Student's Activity Teacher's Copy: Runs by IPL teams in the tournament till 2020

In this activity, we will understand which team has been most productive on batting front

Understanding the Dataset

Dataset consists of 2 columns or `features` namely `batting_team` and `total_runs`.

1. `batting_team` represents the team which was batting.
2. `total_runs` accounts for the runs attributed to the team for a particular ball.

Understanding the Approach

1. Understanding the most productive team on batting front: Here, we will take into account the total runs scored by each team. The columns we will use are:

    A. `batting_team`
    B. `total_runs`

    We will `group` the data on `batting_team` and plot a `bar` graph to interpret the total runs for each team

Importing Packages

Packages are imported in following manner.

```
import package_name
```

In the next cell, we have imported the following packages.

1. `pandas`. It is the most common library used by data scientists for data manipulation and cleaning
2. `numpy`. It adds support for arrays, along with a collection of mathematical functions to operate on these arrays.
3. `matplotlib`. It is a plotting library for python. `.pyplot` is a sub-package or set of functions available in matplotlib which we'll be using

`pd`, `np`, `plt` are all `aliases` for their corresponding packages. `Alias` are second name assigned to values or variables.

`%matplotlib inline` is a "magic function" renders plots

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

Loading the Dataset

In the cell below, we have created a new pandas DataFrame by the name `df` and imported the mentioned file.

We have used `.head()` function to see the first 5 values of the dataset we created.

`.head()` can show up any number of values based on the parameter given.
If we want to see more, we can pass value in the function like `df.head(10)` will show first 10 values of the dataset

In [2]:
```
df = pd.read_csv("https://raw.githubusercontent.com/jainharshit27/datasets/main/runs
df.head()
```

Out[2]:

	batting_team	total_runs
0	Kolkata Knight Riders	1
1	Kolkata Knight Riders	1
2	Kolkata Knight Riders	0
3	Kolkata Knight Riders	1
4	Kolkata Knight Riders	1

Grouping of data

we have grouped data using `.grouby()` function using various values of `batting_team` feature/column. The `groupby()` function is then followed by `.sum()` to summarize values for other numerical columns in the dataframe. The resulting dataframe is then assigned to dataframe `df_teams_total_runs` .

In [3]:
```
df_team_total_runs = df.groupby("batting_team").sum()
```

Reducing the dataset to our need

In the cell below, we have created a new pandas DataFrame by the name `df_team_GT10K` and assigned it a filtered version of dataframe `df_team_total_runs` such that only those observations are accepted which have `total_runs` value more than `10000` . This can be done like:

```
df_team_total_runs[df_team_total_runs["total_runs"]>10000]
```

In [4]:
```
df_team_GT10K = df_team_total_runs[df_team_total_runs["total_runs"]>10000]
df_team_GT10K
```

Out[4]:

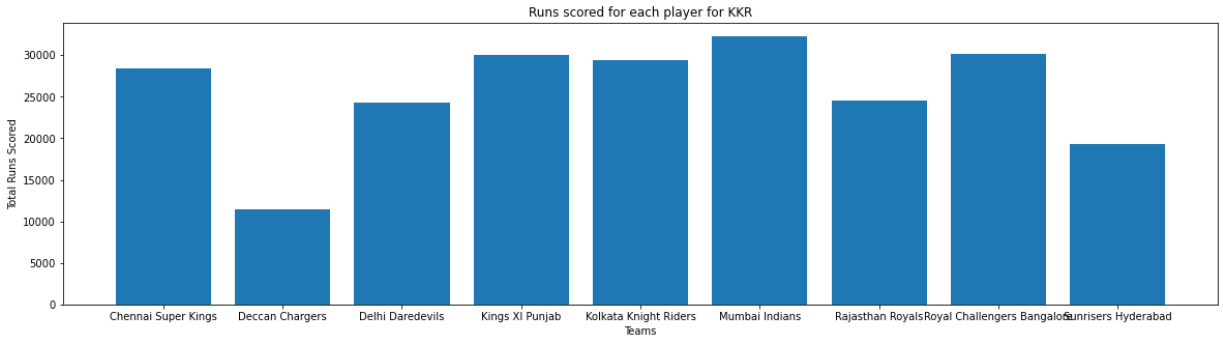
	total_runs
batting_team	
Chennai Super Kings	28363
Deccan Chargers	11463
Delhi Daredevils	24285
Kings XI Punjab	30017
Kolkata Knight Riders	29383
Mumbai Indians	32286
Rajasthan Royals	24507
Royal Challengers Bangalore	30214

batting_team	total_runs
Sunrisers Hyderabad	19332

Plotting of information

1. `plt.figure()` is used to increase the size of the figure. The argument `figsize` take a tuple value i.e., value in a `()` such that the first value is width and second is height like `(width, height)` as shown in cell below `(20,5)`.
2. `plt.title()` provides the graph or chart with a title.
3. `plt.bar()` function is used to plot bar chart. We have plotted bar chart for `df_team_GT10K` dataframe's index value which are, infact, each team as categories or x-axis of the chart and the runs scored by them as y-axis.
4. `plt.show()` function combines all the elements of charts and shows them in harmony.

In [5]:
```
plt.figure(figsize=(20,5))
plt.title("Runs scored for each player for KKR")
plt.bar(df_team_GT10K.index, df_team_GT10K["total_runs"])
plt.xlabel("Teams")
plt.ylabel("Total Runs Scored")
plt.show()
```



We have plotted the graph with x axis being the categories representing each Team with over 10000 runs. The height of the categories is based upon the total runs scored by those teams. The graph is an output of the code.

Conclusion: Mumbai Indians has scored most runs in IPL.