T20 world cup 2022

Name:- Amiya Ghosh
Roll no:- 244161001
MTech Data Science
Instructor:- Neeraj Kumar Sharma

MOT IVAT ION :

Understanding Team Performance: Counting the victories for each team during the T20 World Cup 2022 gives important information on how each team performed as a unit.

Trends in Toss Decisions: Analyzing tosses reveals whether teams were more inclined to bowl or bat first.

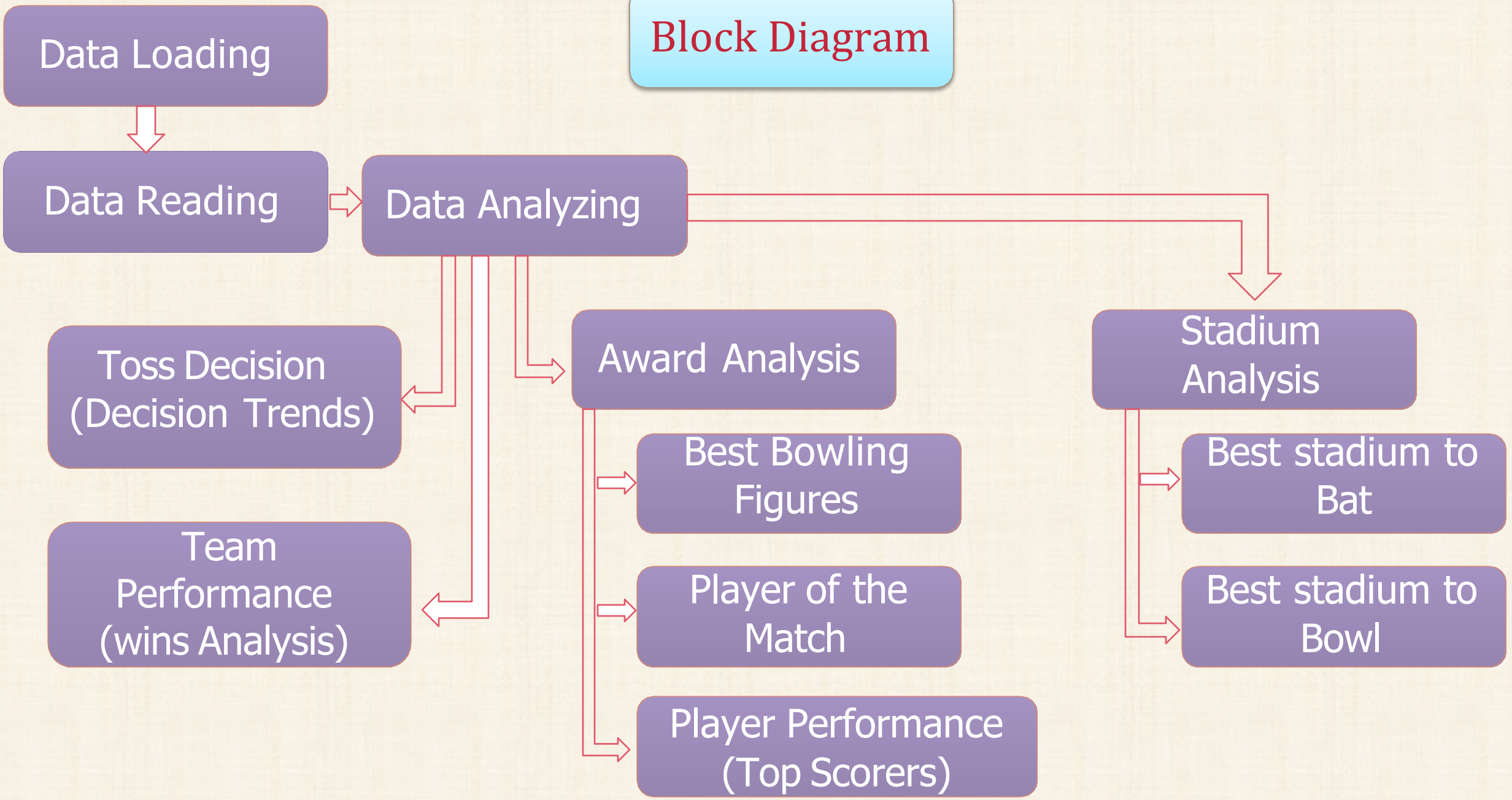
Award Recognition: Honoring the highest scorers, best bowlers, and important players highlights their specific performances, which can assist in developing plans for further matches.

Fan Engagement: By giving a greater understanding of the game, statistical analytics and visualizations increase fan engagement.

The study demonstrates how data-driven insights may improve decision-making and performance evaluation, showcasing the power of data analytics in sports.

The project seeks to provide a thorough understanding of the T20 World Cup 2022 .

Block Diagram



Pseudo Code

- **dataloader.py**
  - **Class Data Loader**:
  - Function __init__(self, file_path):
  - Read data from CSV file into a Data Frame
  - Store Data Frame in self.data
- **mymodule.py**
  - **Class Plotting:**
  - Function __init__(self, data):
  - Store data in self.data
  - **Functions for following :**
  - -To generate bar chart for team wins.
  - -To generate pie chart for matches won by runs or wickets.
  - -To generate bar chart for top scorers.
  - -To generate bar chart for players with the most Player of the Match awards.
  - -To generate bar chart for best bowlers.
  - Each function displays the chart.
  - **Class Stadium Analysis:**
  - **Functions for following:**

    -To generate bar chart for scores in both innings.
    -To generate bar chart for wickets in both innings.
    Each function displays the chart.
  - **Class Tabular Analysis:**
  - **Functions to create and display a table for:**

    -Team wins
    -Top scorers
    -Players with the most Player of the Match awards
    -Relevant stadium data
- **Project.py**
  - **Function main():**
  - Import respective classes from Data Loader and My module
  - #Provides Interactive user interface to display data chosen by user in the displayed list

Pythonic Features

- Classes and Objects:
  Used to create classes like DataLoader and Plotting to encapsulate related functionalities.
- File Handling:
  Utilized to read data from a CSV file using the pd.read_csv function.
- Matplotlib:
  Employed Matplotlib for generating static visualizations like bar charts and pie charts.
- NumPy:
  Used NumPy for numerical operations, especially in creating arrays for Matplotlib.
- Seaborn:
  To make plot look fancy and interesting.
- Data Analysis with Pandas:
  Performed data analysis tasks like grouping, counting, and sorting using Pandas functionalities.

```python
import pandas as pd

class DataLoader:
    def __init__(self, file_path):
        self.data = pd.read_csv(file_path)
```

```python
import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns

class Plotting:
    def __init__(self, data):
        self.data = data


    def plot_print_data(self):
        print(self.data.head())
```

```python
def plot_team_wins(self):

    winner_counts = self.data['winner'].value_counts()

# Set the style using seaborn
    sns.set(style="whitegrid")

    # Create a bar plot with seaborn
    plt.figure(figsize=(12, 6))
    bar_plot = sns.barplot(x=winner_counts.index, y=winner_counts.values, palette="viridis")

    # Add labels and title
    plt.xlabel('Teams', fontsize=14)
    plt.ylabel('Number of Matches Won', fontsize=14)
    plt.title('Number of Matches Won by Teams in T20 World Cup 2022', fontsize=16)

    # Rotate x-axis labels for better readability
    bar_plot.set_xticklabels(bar_plot.get_xticklabels(), rotation=45, horizontalalignment='right')

    # Add data labels on top of the bars
    for p in bar_plot.patches:
        bar_plot.annotate(f'{p.get_height()}', (p.get_x() + p.get_width() / 2., p.get_height()),
                          ha='center', va='center', fontsize=12, color='black', xytext=(0, 5),
                          textcoords='offset points')

    # Show the plot
    plt.show()
```

```python
def display_top_scorers_table(self, num_players=5):
    top_scorers_table = self.data.groupby('top scorer')['highest score'].max().nlargest(num_players).reset_index()
    top_scorers_table.columns = ['Player', 'Highest Score']
    print(f"\nTop {num_players} Scorers Table:")
    print(top_scorers_table)
```

- Pandas DataFrames:

  Leveraged Pandas DataFrames to store and manipulate tabular data efficiently.

- While Loop for User Interaction:

  Used a while loop to create a menu-driven interactive interface for the user.

- Functions and Methods:

  Defined functions and methods to encapsulate specific functionalities for code organization and reusability.

- Conditional Menu Choices:

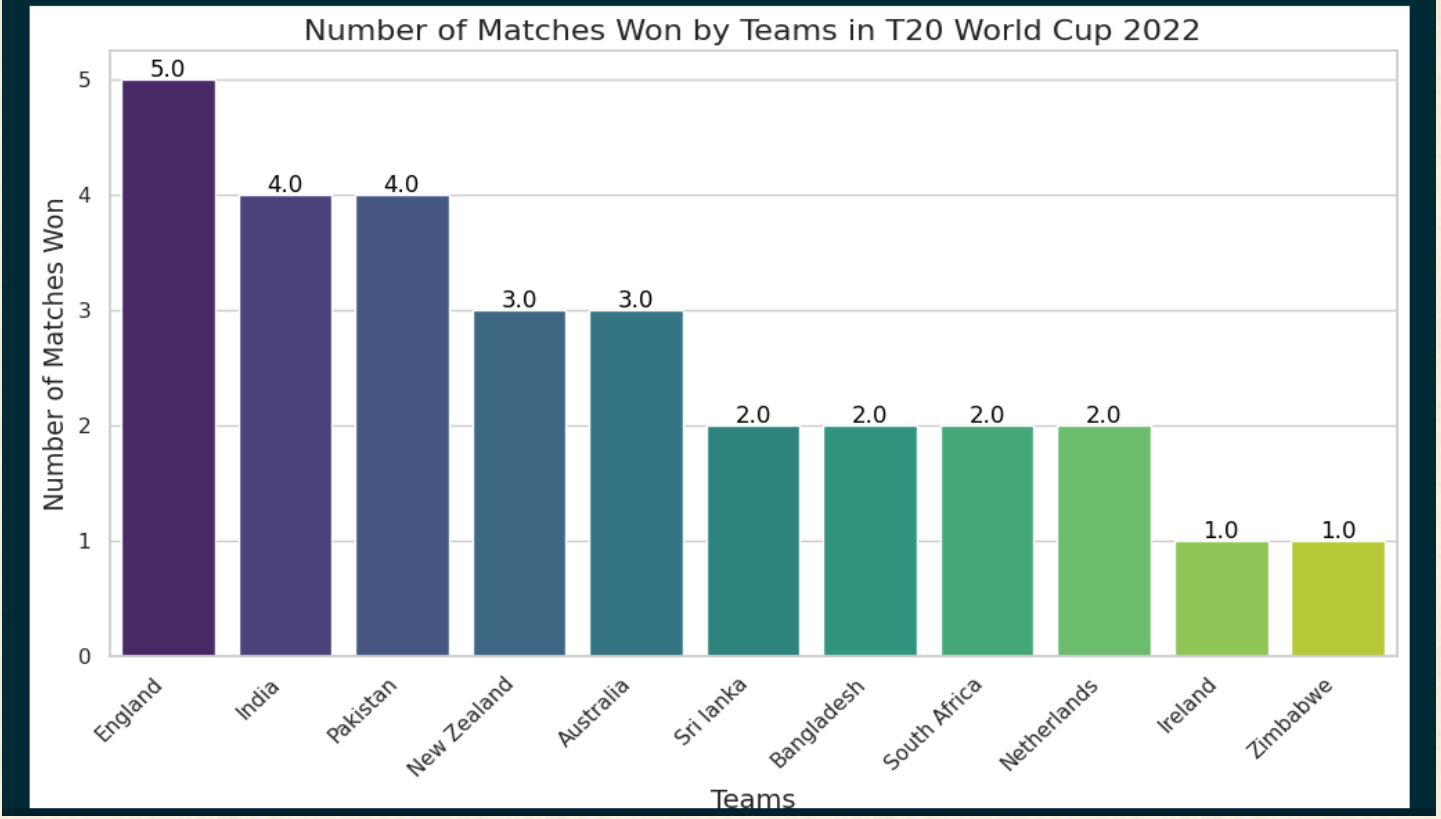
  Implemented conditional statements based on user menu choices to execute specific functionalities.

- User Input Handling:

  Implemented the input function gather user input for menu choices.

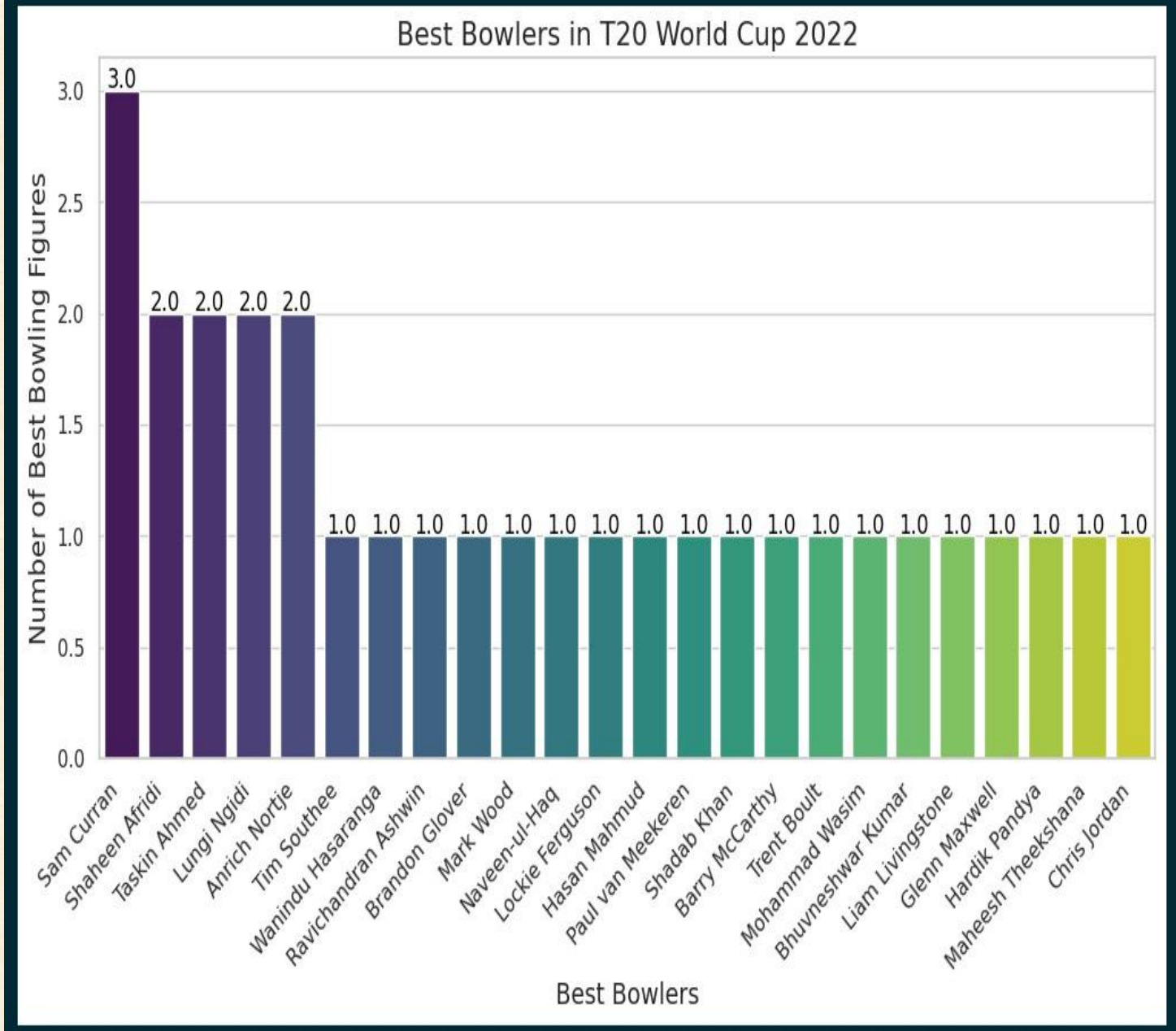
Results

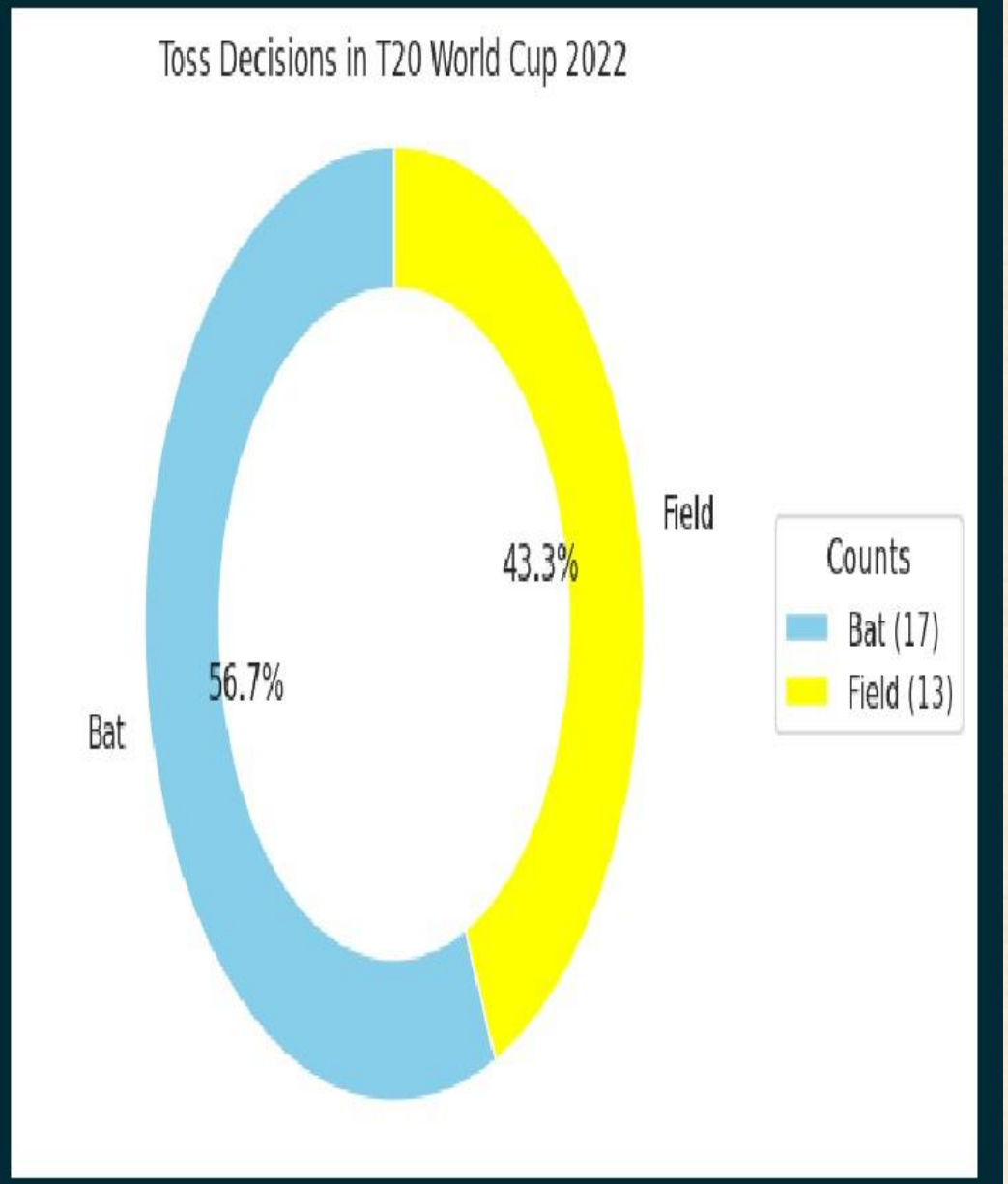
```
Choose an option:
1. Plot Team Wins
2. Plot Matches Won by Runs or Wickets
3. Plot Top Scorers
4. Plot Player of the Match
5. Plot Best Bowlers
6. Plot Stadiums to Bat or Chase
7. Plot Stadiums to Bowl or Defend
8. Display Relevant Data Tables
0. Exit
```




```
Choose an option:
1. Team Wins
2. Top Scorers
3. Player of the Match
4. Stadiums
0. Exit

Team Wins Table:
|    |    |    Team  Number of Matches Won
0          England                      5
1            India                      4
2         Pakistan                      4
3      New Zealand                      3
4        Australia                      3
5        Sri lanka                      2
6       Bangladesh                      2
7     South Africa                      2
8      Netherlands                      2
9          Ireland                      1
10        Zimbabwe                      1
```


Best Bowlers in T20 World Cup 2022
Number of Best Bowling Figures
Best Bowlers
3.0
2.0 2.0 2.0 2.0
1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
Sam Curran
Shaheen Afridi
Taskin Ahmed
Lungi Ngidi
Anrich Nortje
Tim Southee
Wanindu Hasaranga
Ravichandran Ashwin
Brandon Glover
Mark Wood
Naveen-ul-Haq
Lockie Ferguson
Hasan Mahmud
Paul van Meekeren
Shadab Khan
Barry McCarthy
Trent Boult
Mohammad Wasim
Bhuvneshwar Kumar
Liam Livingstone
Glenn Maxwell
Hardik Pandya
Maheesh Theekshana
Chris Jordan


Toss Decisions in T20 World Cup 2022
Bat
56.7%
Field
43.3%
Counts
Bat (17)
Field (13)

OBSERVATIONS:

(About the project)

- England won the most matches
- No player got the player of the match award in more than two matches.
- More teams had chosen bat first.
- More matches were won by runs.
- The ideal stadium for batting first was SCG.

Learnings:-

- Basics of python.
- File handling.
- Object Oriented Programming.
- Some Libraries like Pandas, Numpy, Seaborn etc.
- Analysing text and image data.
- Data plotting like histogram, pie chart etc.
- And many more

Thank You !

Exiting the program. Good Bye!