

```
In [1]: import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
import seaborn as sns
import missingno as msno
```

## Loading the data

```
In [2]: data = pd.read_csv("file:///C:/Users/Vasu%20Prasad/OneDrive/Documents/MCA/II
data.head()
```

Out[2]:

	Unnamed: 0	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	Batsman Names
0	0	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Conway
1	1	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Ruturaj Gaikwad
2	2	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Moeen
3	3	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Stokes
4	4	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Rayudu

```
In [3]: data.drop("Unnamed: 0",axis = 1,inplace = True) #Dropping the unwanted column
```

```
In [4]: data.head()
```

```
Out[4]:
```

	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	Batsman Names	Out/Not Out
0	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Conway	b Shami
1	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Ruturaj Gaikwad	<sup>c</sup> Shubman Gill b Alzarri Joseph
2	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Moeen	<sup>c</sup> W Saha b Rashid Khan
3	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Stokes	<sup>c</sup> W Saha b Rashid Khan
4	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Rayudu	b Joshua Little

```
In [5]: data.describe()
```

```
Out[5]:
```

	Total Runs	Total Wickets	Balls Played	Fours	Sixes	Strike Rate
count	1131.000000	1131.000000	1111.000000	1111.000000	1110.000000	1111.000000
mean	170.764810	6.824050	14.606661	1.839784	0.945045	116.363816
std	32.114252	2.116933	13.512594	2.494947	1.560227	72.425830
min	59.000000	1.000000	0.000000	0.000000	0.000000	0.000000
25%	146.000000	5.000000	4.000000	0.000000	0.000000	66.670000
50%	174.000000	7.000000	10.000000	1.000000	0.000000	119.050000
75%	197.000000	8.000000	21.000000	3.000000	1.000000	161.540000
max	257.000000	10.000000	66.000000	16.000000	10.000000	600.000000

In [6]: data.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1131 entries, 0 to 1130
Data columns (total 15 columns):
 #   Column                Non-Null Count  Dtype  
---  -
 0   Date                  1131 non-null  object 
 1   Time                  1131 non-null  object 
 2   Stadium               1131 non-null  object 
 3   City                  1131 non-null  object 
 4   Match Details        1131 non-null  object 
 5   Team Playing          1131 non-null  object 
 6   Total Runs            1131 non-null  int64  
 7   Total Wickets         1131 non-null  int64  
 8   Batsman Names         1109 non-null  object 
 9   Out/Not Out           1112 non-null  object 
10   Balls Played          1111 non-null  float64 
11   Runs Scored           1125 non-null  object 
12   Fours                 1111 non-null  float64 
13   Sixes                 1110 non-null  float64 
14   Strike Rate           1111 non-null  float64 
dtypes: float64(4), int64(2), object(9)
memory usage: 132.7+ KB
```

In [7]: data.dtypes

```
Out[7]: Date                object
Time                object
Stadium             object
City                object
Match Details       object
Team Playing        object
Total Runs          int64
Total Wickets       int64
Batsman Names       object
Out/Not Out         object
Balls Played        float64
Runs Scored         object
Fours               float64
Sixes               float64
Strike Rate         float64
dtype: object
```

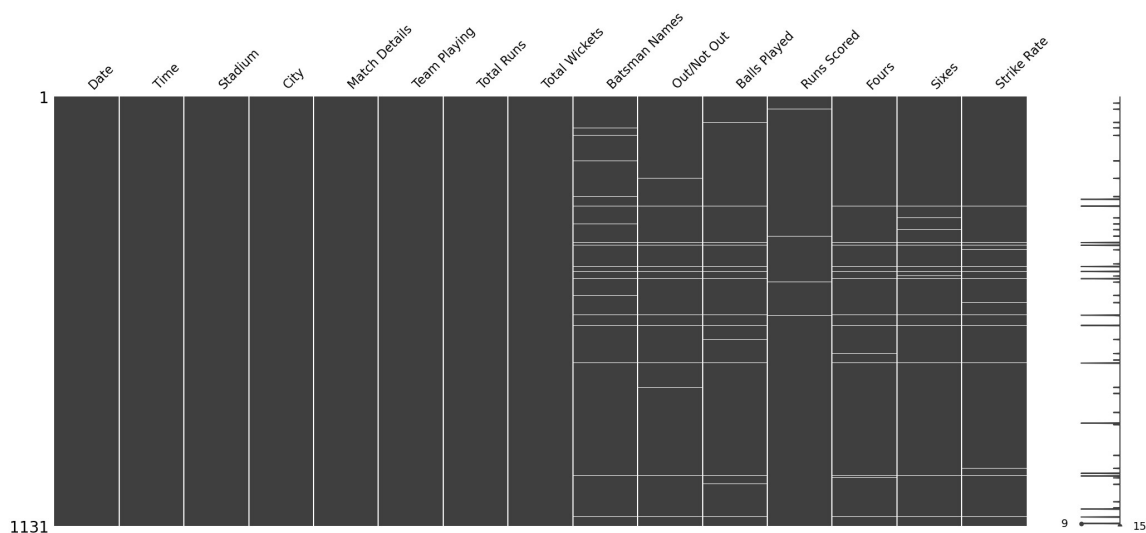
```
In [8]: data.isnull().sum().reset_index().rename(columns = {0:"count"}) #cheaking t
```

Out[8]:

	index	count
0	Date	0
1	Time	0
2	Stadium	0
3	City	0
4	Match Details	0
5	Team Playing	0
6	Total Runs	0
7	Total Wickets	0
8	Batsman Names	22
9	Out/Not Out	19
10	Balls Played	20
11	Runs Scored	6
12	Fours	20
13	Sixes	21
14	Strike Rate	20

```
In [9]: msno.matrix(data) # Displaying the null values
```

Out[9]: <Axes: >



```
In [10]: # Locatins of the null values
data[data["Batsman Names"].isna() | data["Out/Not Out"].isna() | data["Balls
```

```
Out[10]:
```

	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	E
17	Apr 01,	03:30 PM	Punjab Cricket Association IS Bindra Stadium,	Mohali	Punjab Kings vs Kolkata Knight Riders, 2nd Mat...	Punjab Kings Innings	191	5	Dh
33	Apr 01,	07:30 PM	Bharat Ratna Shri Atal Bihari Vajpayee Ekana C...	Lucknow	Lucknow Super Giants vs Delhi Capitals, 3rd Ma...	Lucknow Super Giants Innings	193	6	r
68	Apr 02,	07:30 PM	M.Chinnaswamy Stadium,	Bengaluru	Royal Challengers Bangalore vs Mumbai Indians,...	Mumbai Indians Innings	171	7	

## Updating the null values

```
In [11]: data.at[17,"Out/Not Out"]
```

```
Out[11]: nan
```

```
In [12]: data.at[17,"Out/Not Out"] = "b Chakaravarthy"
```

```
In [13]: data.at[33,"Runs Scored"]
```

```
Out[13]: nan
```

```
In [14]: data.at[33,"Runs Scored"] = 73
```

```
In [15]: data.at[68,"Balls Played"]
```

```
Out[15]: nan
```

```
In [16]: data.at[68,"Balls Played"] = 10
```

```
In [17]: data.at[82,"Batsman Names"]
```

```
Out[17]: nan
```

```
In [18]: data.at[82,"Batsman Names"] = "Conway"
```

```
In [19]: data.at[102,"Batsman Names"]
```

```
Out[19]: nan
```

```
In [20]: data.at[102,"Batsman Names"] = "Sarfaraz Khan"
```

```
In [21]: data.at[169, "Batsman Names"]
```

```
Out[21]: nan
```

```
In [22]: data.at[169, "Batsman Names"] = "Samsom(c & WK)"
```

```
In [23]: data.at[215, "Out/Not Out"]
```

```
Out[23]: nan
```

```
In [24]: data.at[215, "Out/Not Out"] = "not out"
```

```
In [25]: data.at[263, "Batsman Names"]
```

```
Out[25]: nan
```

```
In [26]: data.at[263, "Batsman Names"] = "Padikkal"
```

```
In [27]: data.at[335, "Batsman Names"]
```

```
Out[27]: nan
```

```
In [28]: data.at[335, "Batsman Names"] = "N Jagadeesan"
```

```
In [29]: data.at[319, "Sixes"]
```

```
Out[29]: nan
```

```
In [30]: data.at[319, "Sixes"] = 2
```

```
In [31]: data.at[350, "Sixes"]
```

```
Out[31]: nan
```

```
In [32]: data.at[350, "Sixes"] = 1
```

```
In [33]: data.at[367, "Runs Scored"]
```

```
Out[33]: nan
```

```
In [34]: data.at[367, "Runs Scored"] = 3
```

```
In [35]: data.at[403, "Strike Rate"]
```

```
Out[35]: nan
```

```
In [36]: data.at[403, "Strike Rate"] = 125.53
```

```
In [37]: data.at[440, "Runs Scored"]
```

```
Out[37]: nan
```

```
In [38]: data.at[440, "Runs Scored"] = 34
```

```
In [39]: data.at[472,"Sixes"]
```

```
Out[39]: nan
```

```
In [40]: data.at[472,"Sixes"] = 1
```

```
In [41]: data.at[488,"Runs Scored"]
```

```
Out[41]: nan
```

```
In [42]: data.at[488,"Runs Scored"] = 0
```

```
In [43]: data.at[523,"Batsman Names"]
```

```
Out[43]: nan
```

```
In [44]: data.at[523,"Batsman Names"] = "Warner(c)"
```

```
In [45]: data.at[542,"Strike Rate"]
```

```
Out[45]: nan
```

```
In [46]: data.at[542,"Strike Rate"] = 57.14
```

```
In [47]: data.at[576,"Runs Scored"]
```

```
Out[47]: nan
```

```
In [48]: data.at[576,"Runs Scored"] = 12
```

```
In [49]: data.at[639,"Balls Played"]
```

```
Out[49]: nan
```

```
In [50]: data.at[639,"Balls Played"] = 19
```

```
In [51]: data.at[676,"Fours"]
```

```
Out[51]: nan
```

```
In [52]: data.at[676,"Fours"] = 0
```

```
In [53]: data.at[693,"Fours"]
```

```
Out[53]: nan
```

```
In [54]: data.at[693,"Fours"] = 1
```

```
In [55]: data.at[765,"Out/Not Out"]
```

```
Out[55]: nan
```

```
In [56]: data.at[765,"Out/Not Out"] = "c Axar b Mitchell Marsh"
```

```
In [57]: data.at[781,"Sixes"]
```

```
Out[57]: nan
```

```
In [58]: data.at[781,"Sixes"] = 0
```

```
In [59]: data.at[831,"Fours"]
```

```
Out[59]: nan
```

```
In [60]: data.at[831,"Fours"] = 1
```

```
In [61]: data.at[863,"Sixes"]
```

```
Out[61]: nan
```

```
In [62]: data.at[863,"Sixes"] = 1
```

```
In [63]: data.at[944,"Balls Played"]
```

```
Out[63]: nan
```

```
In [64]: data.at[944,"Balls Played"] = 3
```

```
In [65]: data.at[978,"Strike Rate"]
```

```
Out[65]: nan
```

```
In [66]: data.at[978,"Strike Rate"] = 148.39
```

```
In [67]: data.at[1003,"Fours"]
```

```
Out[67]: nan
```

```
In [68]: data.at[1003,"Fours"] = 0
```

```
In [69]: data.at[1020,"Balls Played"]
```

```
Out[69]: nan
```

```
In [70]: data.at[1020,"Balls Played"] = 9
```

```
In [71]: data.at[1066,"Runs Scored"]
```

```
Out[71]: nan
```

```
In [72]: data.at[1066,"Runs Scored"] = 11
```

```
In [73]: data.at[1082,"Strike Rate"]
```

```
Out[73]: nan
```

```
In [74]: data.at[1082,"Strike Rate"] = 137.5
```



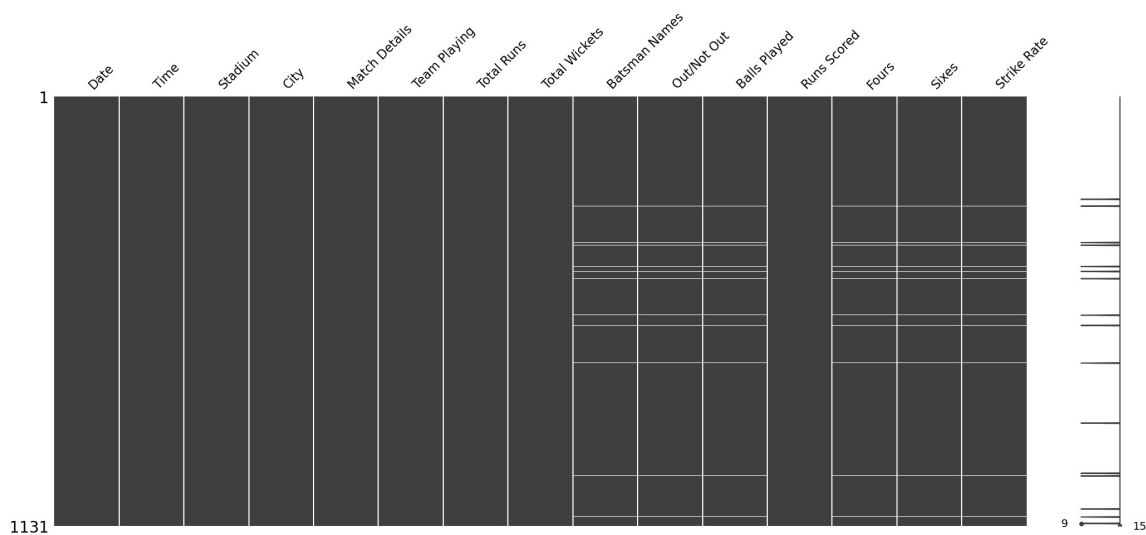
```
In [75]: data.isnull().sum().reset_index().rename(columns = {0:"count"})
```

```
Out[75]:
```

	index	count
0	Date	0
1	Time	0
2	Stadium	0
3	City	0
4	Match Details	0
5	Team Playing	0
6	Total Runs	0
7	Total Wickets	0
8	Batsman Names	16
9	Out/Not Out	16
10	Balls Played	16
11	Runs Scored	0
12	Fours	16
13	Sixes	16
14	Strike Rate	16

```
In [76]: msno.matrix(data)
```

```
Out[76]: <Axes: >
```



```
In [77]: data[data["Batsman Names"].isna()] #null values
```

```
Out[77]:
```

	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	Bats Na
270	Apr 12,	07:30 PM	MA Chidambaram Stadium,	Chennai	Chennai Super Kings vs Rajasthan Royals, 17th ...	Rajasthan Royals Innings	175	8	
288	Apr 13,	07:30 PM	Punjab Cricket Association IS Bindra Stadium,	Mohali	Punjab Kings vs Gujarat Titans, 18th Match - L...	Punjab Kings Innings	153	8	
384	Apr 17,	07:30 PM	M.Chinnaswamy Stadium,	Bengaluru	Royal Challengers Bangalore vs Chennai Super K...	Royal Challengers Bangalore Innings	218	8	

```
In [78]: # Dropping the null values
data.dropna(inplace = True)
data
```

Out[78]:

	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	Batsman Names	Out/N/O
0	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Conway	b Shar
1	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Ruturaj Gaikwad	Shubma Gill Alza Josep
2	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Moeen	c ' Saha Rash Kh
3	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Stokes	c ' Saha Rash Kh
4	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Rayudu	b Joshi Litt
...	...	...	...	...	...	...	...	...	...	...
1126	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Shivam Dube	not o
1127	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Ajinkya Rahane	c Vija Shank b Mol Sharn

	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	Batsman Names	Out/N O
1128	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Ambati Rayudu	c and Mol Sharr
1129	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	MS Dhoni (c & wk)	c Miller Mol Sharr
1130	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Ravindra Jadeja	not o

1115 rows × 15 columns

```
In [79]: data.reset_index(drop = True,inplace = True)
```

In [80]: data

Out[80]:

	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	Batsman Names	Out/No
0	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Conway	b Shar
1	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Ruturaj Gaikwad	Shubma Gill Alzar Joseph
2	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Moeen	c ' Saha Rash Kha
3	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Stokes	c ' Saha Rash Kha
4	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Rayudu	b Josht Litt
...	...	...	...	...	...	...	...	...	...	...
1110	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...	Chennai Super Kings Innings	171	5	Shivam Dube	not o
1111	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...	Chennai Super Kings Innings	171	5	Ajinkya Rahane	c Vije Shank b Mo Sharr

	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	Batsman Names	Out/Not Out
1112	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Ambati Rayudu	c and Mot Sharr
1113	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	MS Dhoni (c & wk)	c Miller Mot Sharr
1114	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Ravindra Jadeja	not o

1115 rows × 15 columns

```
In [81]: # Cheaking for data types
data.dtypes
```

```
Out[81]: Date                object
Time                object
Stadium            object
City               object
Match Details      object
Team Playing       object
Total Runs         int64
Total Wickets      int64
Batsman Names      object
Out/Not Out        object
Balls Played       float64
Runs Scored        object
Fours              float64
Sixes              float64
Strike Rate        float64
dtype: object
```

```
In [82]: data["Balls Played"] = data["Balls Played"].astype(int)
data["Runs Scored"] = data["Runs Scored"].astype(int)
data["Fours"] = data["Fours"].astype(int)
data["Sixes"] = data["Sixes"].astype(int)
```

```
In [83]: data.dtypes
```

```
Out[83]: Date           object
Time           object
Stadium        object
City           object
Match Details  object
Team Playing   object
Total Runs     int64
Total Wickets  int64
Batsman Names  object
Out/Not Out    object
Balls Played   int32
Runs Scored    int32
Fours          int32
Sixes          int32
Strike Rate    float64
dtype: object
```

```
In [84]: new_data = data.copy()
```

```
In [85]: team_playes = data[["Team Playing", "Batsman Names"]]
team_playes.groupby(by = ["Team Playing", "Batsman Names"]).count()
```

```
Out[85]:
```

Team Playing	Batsman Names
Chennai Super Kings Innings	Ajinkya Rahane
	Ambati Rayudu
	Conway
	D Chahar
	Devon Conway
...	...
Sunrisers Hyderabad Innings	Sanvir Singh
	Tripathi
	Umran Malik
	Vivrant Sharma
	Washington Sundar

248 rows × 0 columns

```
In [86]: pd.set_option('display.max.rows', 248 )
```

```
In [87]: # Replacing the names of the plays
#Chennai Super Kings Innings
new_data.replace('Conway', 'Devon Conway', inplace = True)
new_data.replace('Dhoni (c & wk)', 'MS Dhoni (c & wk)', inplace = True)
new_data.replace('Moeen', 'Moeen Ali', inplace = True)
new_data.replace('Rayudu', 'Ambati Rayudu', inplace = True)

# Delhi Capitals Innings
new_data.replace('Axar', 'Axar Patel', inplace = True)
new_data.replace('Warner (c)', 'David Warner (c)', inplace = True)
new_data.replace('Warner(c)', 'David Warner (c)', inplace = True)
new_data.replace('Sarfaraz Khan', 'Sarfaraz Khan (wk)', inplace = True)
new_data.replace('Nortje', 'Anrich Nortje', inplace = True)
new_data.replace('Rossouw', 'Rilee Rossouw', inplace = True)
new_data.replace('Salt (wk)', 'Philip Salt (wk)', inplace = True)

# Gujarat Titans Innings
new_data.replace('Miller', 'David Miller', inplace = True)
new_data.replace('W Saha (wk)', 'Wriddhiman Saha (wk)', inplace = True)
new_data.replace('Shami', 'Mohammed Shami', inplace = True)
new_data.replace('Shanaka', 'Dasun Shanaka', inplace = True)

# Kolkata Knight Riders Innings
new_data.replace('Russell', 'Andre Russell', inplace = True)
new_data.replace('Chakaravarthy', 'Varun Chakaravarthy', inplace = True)
new_data.replace('Wiese', 'David Wiese', inplace = True)
new_data.replace('Gurbaz (wk)', 'Rahmanullah Gurbaz (wk)', inplace = True)
new_data.replace('Mandeep', 'Mandeep Singh', inplace = True)
new_data.replace('N Jagadeesan', 'N Jagadeesan (wk)', inplace = True)
new_data.replace('Narine', 'Sunil Narine', inplace = True)
new_data.replace('Thakur', 'Shardul Thakur', inplace = True)
new_data.replace('Umesh', 'Umesh Yadav', inplace = True)

# Lucknow Super Giants Innings
new_data.replace('Krunal Pandya', 'Krunal Pandya (c)', inplace = True)
new_data.replace('Nicholas Pooran', 'Nicholas Pooran (wk)', inplace = True)
new_data.replace('Pooran', 'Nicholas Pooran (wk)', inplace = True)
new_data.replace('Pooran (wk)', 'Nicholas Pooran (wk)', inplace = True)
new_data.replace('de Kock (wk)', 'Quinton de Kock (wk)', inplace = True)
new_data.replace('Rahul (c)', 'KL Rahul (c)', inplace = True)
new_data.replace('Stoinis', 'Marcus Stoinis', inplace = True)
new_data.replace('K Gowtham', 'Krishnappa Gowtham', inplace = True)
new_data.replace('K Mayers', 'Kyle Mayers', inplace = True)
new_data.replace('K Mayers', 'Kyle Mayers', inplace = True)

# Mumbai Indians Innings
new_data.replace('Green', 'Cameron Green', inplace = True)
new_data.replace('Chawla', 'Piyush Chawla', inplace = True)
new_data.replace('Rohit (c)', 'Rohit Sharma (c)', inplace = True)
new_data.replace('Rohit Sharma', 'Rohit Sharma (c)', inplace = True)
new_data.replace('Suryakumar Yadav (c)', 'Suryakumar Yadav', inplace = True)

# Punjab Kings Innings
new_data.replace('Harpreet Singh', 'Harpreet Singh Bhatia', inplace = True)
new_data.replace('Livingstone', 'Liam Livingstone', inplace = True)
new_data.replace('Prabhsimran', 'Prabhsimran Singh', inplace = True)
new_data.replace('Sam Curran (c)', 'Sam Curran', inplace = True)
```



```
new_data.replace('Dhawan (c)', 'Shikhar Dhawan (c)', inplace = True)
new_data.replace('Raza', 'Sikandar Raza', inplace = True)

# Rajasthan Royals Innings
new_data.replace('Holder', 'Jason Holder', inplace = True)
new_data.replace('Padikkal', 'Devdutt Padikkal', inplace = True)
new_data.replace('Ashwin', 'Ravichandran Ashwin', inplace = True)
new_data.replace('Samsom(c & WK)', 'Sanju Samson (c & wk)', inplace = True)
new_data.replace('Samson (c & wk)', 'Sanju Samson (c & wk)', inplace = True)
new_data.replace('Hetmyer', 'Shimron Hetmyer', inplace = True)
new_data.replace('Boult', 'Trent Boult', inplace = True)
new_data.replace('Zampa', 'Adam Zampa', inplace = True)

# Royal Challengers Bangalore Innings
new_data.replace('Anuj Rawat', 'Anuj Rawat (wk)', inplace = True)
new_data.replace('Karthik', 'Dinesh Karthik (wk)', inplace = True)
new_data.replace('Karthik (wk)', 'Dinesh Karthik (wk)', inplace = True)
new_data.replace('Kohli', 'Virat Kohli', inplace = True)
new_data.replace('Kohli (c)', 'Virat Kohli', inplace = True)
new_data.replace('Lomror', 'Mahipal Lomror', inplace = True)
new_data.replace('M Bracewell', 'Michael Bracewell', inplace = True)
new_data.replace('Prabhudessai', 'Suyash Prabhudessai', inplace = True)
new_data.replace('du Plessis', 'Faf du Plessis (c)', inplace = True)
new_data.replace('du Plessis', 'Faf du Plessis (c)', inplace = True)
new_data.replace('Willey', 'David Willey', inplace = True)
new_data.replace('Maxwell', 'Glenn Maxwell', inplace = True)
new_data.replace('Maxwell', 'Glenn Maxwell', inplace = True)

# Sunrisers Hyderabad Innings
new_data.replace('Bhuvneshwar Kumar (c)', 'Bhuvneshwar Kumar', inplace = True)
new_data.replace('Bhuvneshwar', 'Bhuvneshwar Kumar', inplace = True)
new_data.replace('Glenn Phillips', 'Glenn Phillips (wk)', inplace = True)
new_data.replace('Anmolpreet Singh (wk)', 'Anmolpreet Singh', inplace = True)
new_data.replace('Klaasen (wk)', 'Heinrich Klaasen', inplace = True)
new_data.replace('Markram (c)', 'Aiden Markram (c)', inplace = True)
new_data.replace('Tripathi', 'Rahul Tripathi', inplace = True)
```

In [88]: new\_data

Out[88]:

	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	Batsman Names	Out/No Of
0	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Devon Conway	b Shar
1	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Ruturaj Gaikwad	Shubma Gill Alzar Josep
2	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Moeen Ali	c ' Saha Rash Kha
3	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Stokes	c ' Saha Rash Kha
4	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Chennai Super Kings Innings	178	7	Ambati Rayudu	b Josht Litt
...	...	...	...	...	...	...	...	...	...	...
1110	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Shivam Dube	not o
1111	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Ajinkya Rahane	c Vije Shank b Mot Sharr

	Date	Time	Stadium	City	Match Details	Team Playing	Total Runs	Total Wickets	Batsman Names	Out/No
1112	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Ambati Rayudu	c and Mot Sharr
1113	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	MS Dhoni (c & wk)	c Miller Mot Sharr
1114	May 29,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Chennai Super Kings vs Gujarat Titans, Final (...)	Chennai Super Kings Innings	171	5	Ravindra Jadeja	not o

1115 rows × 15 columns

```
In [89]: new_team_players = new_data[["Team Playing", "Batsman Names"]]  
new_team_players.groupby(by = ["Team Playing", "Batsman Names"]).count()
```

Out[89]:

Team Playing	Batsman Names
Chennai Super Kings Innings	Ajinkya Rahane
	Ambati Rayudu
	D Chahar
	Devon Conway
	MS Dhoni (c & wk)
	Moeen Ali
	Ravindra Jadeja
	Ruturaj Gaikwad
	Santner
	Shivam Dube
	Stokes

```
In [90]: pd.set_option('display.max.rows', 248 )
```

## Top Fours

```
In [91]: Top_Fours = new_data[["Batsman Names", "Fours"]]  
Top_Fours
```

Out[91]:

	Batsman Names	Fours
0	Devon Conway	0
1	Ruturaj Gaikwad	4
2	Moeen Ali	4
3	Stokes	1
4	Ambati Rayudu	0
...	...	...
1110	Shivam Dube	0
1111	Ajinkya Rahane	2
1112	Ambati Rayudu	1
1113	MS Dhoni (c & wk)	0
1114	Ravindra Jadeja	1

1115 rows × 2 columns

```
In [92]: Top_Fours_Byplayers = Top_Fours.groupby("Batsman Names").sum()  
Top_Fours_Byplayers
```

Out[92]:

	Fours
Batsman Names	
Abdul Basith	0
Abdul Samad	10
Abhinav Manohar	6
Abhishek Sharma	25
Abishek Porel (wk)	1
Adam Zampa	0
Adil Rashid	2
Aiden Markram (c)	16
Ajinkya Rahane	24
Akash Deep	2

```
In [93]: Fours = Top_Fours_Byplayers.sort_values("Fours",ascending = False).reset_index_in  
Fours
```

Out[93]:

	Batsman Names	Fours
0	Yashasvi Jaiswal	79
1	Shubman Gill	78
2	Devon Conway	77
3	David Warner (c)	69
4	Virat Kohli	59
5	Suryakumar Yadav	58
6	Ishan Kishan (wk)	54
7	Shikhar Dhawan (c)	49
8	Ruturaj Gaikwad	46
9	Wriddhiman Saha (wk)	44

## Top Six

```
In [94]: Top_six = new_data[["Batsman Names","Sixes"]]  
six = Top_six.groupby("Batsman Names").sum().reset_index()
```

```
In [95]: six
```

Out[95]:

	Batsman Names	Sixes
0	Abdul Basith	0
1	Abdul Samad	11
2	Abhinav Manohar	7
3	Abhishek Sharma	4
4	Abishek Porel (wk)	2
5	Adam Zampa	0
6	Adil Rashid	1
7	Aiden Markram (c)	3
8	Ajinkya Rahane	16
9	Akash Deep	1
10	Akeal Hosein	1

```
In [96]: Top_sixes = six.sort_values("Sixes",ascending = False).head(10).reset_index  
Top_sixes
```

Out[96]:

	index	Batsman Names	Sixes
0	146	Shivam Dube	35
1	46	Glenn Maxwell	31
2	133	Ruturaj Gaikwad	30
3	87	Marcus Stoinis	27
4	152	Suryakumar Yadav	26
5	105	Nicholas Pooran (wk)	25
6	126	Rinku Singh	24
7	176	Yashasvi Jaiswal	24
8	137	Sanju Samson (c & wk)	24
9	147	Shubman Gill	23

## Total Teams

```
In [97]: new_data[["Team Playing"]].groupby(by =["Team Playing"] ).count().reset_index
```

Out[97]:

	Team Playing
0	Chennai Super Kings Innings
1	Delhi Capitals Innings
2	Gujarat Titans Innings
3	Kolkata Knight Riders Innings
4	Lucknow Super Giants Innings
5	Mumbai Indians Innings
6	Punjab Kings Innings
7	Rajasthan Royals Innings
8	Royal Challengers Bangalore Innings
9	Sunrisers Hyderabad Innings

## Highest Team Scores

```
In [98]: Highest_Team_Scores = new_data[["Team Playing", "Total Runs"]].groupby(by =  
Highest_Team_Scores
```

Out[98]:

	Team Playing	Total Runs
0	Lucknow Super Giants Innings	257
1	Chennai Super Kings Innings	235
2	Gujarat Titans Innings	227
3	Mumbai Indians Innings	218
4	Royal Challengers Bangalore Innings	218
5	Sunrisers Hyderabad Innings	217
6	Punjab Kings Innings	214
7	Rajasthan Royals Innings	214
8	Delhi Capitals Innings	213
9	Kolkata Knight Riders Innings	207

## Runs\_Scored\_ByPlayers

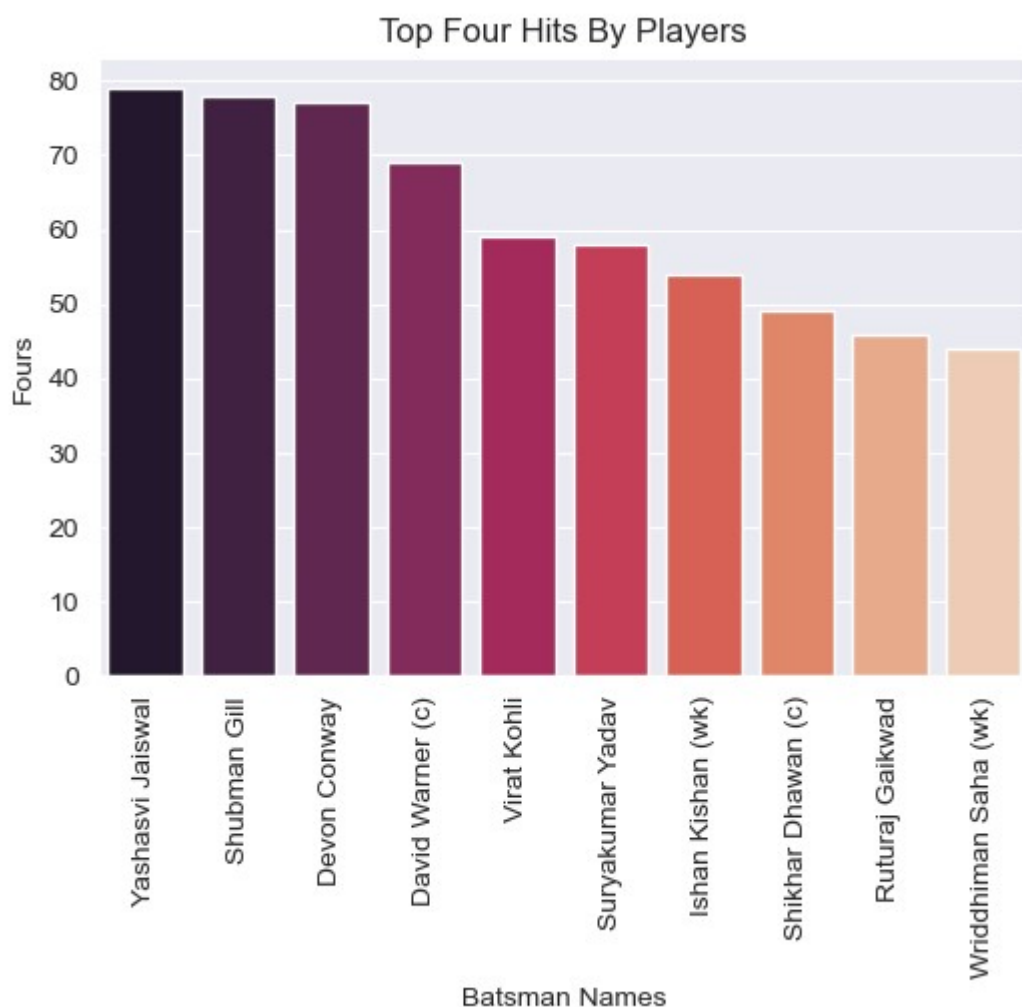
```
In [99]: Runs_Scored = new_data[["Batsman Names", "Runs Scored"]].groupby(by = ["Batsman  
Runs_Scored
```

Out[99]:

	Batsman Names	Runs Scored
0	Shubman Gill	761
1	Devon Conway	672
2	Ruturaj Gaikwad	590
3	Virat Kohli	585
4	Yashasvi Jaiswal	581
5	Suryakumar Yadav	544
6	David Warner (c)	516
7	Ishan Kishan (wk)	454
8	Cameron Green	422
9	Shivam Dube	418

## Graphical representation

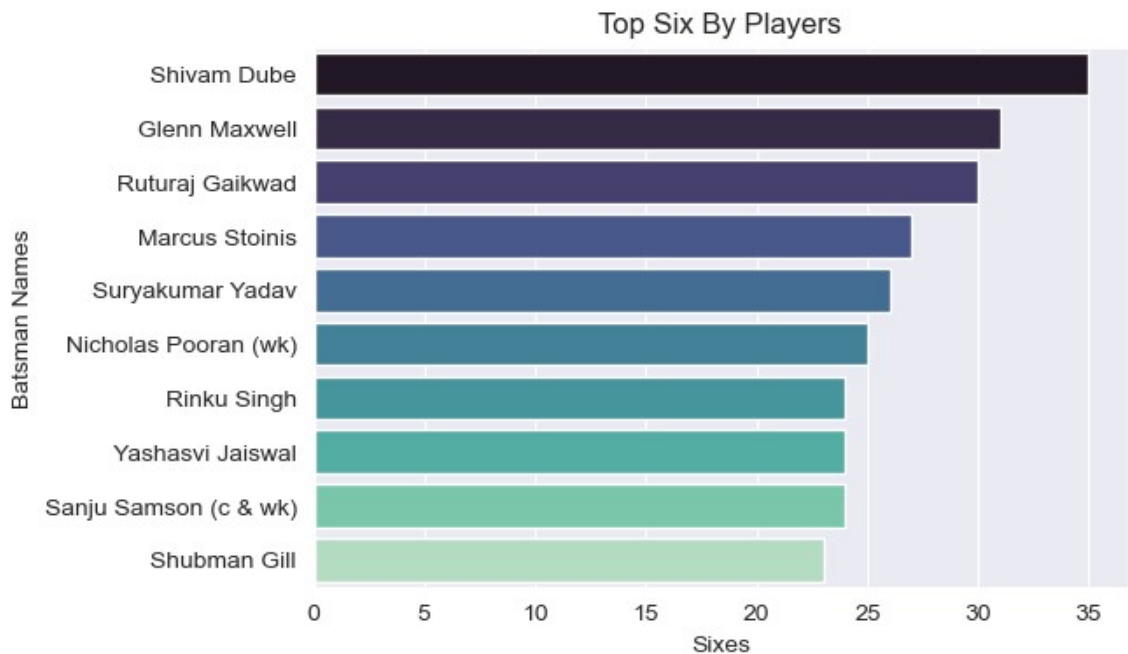
```
In [100]: plt.figure(figsize = (6,4))
sns.set_style("darkgrid")
ax=sns.barplot(x =Fours['Batsman Names'],y = Fours['Fours'],palette = "rocket")
ax.set_xticklabels(ax.get_xticklabels(),rotation = 90)
plt.title("Top Four Hits By Players")
plt.show()
```





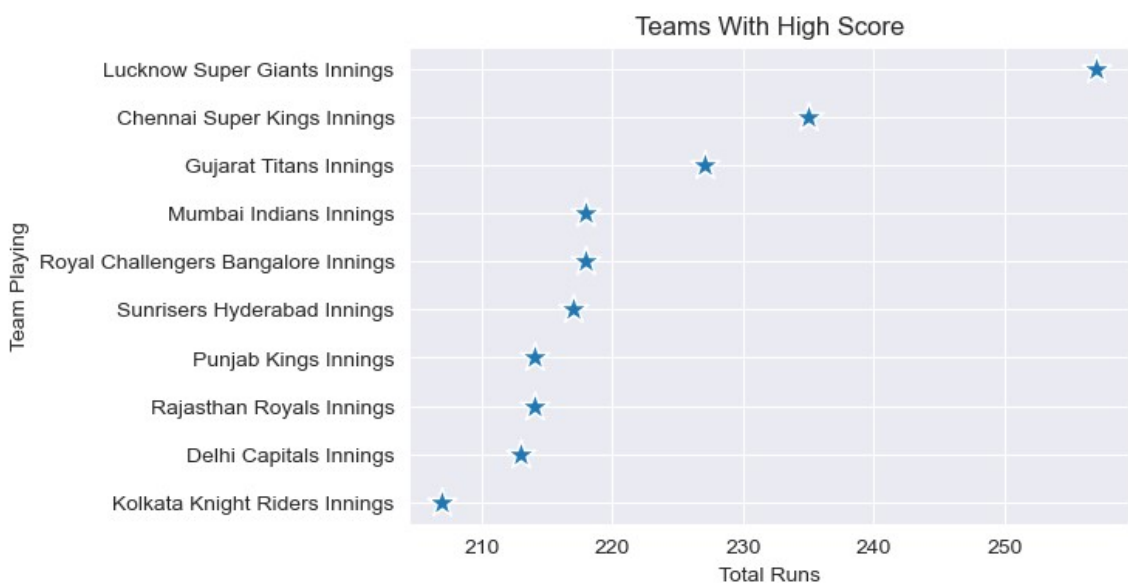
In [101]:

```
plt.figure(figsize = (6,4))
sns.barplot(x = Top_sixes["Sixes"],y = Top_sixes["Batsman Names"],palette = 
plt.title("Top Six By Players")
plt.show()
```



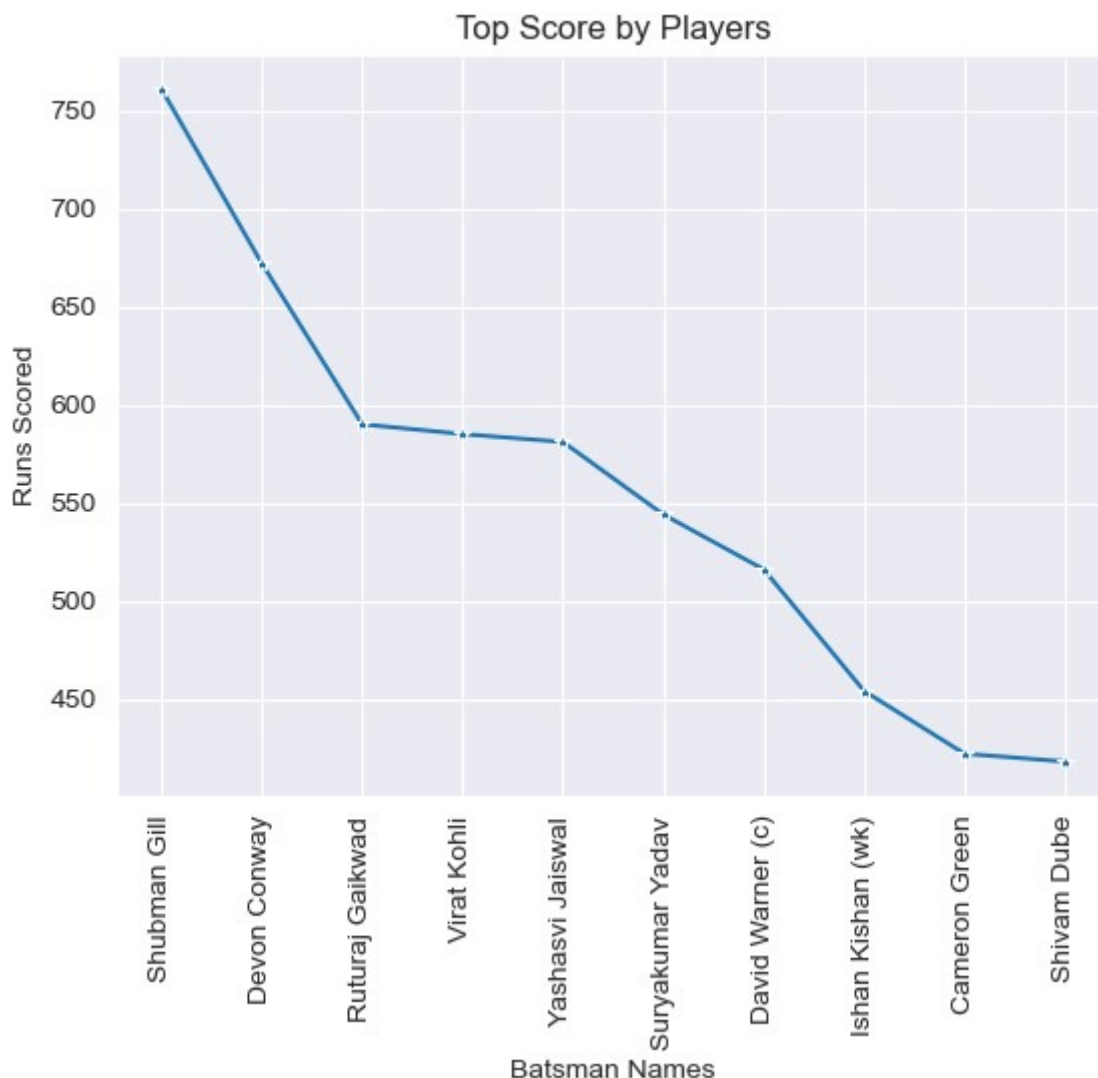
In [102]:

```
plt.figure(figsize = (6,4))
sns.set_style("darkgrid")
#sns.set(rc={'axes.facecolor':'lightblue', 'figure.facecolor':'lightgreen'})
sns.scatterplot(x = Highest_Team_Scores["Total Runs"],y=Highest_Team_Scores
plt.title("Teams With High Score")
plt.show()
```



```
In [103]: ab=sns.lineplot(x = Runs_Scored["Batsman Names"],y = Runs_Scored['Runs Scored'])
ab.set_xticklabels(ab.get_xticklabels(),rotation = 90)
plt.title("Top Score by Players")
plt.show()
```

C:\Users\Vasu Prasad\AppData\Local\Temp\ipykernel\_8488\958133767.py:2: UserWarning: FixedFormatter should only be used together with FixedLocator  
ab.set\_xticklabels(ab.get\_xticklabels(),rotation = 90)



## Bowling Data

```
In [104]: B_data=pd.read_csv("file:///C:/Users/Vasu%20Prasad/OneDrive/Documents/MCA/II")
```

```
In [105]: B_data.head()
```

```
Out[105]:
```

	Unnamed: 0	Date	Time	Stadium	City	Match Details	Team Bowling	Total Runs Conceded	Total Wickets Taken	Bo N
0	0	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Gujarat Titans Innings	178	7	Si
1	1	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Gujarat Titans Innings	178	7	Hi Pal
						Guiarat				

```
In [106]: B_data.describe()
```

```
Out[106]:
```

	Unnamed: 0	Total Runs Conceded	Total Wickets Taken	Overs	Maidens	Runs	Wickets
count	761.000000	761.000000	761.000000	758.000000	759.000000	760.000000	760.000000
mean	380.000000	174.943495	6.152431	3.157520	0.017128	28.067105	0.940789
std	219.826068	31.137568	2.347540	1.048363	0.129833	11.513272	1.026869
min	0.000000	101.000000	1.000000	0.100000	0.000000	0.000000	0.000000
25%	190.000000	150.000000	4.000000	2.625000	0.000000	20.000000	0.000000
50%	380.000000	178.000000	6.000000	4.000000	0.000000	28.000000	1.000000
75%	570.000000	199.000000	8.000000	4.000000	0.000000	36.000000	2.000000
max	760.000000	257.000000	10.000000	4.000000	1.000000	69.000000	5.000000

```
In [107]: B_data.isnull().sum().reset_index().rename(columns = {0:"count"})
```

Out[107]:

	index	count
0	Unnamed: 0	0
1	Date	0
2	Time	0
3	Stadium	0
4	City	0
5	Match Details	0
6	Team Bowling	0
7	Total Runs Conceeded	0
8	Total Wickets Taken	0
9	Bowler Name	5
10	Overs	3
11	Maidens	2
12	Runs	1
13	Wickets	1
14	No Balls	0
15	Wides	2
16	Economies	0

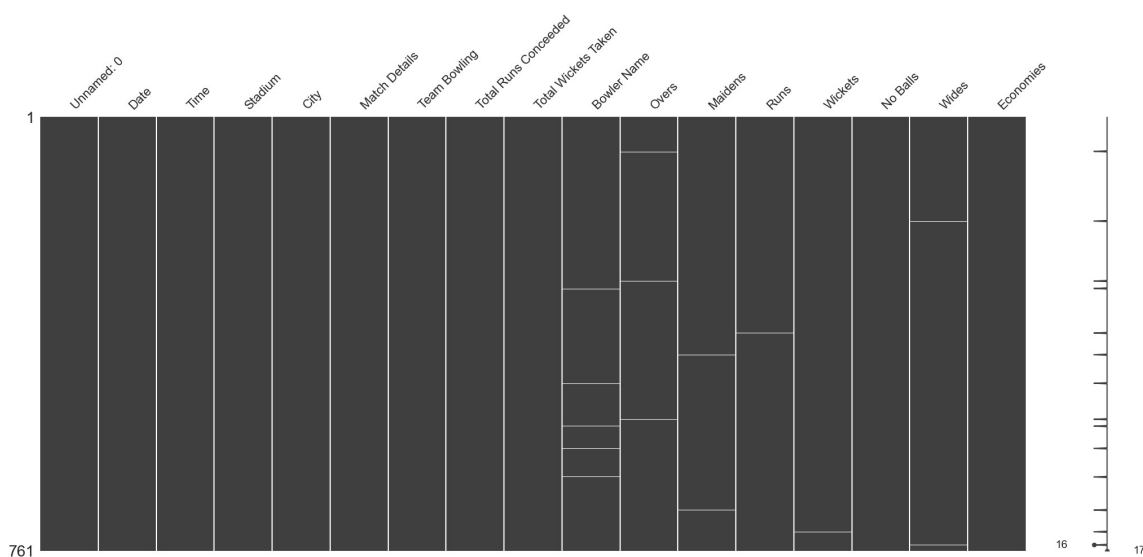
```
In [108]: B_data[B_data["Bowler Name"].isna() | B_data["Overs"].isna() | B_data["Maidens"].isna()]
```

Out[108]:

	Unnamed: 0	Date	Time	Stadium	City	Match Details	Team Bowling	Total Runs Conceeded
61	61	Apr 03,	07:30 PM	MA Chidambaram Stadium,	Chennai	Chennai Super Kings vs Lucknow Super Giants, 6...	Lucknow Super Giants Innings	217
183	183	Apr 12,	07:30 PM	MA Chidambaram Stadium,	Chennai	Chennai Super Kings vs Rajasthan Royals, 17th ...	Chennai Super Kings Innings	175
288	288	Apr 20,	07:30 PM	Arun Jaitley Stadium,	Delhi	Delhi Capitals vs Kolkata Knight Riders	Delhi Capitals Innings	127

```
In [109]: msno.matrix(B_data)
```

```
Out[109]: <Axes: >
```



```
In [110]: pd.set_option('display.max.rows',761)
```

```
In [111]: B_data.at[301,"Bowler Name"]
```

```
Out[111]: nan
```

```
In [112]: B_data.at[301,"Bowler Name"] = "Akash Singh"
```

```
In [113]: B_data.at[467,"Bowler Name"]
```

```
Out[113]: nan
```

```
In [114]: B_data.at[467,"Bowler Name"] = "Green"
```

```
In [115]: B_data.at[542,"Bowler Name"]
```

```
Out[115]: nan
```

```
In [116]: B_data.at[542,"Bowler Name"] = "Vaibhav Arora"
```

```
In [117]: B_data.at[581,"Bowler Name"]
```

```
Out[117]: nan
```

```
In [118]: B_data.at[581,"Bowler Name"] = "Shami"
```

```
In [119]: B_data.at[631,"Bowler Name"]
```

```
Out[119]: nan
```

```
In [120]: B_data.at[631,"Bowler Name"] = "Behrendorff"
```

```
In [121]: B_data.at[61,"Overs"]
```

```
Out[121]: nan
```

```
In [122]: B_data.at[61,"Overs"] = 2
```

```
In [123]: B_data.at[288,"Overs"]
```

```
Out[123]: nan
```

```
In [124]: B_data.at[288,"Overs"] = 4
```

```
In [125]: B_data.at[530,"Overs"]
```

```
Out[125]: nan
```

```
In [126]: B_data.at[530,"Overs"] = 4
```

```
In [127]: B_data.at[417,"Maidens"]
```

```
Out[127]: nan
```

```
In [128]: B_data.at[417,"Maidens"] = 0
```

```
In [129]: B_data.at[689,"Maidens"]
```

```
Out[129]: nan
```

```
In [130]: B_data.at[689,"Maidens"] = 0
```

```
In [131]: B_data.at[379,"Runs"]
```

```
Out[131]: nan
```

```
In [132]: B_data.at[379,"Runs"] = 25
```

```
In [133]: B_data.at[727,"Wickets"]
```

```
Out[133]: nan
```

```
In [134]: B_data.at[727,"Wickets"] = 0
```

```
In [135]: B_data.at[183,"Wides"]
```

```
Out[135]: nan
```

```
In [136]: B_data.at[183,"Wides"] = 0
```

```
In [137]: B_data.at[750,"Wides"]
```

```
Out[137]: nan
```

```
In [138]: B_data.at[750,"Wides"] = 0
```

In [139]: B\_data

Out[139]:

	Unnamed: 0	Date	Time	Stadium	City	Match Details	Team Bowling	Total Run Concede
0	0	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Gujarat Titans Innings	17
1	1	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Gujarat Titans Innings	17
2	2	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st	Gujarat Titans Innings	17

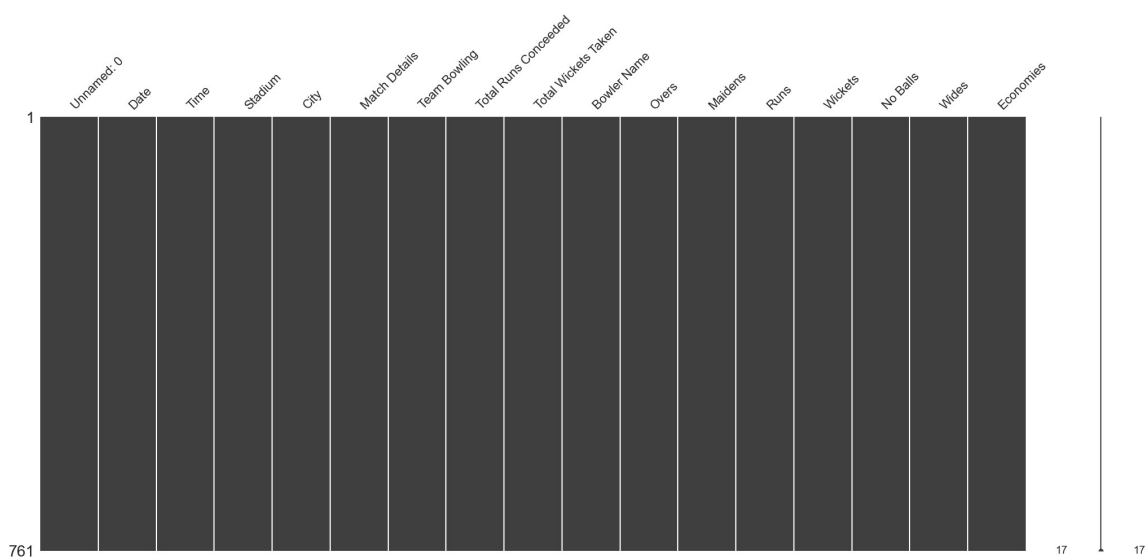
In [140]: B\_data.isnull().sum().reset\_index().rename(columns = {0:"count"})

Out[140]:

	index	count
0	Unnamed: 0	0
1	Date	0
2	Time	0
3	Stadium	0
4	City	0
5	Match Details	0
6	Team Bowling	0
7	Total Runs Conceeded	0
8	Total Wickets Taken	0
9	Bowler Name	0
10	Overs	0
11	Maidens	0
12	Runs	0
13	Wickets	0
14	No Balls	0
15	Wides	0
16	Economies	0

```
In [141]: msno.matrix(B_data)
```

```
Out[141]: <Axes: >
```



```
In [142]: B_data.dtypes
```

```
Out[142]: Unnamed: 0          int64
Date              object
Time             object
Stadium          object
City             object
Match Details    object
Team Bowling     object
Total Runs Conceeded  int64
Total Wickets Taken  int64
Bowler Name      object
Overs            float64
Maidens          float64
Runs            float64
Wickets          float64
No Balls         int64
Wides            float64
Economies        float64
dtype: object
```

```
In [143]: B_data[["Overs"]] = B_data[["Overs"]].astype(int)
B_data[["Maidens"]] = B_data[["Maidens"]].astype(int)
B_data[["Economies"]] = B_data[["Economies"]].astype(int)
B_data[["Wides"]] = B_data[["Wides"]].astype(int)
B_data[["Runs"]] = B_data[["Runs"]].astype(int)
B_data[["Wickets"]] = B_data[["Wickets"]].astype(int)
```



```
In [144]: B_data.dtypes
```

```
Out[144]: Unnamed: 0          int64
Date              object
Time              object
Stadium           object
City              object
Match Details     object
Team Bowling      object
Total Runs Conceded  int64
Total Wickets Taken int64
Bowler Name       object
Overs             int32
Maidens           int32
Runs              int32
Wickets           int32
No Balls          int64
Wides             int32
Economies         int32
dtype: object
```

```
In [145]: B_data.shape
```

```
Out[145]: (761, 17)
```

```
In [146]: B_data.drop("Unnamed: 0",axis = 1,inplace = True)
```

```
In [147]: B_data
```

```
Out[147]:
```

	Date	Time	Stadium	City	Match Details	Team Bowling	Total Runs Conceded	Total Wickets Taken
0	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Gujarat Titans Innings	178	7
1	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kings, 1st Mat...	Gujarat Titans Innings	178	7
2	Mar 31,	07:30 PM	Narendra Modi Stadium,	Ahmedabad	Gujarat Titans vs Chennai Super Kinas 1st	Gujarat Titans Innings	178	7

```
In [148]: B_data.columns
```

```
Out[148]: Index(['Date', 'Time', 'Stadium', 'City', 'Match Details', 'Team Bowling',
                'Total Runs Conceded', 'Total Wickets Taken', 'Bowler Name', 'Over
s',
                'Maidens', 'Runs', 'Wickets', 'No Balls', 'Wides', 'Economies'],
              dtype='object')
```

```
In [149]: Team_Bowlers = B_data[["Team Bowling", "Bowler Name"]]  
Team_Bowlers.groupby(by = ["Team Bowling", "Bowler Name"]).count()
```

Out[149]:

Team Bowling	Bowler Name
Chennai Super Kings Innings	Akash Singh
	Ben Stokes
	D Chahar
	Deepak Chahar
	M Theekshana
	Magala
	Maheesh Theekshana
	Matheesha Pathirana
	Mitchell Santner
	Moeen
	Moeen Ali

In [150]: *#updating the team players names*

```
B_data["Bowler Name"].replace({'D Chahar':'Deepak Chahar','Moeen':'Moeen Ali',  
                                'M Theekshana':'Maheesh Theekshana',  
                                'RS Hangargekar':'Rajvardhan Hangargekar',  
                                'Santner':'Mitchell Santner',  
                                'Axar':'Axar Patel',  
                                'Ishant':'Ishant Sharma',  
                                'Nortje':'Anrich Nortje',  
                                'Rashid Khan':'Rashid Khan (c)',  
                                'Shami':'Mohammed Shami',  
                                'Russell':'Andre Russell',  
                                'Narine':'Sunil Narine',  
                                'Southee':'Tim Southee',  
                                'Umesh':'Umesh Yadav',  
                                'Chakaravarthy':'Varun Chakaravarthy',  
                                'Thakur':'Shardul Thakur',  
                                'Krunal Pandya':'Krunal Pandya (c)',  
                                'K Mayers':'Kyle Mayers',  
                                'Green':'Cameron Green',  
                                'Chawla':'Piyush Chawla',  
                                'Livingstone':'Liam Livingstone',  
                                'Sam Curran':'Sam Curran (c)',  
                                'Raza':'Sikandar Raza',  
                                'Rabada':'Kagiso Rabada',  
                                'Holder':'Jason Holder',  
                                'Jason Holder':'Ravichandran Ashwin',  
                                'Zampa':'Adam Zampa',  
                                'Chahal':'Yuzvendra Chahal',  
                                'Boult':'Trent Boult',  
                                'Maxwell':'Glenn Maxwell',  
                                'Siraj':'Mohammed Siraj',  
                                'Parnell':'Wayne Parnell',  
                                'Willey':'David Willey',  
                                'W Hasaranga':'Wanindu Hasaranga',  
                                'Bhuvneshwar':'Bhuvneshwar Kumar',  
                                'Markram (c)':'Aiden Markram (c)',  
                                'Bhuvneshwar (c)':'Bhuvneshwar Kumar',  
                                'Markande':'Mayank Markande'  
                                },inplace=True)
```

```
In [151]: New_Team_Bowlers = B_data[["Team Bowling", "Bowler Name"]]  
New_Team_Bowlers.groupby(by = ["Team Bowling", "Bowler Name"]).count()
```

Out[151]:

Team Bowling	Bowler Name
Chennai Super Kings Innings	Akash Singh
	Ben Stokes
	Deepak Chahar
	Magala
	Maheesh Theekshana
	Matheesha Pathirana
	Mitchell Santner
	Moeen Ali
	Pretorius
	Rajvardhan Hangargekar
	Ravindra Jadeja

## Top Wickets

```
In [152]: # Top Wickets  
W_data = B_data[["Bowler Name", "Wickets"]].groupby(by = ["Bowler Name"]).sum()  
W_data
```

Out[152]:

	Bowler Name	Wickets
0	Abhishek Sharma	2
1	Adam Zampa	6
2	Adil Rashid	2
3	Aiden Markram (c)	0
4	Akash Deep	1
5	Akash Madhwal	14
6	Akash Singh	5
7	Akeal Hosein	1
8	Alzarri Joseph	7
9	Amit Mishra	7
10	Andre Russell	3

```
In [153]: Top_Wickets = W_data.sort_values("Wickets",ascending = False).head(10)
Top_Wickets
```

Out[153]:

	Bowler Name	Wickets
102	Rashid Khan (c)	25
82	Mohit Sharma	21
138	Yuzvendra Chahal	21
79	Mohammed Shami	19
127	Varun Chakaravathy	18
123	Tushar Deshpande	18
105	Ravindra Jadeja	17
94	Piyush Chawla	17
80	Mohammed Siraj	16
103	Ravi Bishnoi	16

## Top Over

```
In [154]: # Top Over
Over = B_data[["Bowler Name","Overs"]].groupby(by=["Bowler Name"]).sum().i
Over
```

Out[154]:

	Bowler Name	Overs
0	Abhishek Sharma	11
1	Adam Zampa	18
2	Adil Rashid	7
3	Aiden Markram (c)	4
4	Akash Deep	5
5	Akash Madhwal	23
6	Akash Singh	16
7	Akeal Hosein	4
8	Alzarri Joseph	24
9	Amit Mishra	17
10	Andre Russell	12

```
In [155]: Overs_1 = Over.sort_values("Overs",ascending = False).head(10)
Overs_1
```

Out[155]:

	Bowler Name	Overs
102	Rashid Khan (c)	55
79	Mohammed Shami	53
123	Tushar Deshpande	51
94	Piyush Chawla	50
105	Ravindra Jadeja	50
103	Ravi Bishnoi	46
138	Yuzvendra Chahal	44
127	Varun Chakaravathy	44
57	Kuldeep Yadav	43
15	Arshdeep Singh	42

## Wides

```
In [156]: Wides = B_data[["Bowler Name", "Wides"]].groupby(by = ["Bowler Name"]).sum()
Wides
```

Out[156]:

	Bowler Name	Wides
0	Abhishek Sharma	2
1	Adam Zampa	2
2	Adil Rashid	0
3	Aiden Markram (c)	0
4	Akash Deep	1
5	Akash Madhwal	2
6	Akash Singh	2
7	Akeal Hosein	0
8	Alzarri Joseph	6
9	Amit Mishra	1
10	Andre Russell	3

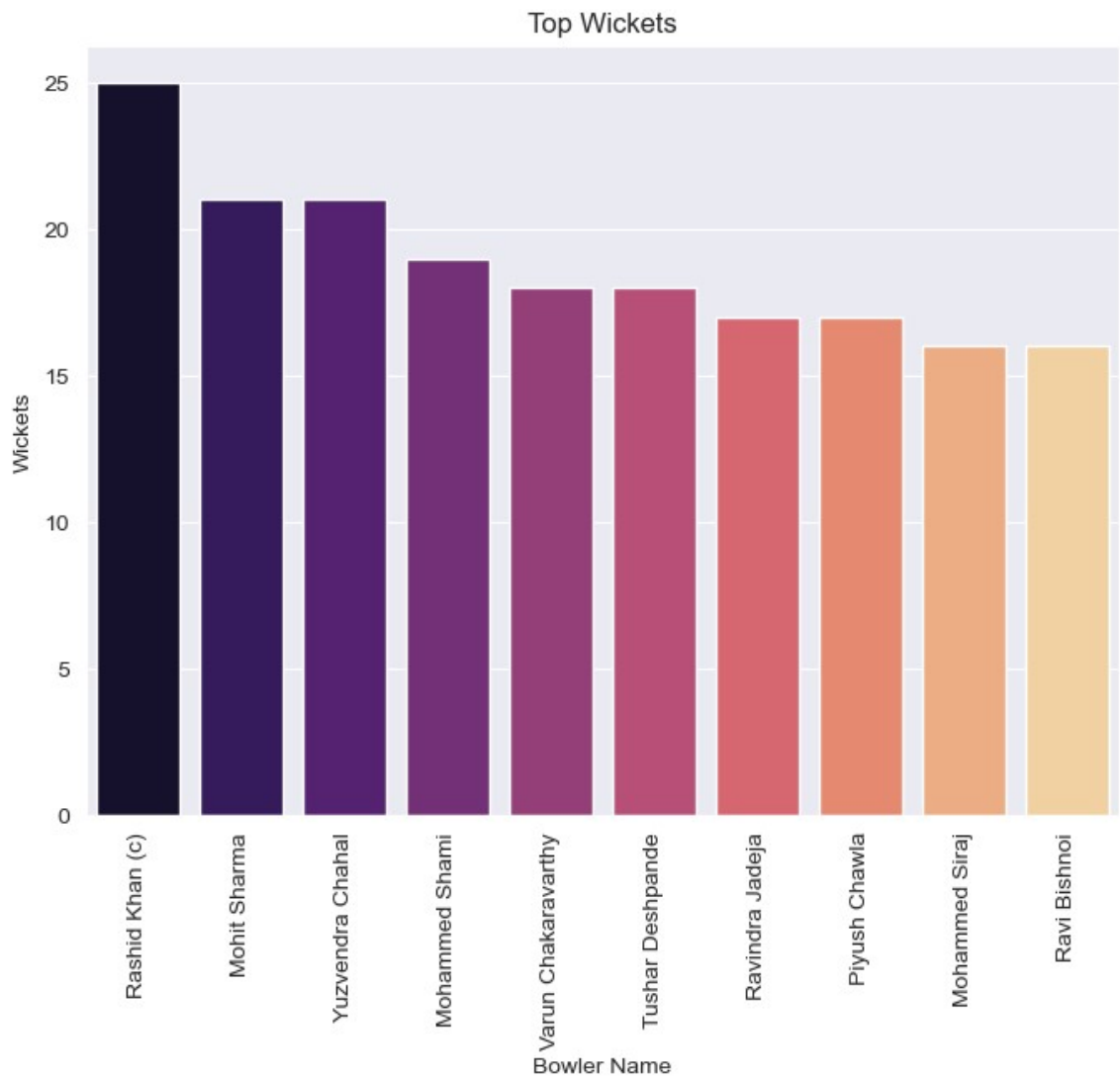
```
In [157]: Most_Wides = Wides.sort_values("Wides",ascending = False).head(10)
Most_Wides
```

Out[157]:

	Bowler Name	Wides
72	Matheesha Pathirana	34
80	Mohammed Siraj	28
123	Tushar Deshpande	21
23	Cameron Green	16
79	Mohammed Shami	16
104	Ravichandran Ashwin	16
22	Bhuvneshwar Kumar	15
15	Arshdeep Singh	15
53	Khaleel Ahmed	14
135	Yash Thakur	14

## graphical representation

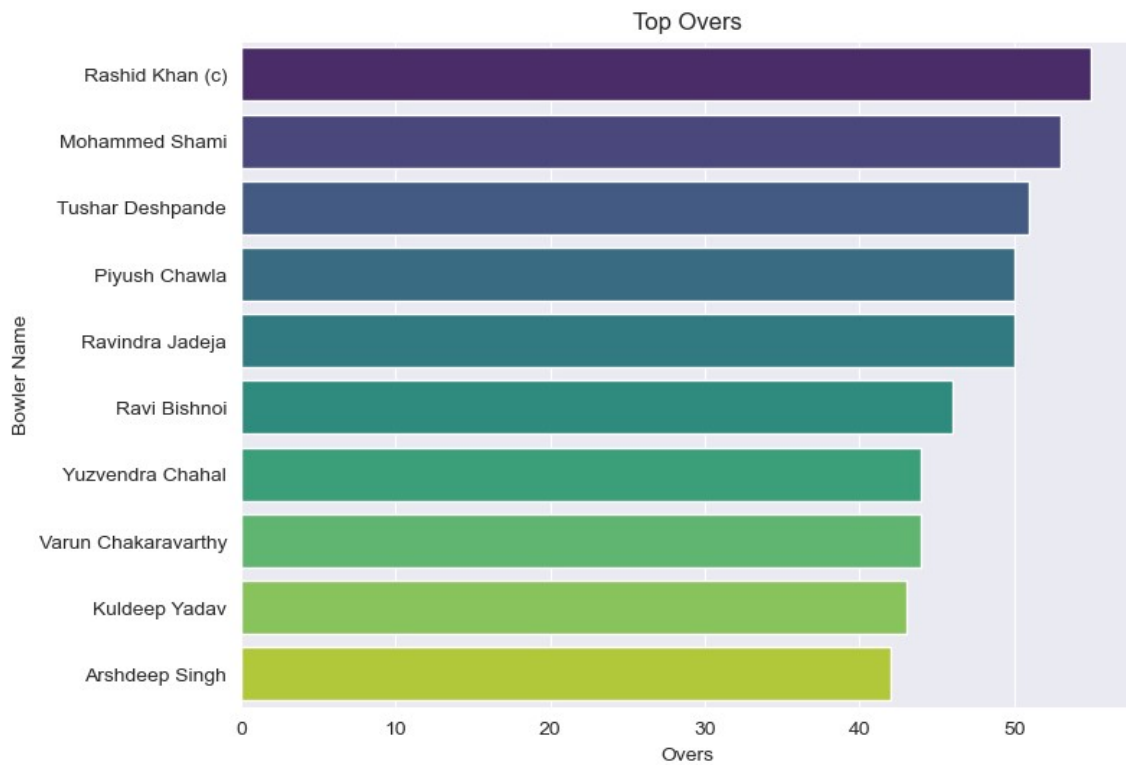
```
In [158]: #Top Wickets
#x = Top_Wickets['Bowler Name']
#y = Top_Wickets['Wickets']
plt.figure(figsize = (8,6))
ax = sns.barplot(x = Top_Wickets['Bowler Name'],y = Top_Wickets['Wickets'],
ax.set_xticklabels(ax.get_xticklabels(),rotation = 90)
plt.title("Top Wickets")
plt.show()
```





```
In [159]: #Top Over
#x = Overs_1['Overs']
#y = Overs_1['Bowler Name']

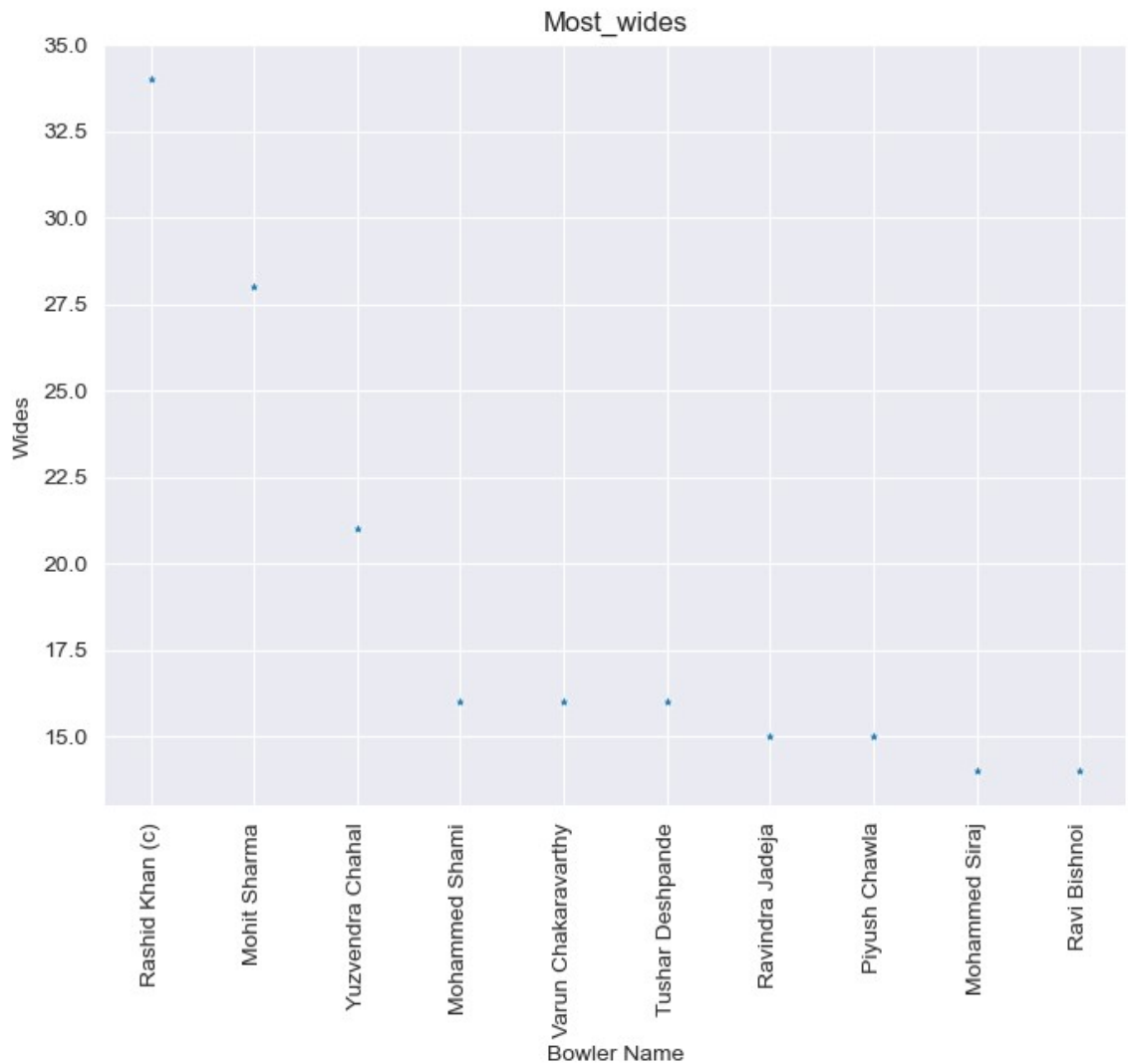
plt.figure(figsize = (8,6))
sns.barplot(x = Overs_1['Overs'],y = Overs_1['Bowler Name'],data = Overs_1,
plt.title("Top Overs")
plt.show()
```



```
In [160]: #Most_wides
#x = Most_Wides['Bowler Name']
#y = Most_Wides['Wides']
plt.figure(figsize = (8,6))

ay = sns.scatterplot(x = Most_Wides['Bowler Name'],y = Most_Wides['Wides'],
ay.set_xticklabels(ax.get_xticklabels(),rotation = 90)
plt.title("Most_wides")
plt.show()
```

C:\Users\Vasu Prasad\AppData\Local\Temp\ipykernel\_8488\3955265520.py:7: UserWarning: FixedFormatter should only be used together with FixedLocator  
ay.set\_xticklabels(ax.get\_xticklabels(),rotation = 90)



**match data**

```
In [161]: Match_data = pd.read_csv("file:///C:/Users/Vasu%20Prasad/OneDrive/Documents,
Match_data
```

Out[161]:

	Unnamed: 0	Date	Time	Teams	Winners
0	0	Mar 31, Fri	7:30 PM	GUJARAT TITANS vs CHENNAI SUPER KINGS, 1st Match	Gujarat Titans won by 5 wkts
1	1	Apr 01, Sat	3:30 PM	PUNJAB KINGS vs KOLKATA KNIGHT RIDERS, 2nd Match	Punjab Kings won by 7 runs (DLS method)
2	2	NaN	7:30 PM	LUCKNOW SUPER GIANTS vs DELHI CAPITALS, 3rd Match	Lucknow Super Giants won by 50 runs
3	3	Apr 02, Sun	3:30 PM	SUNRISERS HYDERABAD vs RAJASTHAN ROYALS, 4th M...	Rajasthan Royals won by 72 runs
4	4	NaN	7:30 PM	ROYAL CHALLENGERS BANGALORE vs MUMBAI INDIANS,...	Royal Challengers Bangalore won by 8 wkts
5	5	Apr 03, Mon	7:30 PM	CHENNAI SUPER KINGS vs LUCKNOW SUPER GIANTS, 6...	Chennai Super Kings won by 12 runs
6	6	Apr 04, Tue	7:30 PM	DELHI CAPITALS vs GUJARAT TITANS, 7th Match	Gujarat Titans won by 6 wkts

```
In [162]: Match_data.rename(columns = {'Unnamed: 0': 'Match_Id'}, inplace = True)
```

```
In [163]: Match_data
```

Out[163]:

	Match_Id	Date	Time	Teams	Winners
0	0	Mar 31, Fri	7:30 PM	GUJARAT TITANS vs CHENNAI SUPER KINGS, 1st Match	Gujarat Titans won by 5 wkts
1	1	Apr 01, Sat	3:30 PM	PUNJAB KINGS vs KOLKATA KNIGHT RIDERS, 2nd Match	Punjab Kings won by 7 runs (DLS method)
2	2	NaN	7:30 PM	LUCKNOW SUPER GIANTS vs DELHI CAPITALS, 3rd Match	Lucknow Super Giants won by 50 runs
3	3	Apr 02, Sun	3:30 PM	SUNRISERS HYDERABAD vs RAJASTHAN ROYALS, 4th M...	Rajasthan Royals won by 72 runs
4	4	NaN	7:30 PM	ROYAL CHALLENGERS BANGALORE vs MUMBAI INDIANS,...	Royal Challengers Bangalore won by 8 wkts
5	5	Apr 03, Mon	7:30 PM	CHENNAI SUPER KINGS vs LUCKNOW SUPER GIANTS, 6...	Chennai Super Kings won by 12 runs
6	6	Apr 04, Tue	7:30 PM	DELHI CAPITALS vs GUJARAT TITANS, 7th Match	Gujarat Titans won by 6 wkts