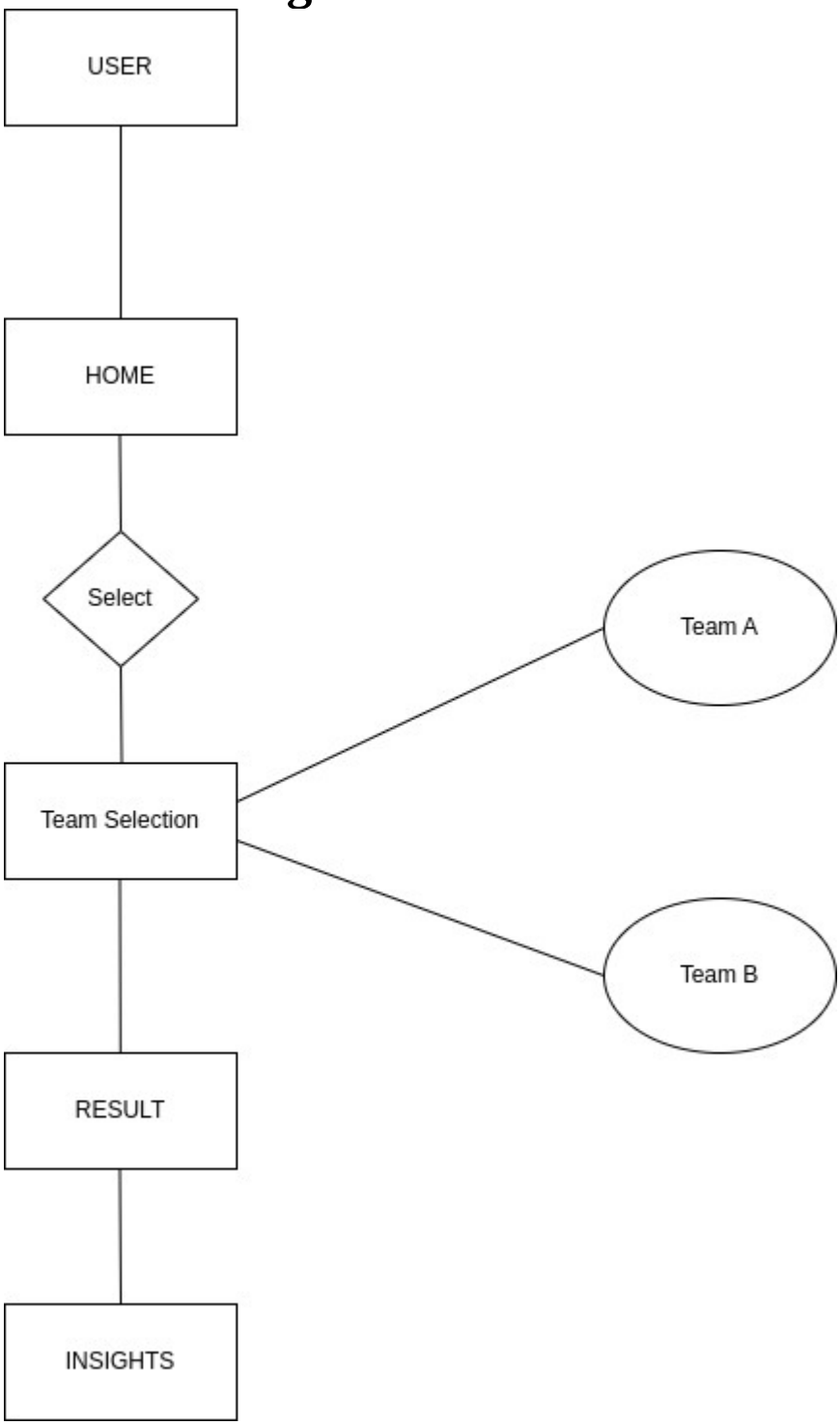
1. Insert the name of two teams in the select team section

2. Click on more details to view Chart

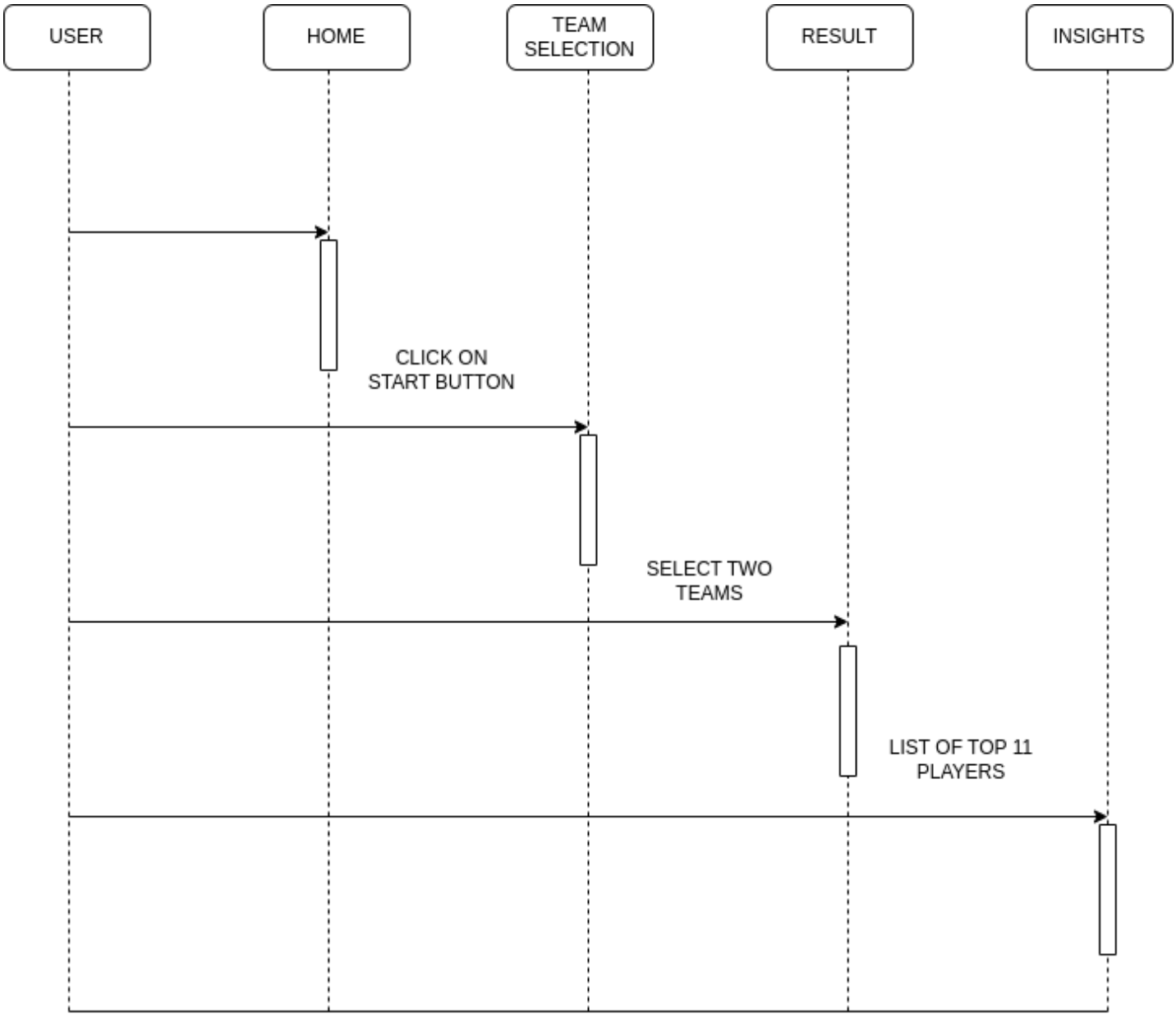
Event Table

Action	Source	Activity	Response
Start	User	Team Selection	Takes to Team Selection Page
Team Selection	User	Insert name of two teams	Takes to Result page
Result Page	User	Click on Charts Button	Show the Graphical Representation of predicted data

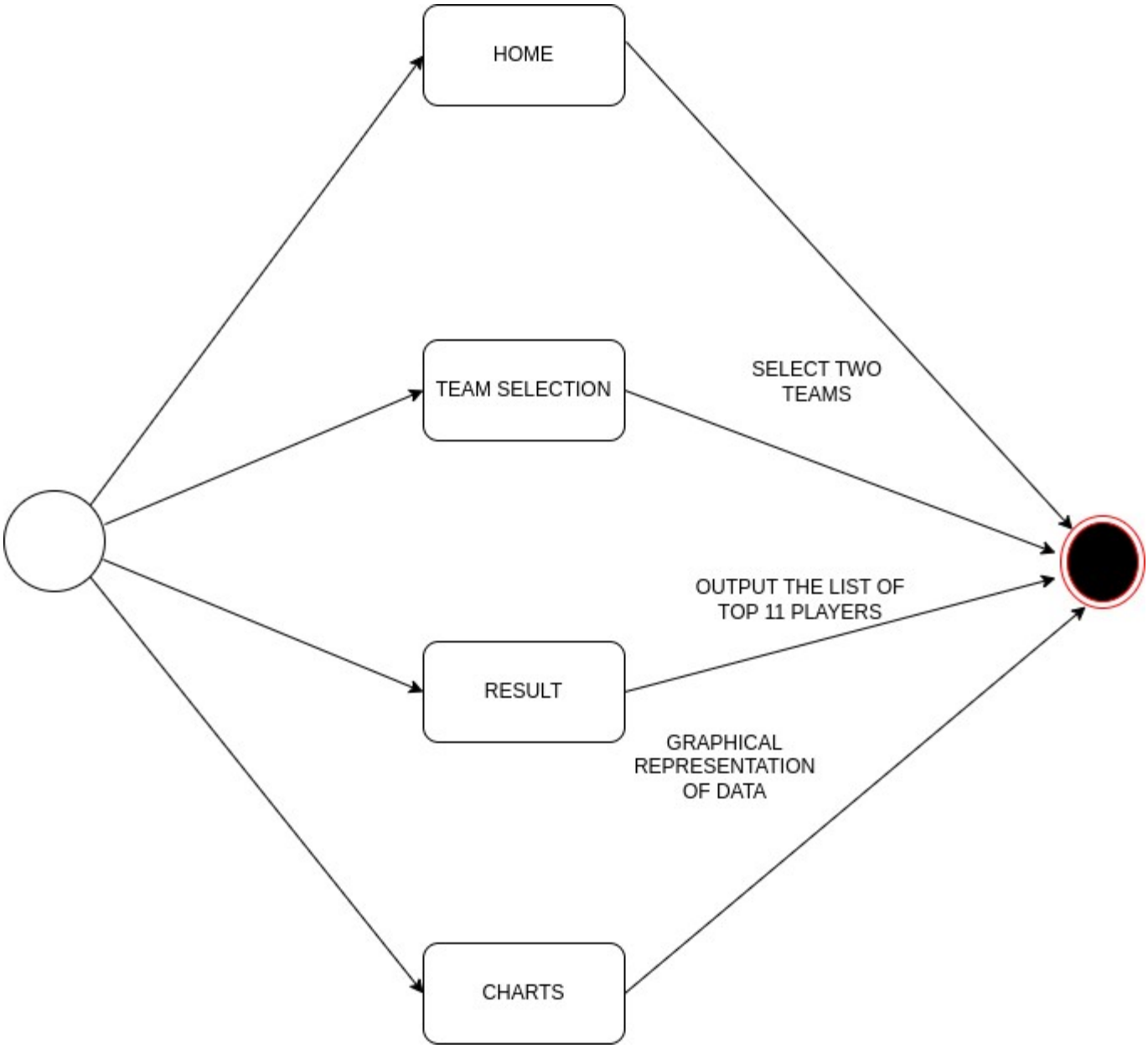
3.2 E-R Diagram



3.3 Sequence Diagram



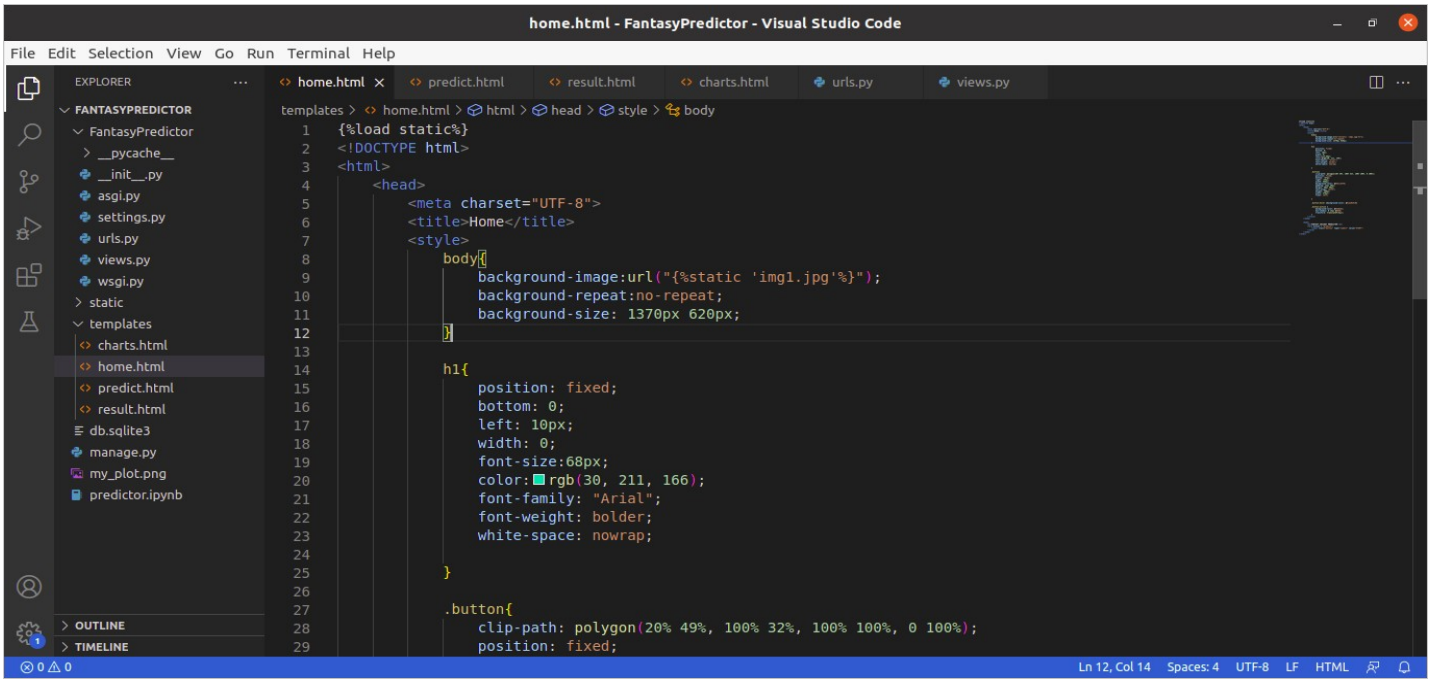
3.6 Activity Diagram



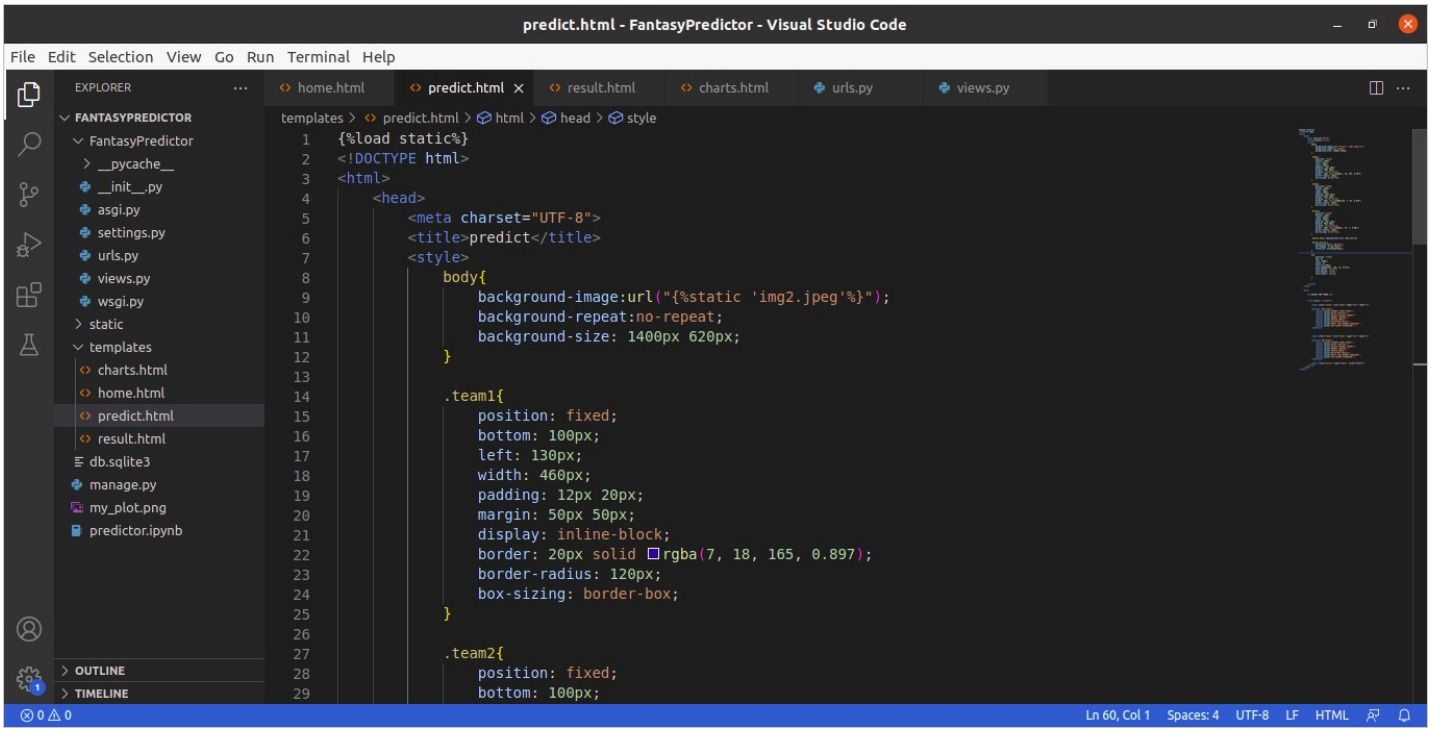
Chapter 4 Implementation and Testing

4.1 Code

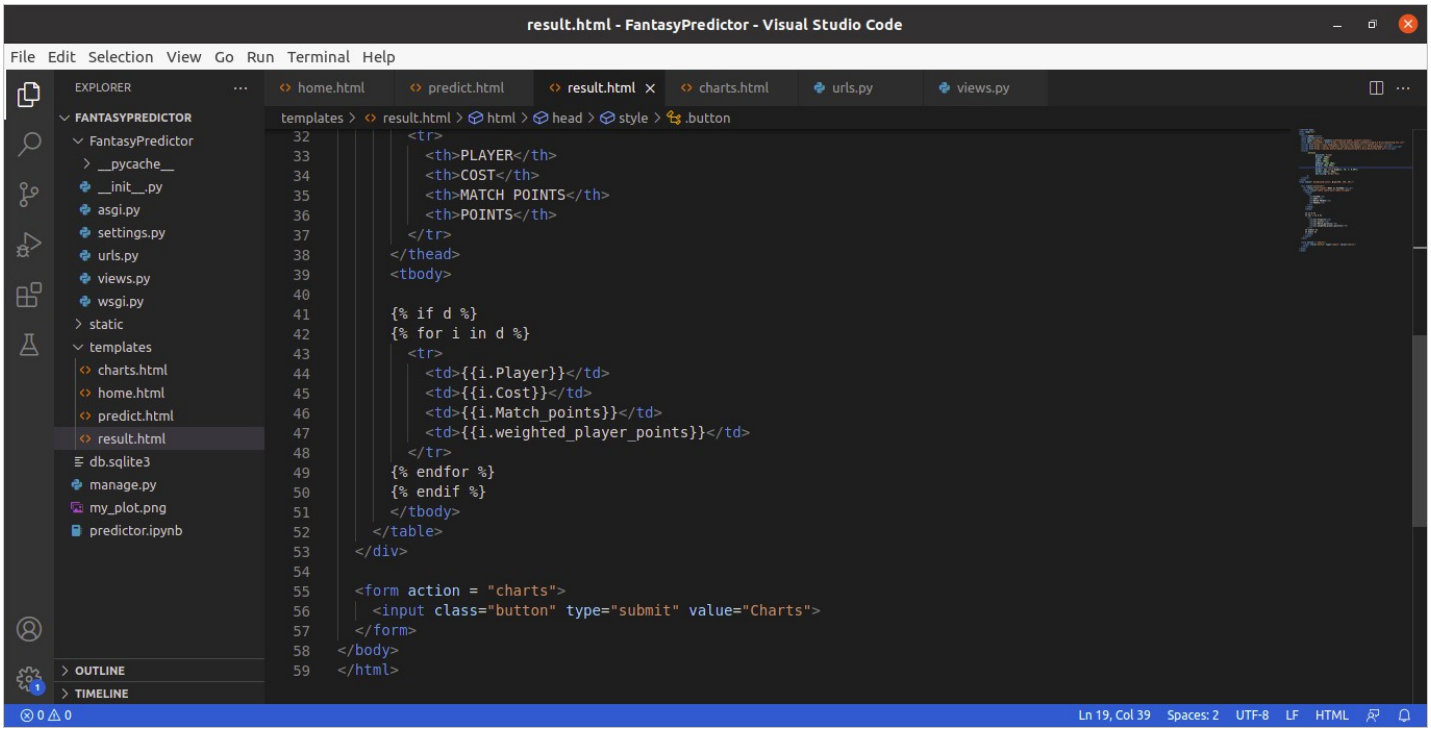
home.html



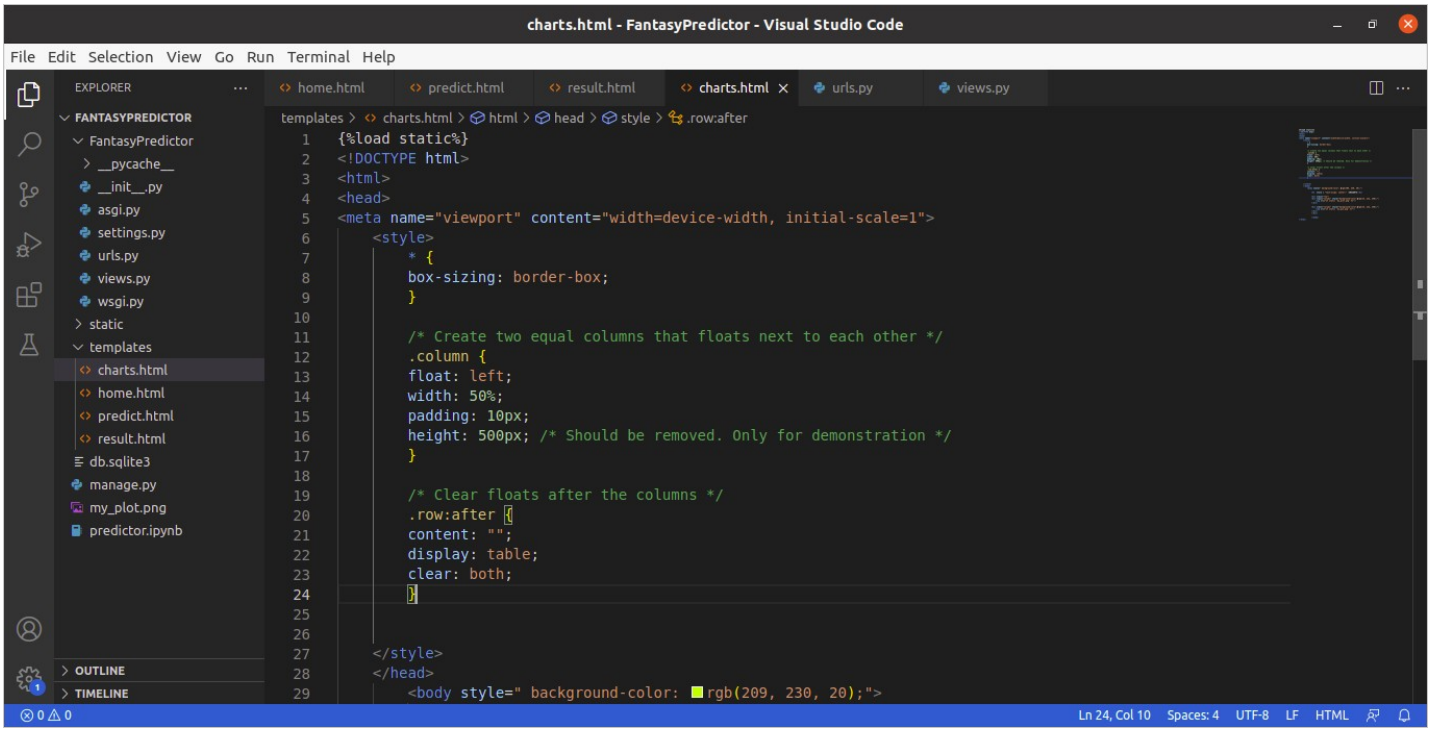
predict.html



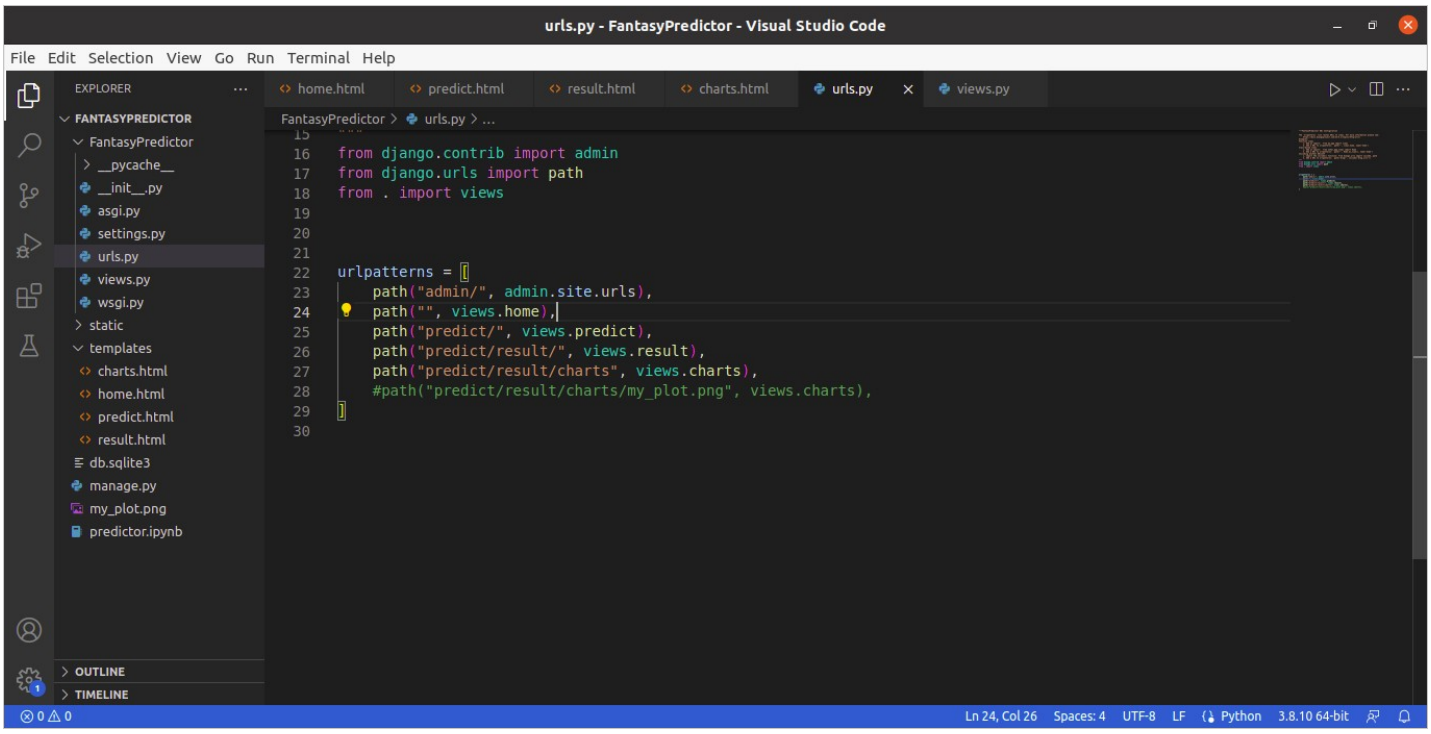
result.html



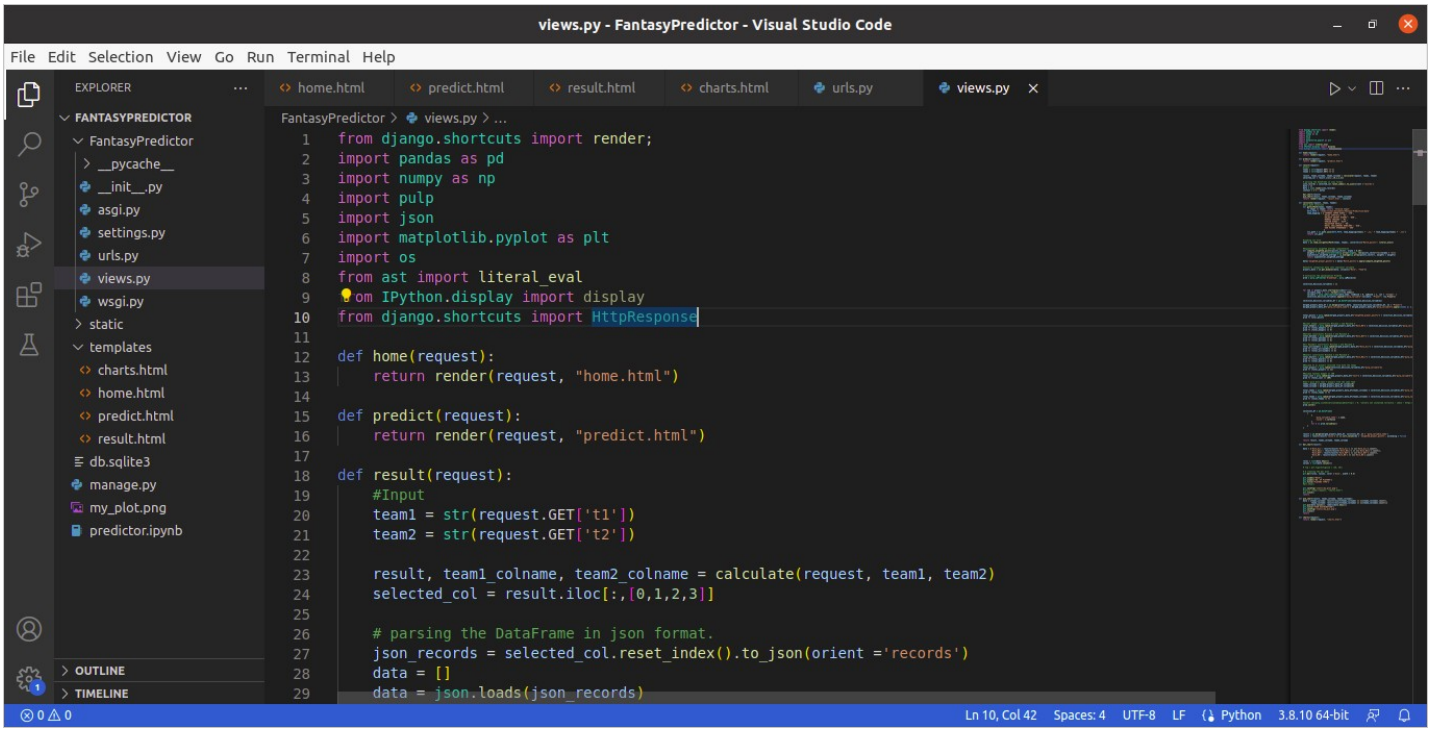
charts.html

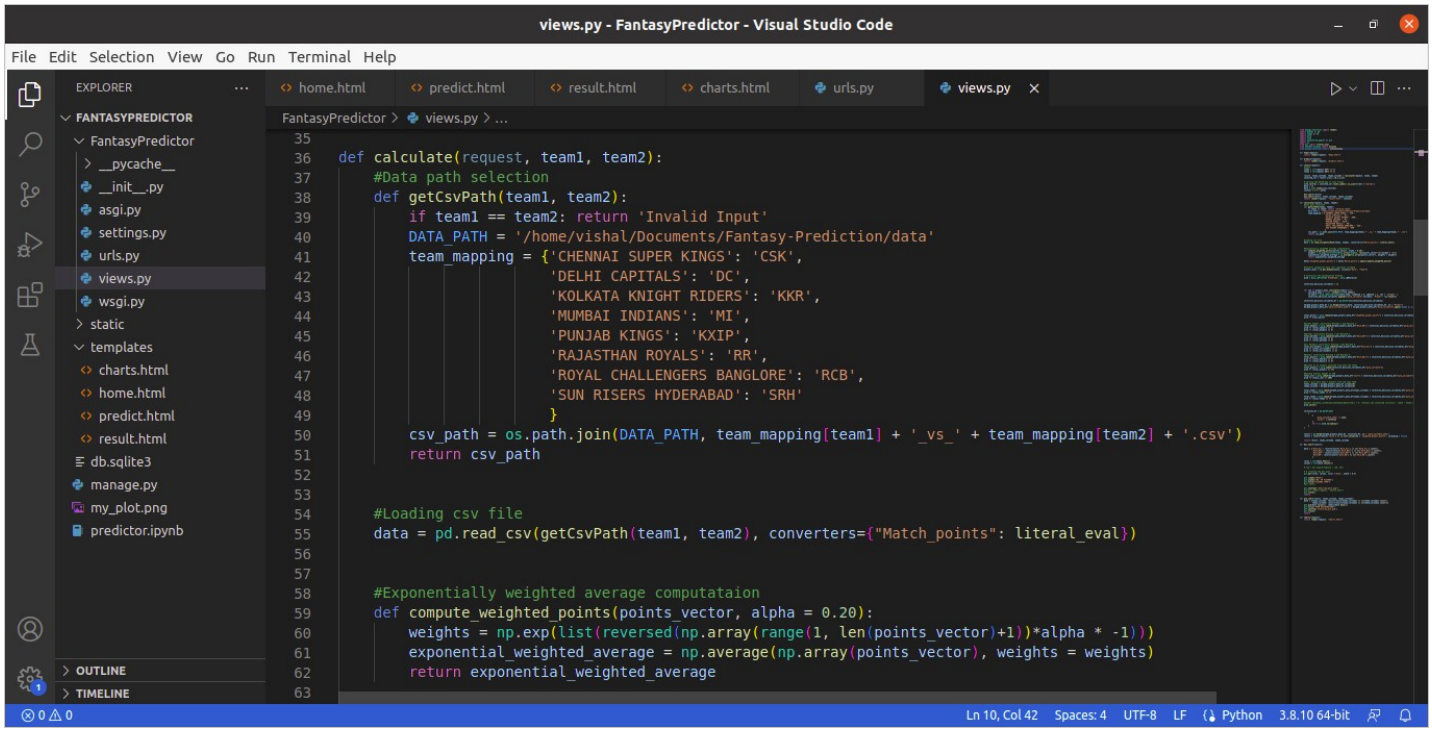


urls.py



views.py




views.py - FantasyPredictor - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
FANTASYPREDICTOR
FantasyPredictor
__pycache__
__init__.py
asgi.py
settings.py
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templates
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db.sqlite3
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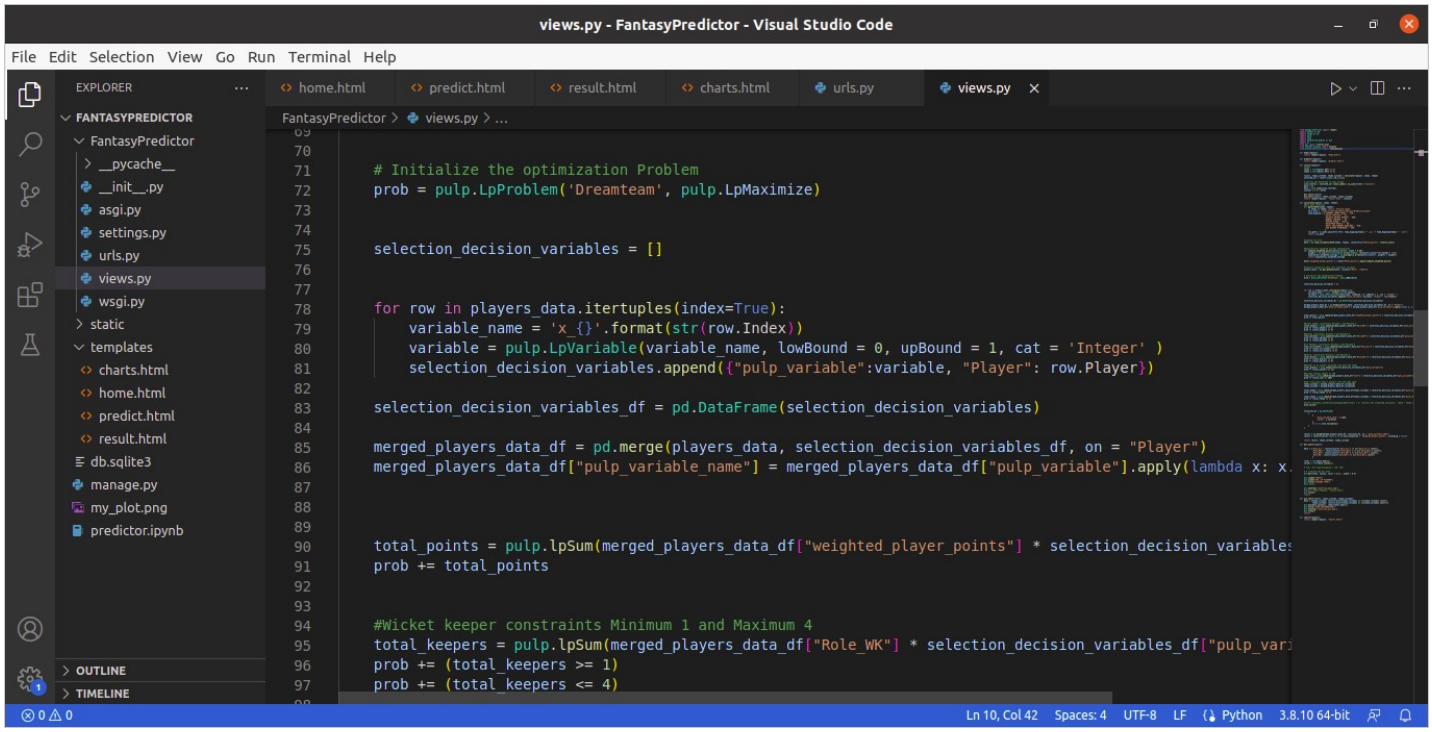
predictor.ipynb
OUTLINE
TIMELINE
home.html
predict.html
result.html
charts.html
urls.py
views.py
FantasyPredictor > views.py > ...
def calculate(request, team1, team2):
#Data path selection
def getCsvPath(team1, team2):
if team1 == team2: return 'Invalid Input'
DATA_PATH = '/home/vishal/Documents/Fantasy-Prediction/data'
team_mapping = {'CHENNAI SUPER KINGS': 'CSK',
'DELHI CAPITALS': 'DC',
'KOLKATA KNIGHT RIDERS': 'KKR',
'MUMBAI INDIANS': 'MI',
'PUNJAB KINGS': 'KXIP',
'RAJASTHAN ROYALS': 'RR',
'ROYAL CHALLENGERS BANGLORE': 'RCB',
'SUN RISERS HYDERABAD': 'SRH'
}
csv_path = os.path.join(DATA_PATH, team_mapping[team1] + '_vs_' + team_mapping[team2] + '.csv')
return csv_path
#Loading csv file
data = pd.read_csv(getCsvPath(team1, team2), converters={"Match_points": literal_eval})
#Exponentially weighted average computataion
def compute_weighted_points(points_vector, alpha = 0.20):
weights = np.exp(list(reversed(np.array(range(1, len(points_vector)+1))*alpha * -1)))
exponential_weighted_average = np.average(np.array(points_vector), weights = weights)
return exponential_weighted_average
0 0
Ln 10, Col 42
Spaces: 4
UTF-8
LF
Python
3.8.10 64-bit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result.html
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manage.py
my_plot.png
predictor.ipynb
OUTLINE
TIMELINE
home.html
predict.html
result.html
charts.html
urls.py
views.py
FantasyPredictor > views.py > ...
# Initialize the optimization Problem
prob = pulp.LpProblem('Dreamteam', pulp.LpMaximize)
selection_decision_variables = []
for row in players_data.itertuples(index=True):
variable_name = 'x_{}'.format(str(row.Index))
variable = pulp.LpVariable(variable_name, lowBound = 0, upBound = 1, cat = 'Integer')
selection_decision_variables.append({"pulp_variable":variable, "Player": row.Player})
selection_decision_variables_df = pd.DataFrame(selection_decision_variables)
merged_players_data_df = pd.merge(players_data, selection_decision_variables_df, on = "Player")
merged_players_data_df["pulp_variable_name"] = merged_players_data_df["pulp_variable"].apply(lambda x: x.
total_points = pulp.lpSum(merged_players_data_df["weighted_player_points"] * selection_decision_variables
prob += total_points
#Wicket keeper constraints Minimum 1 and Maximum 4
total_keepers = pulp.lpSum(merged_players_data_df["Role_WK"] * selection_decision_variables_df["pulp_var
prob += (total_keepers >= 1)
prob += (total_keepers <= 4)
0 0
Ln 10, Col 42
Spaces: 4
UTF-8
LF
Python
3.8.10 64-bit

4.2 Testing Approach

Testing Approach is one of the basic steps, which is performed in the early stages. Most of the testers prefer performing to check if a specific unit of code is functional or not. Unit Testing is one of the common steps performed for every activity because it helps in removing basic and simple errors.

4.1.1 Unit Testing

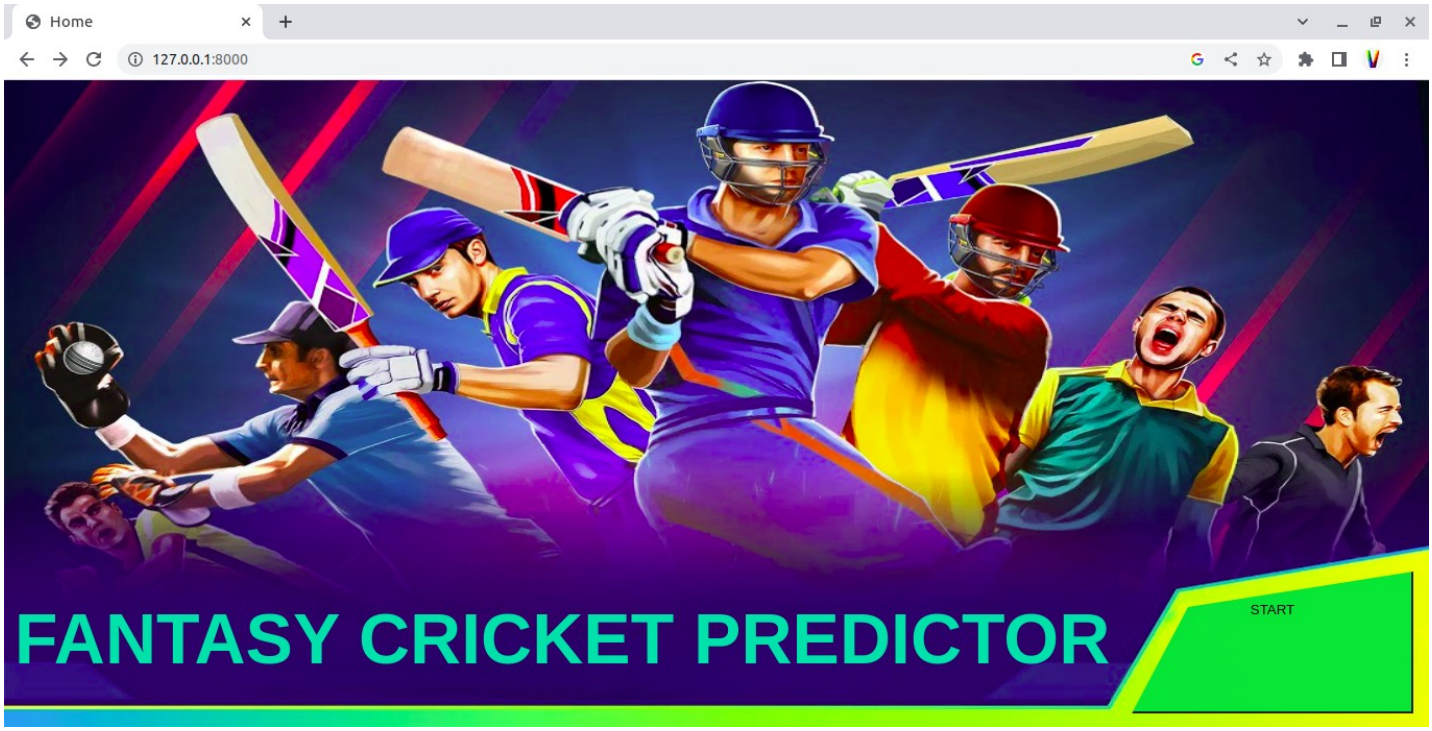
Sr. No	Action	Inputs	Expected Output	Actual Output	Test Result	Test Comments
1	Access Website	NA	Home Page	Home Page	Pass	[Stalin 07/11/2022 11:45 AM]: Launch successful

4.1.2 Integration Testing

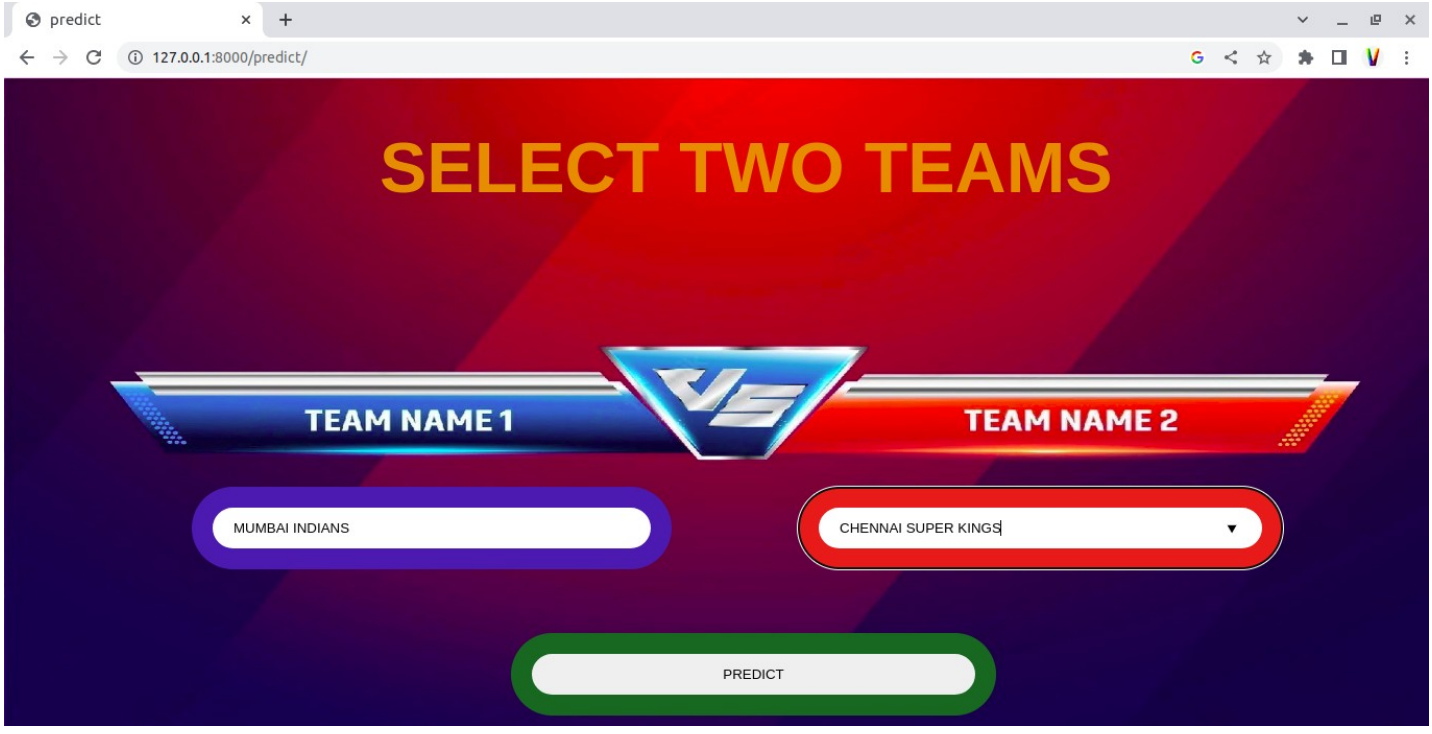
Sr. No	Action	Inputs	Expected Output	Actual Output	Test Result	Test Comments
1	Access Website	NA	Home Page	Home Page	Pass	[Stalin 07/11/2022 11:44 AM]: Launch successful
2	Home Page	Click on start button	Team Selection Page	Team Selection Page	pass	[Stalin 07/11/2022 11:44 AM]: Launch successful
3	Team Selection Page	Add two teams name and click on predict	Result Page	Result Page	pass	[[Stalin 07/11/2022 11:44 AM]: Launch successful
4	Result Page	Click on Charts button	Insights Page	Insights Page	pass	[[Stalin 07/11/2022 11:44 AM]: Launch successful

Chapter 5: Results and Discussions

Home Page



Select Teams



Result Page

PLAYER	COST	MATCH POINTS	POINTS
Rituraj Gaikwad	8.0	[8, 2, 2, 103, 102, 90]	64.1992919263
Bumrah	10.0	[30, 54, 0, 58, 50, 114, 4, 31, 81, 54, 2, 93, 95]	60.2364264499
Ngidi	8.0	[77, 23, 54, 77]	58.8859178187
De Kock	9.0	[42, 33, 19, 10, 99, 56, 75, 121, 80, 95, 12, 36, 60, 35]	53.8755992606
Ishan Kishan	9.5	[131, 35, 48, 2, 38, 4, 12, 96, 47, 34, 98, 42]	51.1416086744
Boult	9.5	[29, 62, 54, 33, 54, 54, 35, 29, 6, 124, 2, 35, 81]	48.8430735923
S.Yadav	9.0	[23, 59, 2, 32, 37, 106, 79, 23, 2, 20, 50, 115, 25, 45]	47.3360021712
Du Plesis	9.0	[100, 107, 51, 38, 112, 40, 20, 2, 96, 15, 5, 51, 60]	45.0020803392
Sam Curran	8.5	[68, 101, 30, 25, 8, 74, 21, 77, 35, 29, 72, 79, 26, 4]	40.3800987822
Rayudu	8.5	[95, 19, 12, 37, 50, 52, 66, 17, 6, 50, 57, 36]	40.257306829

Insights Page

CHAPTER 6

CONCLUSION AND FUTURE WORK

Fantasy Cricket Predictor website is completely automated and spits out the Dream team that maximizes the probability of scoring the highest points.In addition to that, it also conveys the estimated points that can be accrued through the selected team. The value would help us check the accuracy of the system.The algorithm is sensitive to player performance trends and it adjusts accordingly.

Chapter 7: Reference

YouTube: www.youtube.come

Stackoverflow: www.stackoverflow.com

W3Schools: www.w3schools.com

Geeksforgeeks: www.geeksforgeeks.com

Chapter 8: Glossary

ER Diagram - An **Entity Relationship** (**ER**) **Diagram** is a type of flowchart that illustrates how “entities” such as people, objects or concepts relate to each other within a system.

Activity Diagram - An **activity diagram** visually presents a series of actions or flow of control in a system similar to a flowchart or a data flow **diagram**.

Use Case Diagram - Use case diagrams consists of **actors**, use cases and their **relationships**. The diagram is used to model the system/subsystem of an application

Sequence Diagram - A **sequence diagram** is a type of interaction **diagram** because it describes how—and in what order—a group of objects works together.

Html - **HTML** stands for Hyper Text Markup Language. **HTML** is the standard markup language for creating Web pages

Css - **CSS** is the language for describing the presentation of Web pages, including colors, layout, and fonts

Django - Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. Built by experienced developers, it takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. It’s free and open source.