8/9/23, 12:57 AM IPL Data Analysis

```
In [34]:
          import numpy as np
          import pandas as pd
          data=pd.read_csv('matches.csv')
In [35]:
          type(data)
In [36]:
          pandas.core.frame.DataFrame
Out[36]:
          data.head(1)
In [37]:
Out[37]:
             id season
                               city
                                     date
                                              team1
                                                          team2 toss_winner toss_decision
                                                                                            result dl_ap
                                                           Royal
                                                                       Royal
                                    2017-
                                            Sunrisers
             1
                   2017 Hyderabad
                                                      Challengers
                                                                  Challengers
                                                                                     field normal
                                    04-05 Hyderabad
                                                       Bangalore
                                                                   Bangalore
          data.tail(1)
In [38]:
Out[38]:
                 id season
                                  city
                                       date
                                                 team1
                                                             team2 toss_winner toss_decision
                                                                                               result dl
                                                             Royal
                                       2016-
                                               Sunrisers
                                                                       Sunrisers
          635 636
                      2016 Bangalore
                                                        Challengers
                                                                                         bat normal
                                       05-29
                                             Hyderabad
                                                                     Hyderabad
                                                          Bangalore
          data.shape
In [39]:
          (636, 18)
Out[39]:
          data.info()
In [40]:
```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 636 entries, 0 to 635
Data columns (total 18 columns):

- 0. 0 0.		0 00-0	
#	Column	Non-Null Count	Dtype
0	id	636 non-null	int64
1	season	636 non-null	int64
2	city	629 non-null	object
3	date	636 non-null	object
4	team1	636 non-null	object
5	team2	636 non-null	object
6	toss_winner	636 non-null	object
7	toss_decision	636 non-null	object
8	result	636 non-null	object
9	dl_applied	636 non-null	int64
10	winner	633 non-null	object
11	win_by_runs	636 non-null	int64
12	win_by_wickets	636 non-null	int64
13	player_of_match	633 non-null	object
14	venue	636 non-null	object
15	umpire1	635 non-null	object
16	umpire2	635 non-null	object
17	umpire3	0 non-null	float64
ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ ـ		-+C1/F) -b+/	12)

dtypes: float64(1), int64(5), object(12)

memory usage: 89.6+ KB

In [41]: data.describe()

Out	[41]:
-----	-----	----

	id	season	dl_applied	win_by_runs	win_by_wickets	umpire3
count	636.000000	636.000000	636.000000	636.000000	636.000000	0.0
mean	318.500000	2012.490566	0.025157	13.682390	3.372642	NaN
std	183.741666	2.773026	0.156726	23.908877	3.420338	NaN
min	1.000000	2008.000000	0.000000	0.000000	0.000000	NaN
25%	159.750000	2010.000000	0.000000	0.000000	0.000000	NaN
50%	318.500000	2012.000000	0.000000	0.000000	4.000000	NaN
75%	477.250000	2015.000000	0.000000	20.000000	7.000000	NaN
max	636.000000	2017.000000	1.000000	146.000000	10.000000	NaN

In [42]: data.head()

Out[42]:		id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_a
	0	1	2017	Hyderabad	2017- 04-05	Sunrisers Hyderabad	Royal Challengers Bangalore	Royal Challengers Bangalore	field	normal	
	1	2	2017	Pune	2017- 04-06	Mumbai Indians	Rising Pune Supergiant	Rising Pune Supergiant	field	normal	
	2	3	2017	Rajkot	2017- 04-07	Gujarat Lions	Kolkata Knight Riders	Kolkata Knight Riders	field	normal	
	3	4	2017	Indore	2017- 04-08	Rising Pune Supergiant	Kings XI Punjab	Kings XI Punjab	field	normal	
	4	5	2017	Bangalore	2017- 04-08	Royal Challengers Bangalore	Delhi Daredevils	Royal Challengers Bangalore	bat	normal	
4											•

Series

```
data['winner']
In [43]:
                         Sunrisers Hyderabad
Out[43]:
                      Rising Pune Supergiant
          2
                       Kolkata Knight Riders
                             Kings XI Punjab
                 Royal Challengers Bangalore
          631
                 Royal Challengers Bangalore
          632
                 Royal Challengers Bangalore
          633
                         Sunrisers Hyderabad
          634
                         Sunrisers Hyderabad
          635
                         Sunrisers Hyderabad
         Name: winner, Length: 636, dtype: object
In [44]:
          type(data['winner'])
          pandas.core.series.Series
Out[44]:
          data['winner'].shape
In [45]:
          (636,)
Out[45]:
```

Data Frame

```
In [46]: data[['team1','team2','winner']]
```

team1

team2

winner

Out[46]:

1 Mumbai Indians Rising Pune Supergiant Rising Pung Supergiant Rising Rising Rising Rising Rising Pung Supergiant Rising		_									
2 Gujarat Lions Kolkata Knight Riders Kolkata Knight Riders 3 Rising Pune Supergiant Kings XI Punjab Kings XI Punjab 4 Royal Challengers Bangalore Delhi Daredevils Royal Challengers Bangalore		0	Su	nrisers Hyder	abad	Royal Challeng	ers Bangalore	Sunr	isers Hyderabad		
3 Rising Pune Supergiant Kings XI Punjab Kings XI Punjab 4 Royal Challengers Bangalore Delhi Daredevils Royal Challengers Bangalore		1		Mumbai Ind	dians	Rising Pur	ne Supergiant	Rising l	Pune Supergiant		
### Royal Challengers Bangalore ### Royal Challengers Bangalore #### Royal Challengers Bangalore #### Royal Challengers Bangalore ##### Royal Challengers Bangalore ####################################		2		Gujarat I	Lions	Kolkata	Knight Riders	Kolka			
Delhi Daredevils Royal Challengers Bangalore Sunrisers Hyderabad S		3	Rising	g Pune Super	giant	Ki	ngs XI Punjab		Kings XI Punjab		
G31 Delhi Daredevils Royal Challengers Bangalore Royal Challengers Bangalore G32 Gujarat Lions Royal Challengers Bangalore Sunrisers Hyderabad Sunrisers Hyderabad Sunrisers Hyderabad Sunrisers Hyderabad Royal Challengers Bangalore Sunrisers Hyderabad Sunrisers Sunrisers Sunrisers Sunrisers Sunrisers Hyderabad Sunrisers Sunrisers Sunrisers Hyderabad Sunrisers Bangalore Royal Challengers Bangalore Sunrisers Sunrisers Bangalore Sunrisers Sunrisers Bangalore Sunrisers Sunrisers Bangalore Sunrisers Sun		4 R	Royal Chal	lengers Bang	alore	De	lhi Daredevils	Royal Challe	ngers Bangalore		
Gujarat Lions Royal Challengers Bangalore Sunrisers Hyderabad Gujarat Lions Sunrisers Hyderabad Gujarat Lions Sunrisers Hyderabad Gujarat Lions Sunrisers Hyderabad Gujarat Sunrisers Hyderabad Gujarat Lions Sunrisers Hyderabad Gujarat Challengers Bangalore Sunrisers Hyderabad Gujarat Challengers Bangalore Royal Challengers Royal Challengers Bangalore Royal Challengers	•	•••									
Sunrisers Hyderabad	63	1		Delhi Darec		, ,		•			
G34 Gujarat Lions Sunrisers Hyderabad Sunrisers Hyderabad G35 Sunrisers Hyderabad Royal Challengers Bangalore Sunrisers Hyderabad G36 rows × 3 columns type(data[['team1','team2','winner']]) pandas.core.frame.DataFrame data[['team1','team2','winner']].shape (636, 3) data.iloc[1:11:2] id season city date team1 team2 toss_winner toss_decision result dl_ 1 2 2017 Pune 2017- Mumbai Pune Supergiant Supergiant field normal 3 4 2017 Indore 2017- Rising Pune O4-08 Supergiant Punjab Punjab field normal 5 6 2017 Hyderabad 2017- Gujarat Sunrisers Hyderabad Hyderabad Hyderabad Field normal 7 8 2017 Indore 2017- Gujarat Sunrisers Hyderabad Hyderabad Field normal 636 Fows × 3 columns Sunrisers Hyderabad Sunrisers Sunrisers Sunrisers Hyderabad Hyderabad Field normal 637 Royal Challengers Bangalore Punjab Challengers Bangalore Bangalore Sunrisers Bangalore Field normal Challengers Bangalore Sunrisers Bangalore Field normal Challengers Bangalore Sunrisers Sunrisers Bangalore Sunrisers Bangalore Sunrisers Sunrisers Bangalore Sunrisers Sun							_	-			
Sunrisers Hyderabad Royal Challengers Bangalore Sunrisers Hyderabad 636 rows × 3 columns type(data[['team1','team2','winner']]) pandas.core.frame.DataFrame data[['team1','team2','winner']].shape (636, 3) data.iloc[1:11:2] id season city date team1 team2 toss_winner toss_decision result dl_ 1 2 2017 Pune 2017- Mumbai Pune Supergiant Supergiant Supergiant Field normal 3 4 2017 Indore 2017- Rising Pune Supergiant Punjab Field normal 5 6 2017 Hyderabad 2017- Gujarat Supergiant Sunrisers Hyderabad Hyderabad Hyderabad Field normal 7 8 2017 Indore 2017- Challengers Bangalore Royal Challengers Bangalore Bangalore Bangalore Bangalore Field normal Challengers Bangalore Bangalore Bangalore Bangalore Field normal Challengers Bangalore Bangalore Bangalore Bangalore Bangalore Bangalore Bangalore Bangalore Field normal Field normal Challengers Bangalore Bangalore Bangalore Bangalore Bangalore Bangalore Field normal Fiel			Su	,			_		-		
type(data[['team1', 'team2', 'winner']]) pandas.core.frame.DataFrame data[['team1', 'team2', 'winner']].shape (636, 3) data.iloc[1:11:2] id season city date team1 team2 toss_winner toss_decision result dl_ 1 2 2017 Pune 2017- Mumbai Pune Supergiant Pune Supergiant Supergiant Field normal 3 4 2017 Indore 2017- Rising Pune Supergiant Punjab Punjab Field normal 5 6 2017 Hyderabad 2017- Gujarat Sunrisers Hyderabad Field normal 7 8 2017 Indore 2017- Od-09 Challengers Bangalore Challengers Bangalore 9 10 2017 Mumbai 2017- Sunrisers Mumbai Indians Field normal Field normal				,			•				
type(data[['team1','team2','winner']]) pandas.core.frame.DataFrame data[['team1','team2','winner']].shape (636, 3) data.iloc[1:11:2] id season city date team1 team2 toss_winner toss_decision result dl_ 1 2 2017 Pune 2017- Mumbai Pune Supergiant Supergiant Supergiant Field normal 3 4 2017 Indore 2017- Rising Pune Supergiant Punjab Punjab Field normal 5 6 2017 Hyderabad 2017- Q4-09 Gujarat Lions Hyderabad Hyderabad Hyderabad Field normal 7 8 2017 Indore 2017- Challengers Bangalore Bangalore Bangalore 9 10 2017 Mumbai 2017- Sunrisers Mumbai Indians Mumbai Indians field normal	63	5	Su	nrisers Hyder	abad	Royal Challeng	ers Bangalore	Sunr	isers Hyderabad		
pandas.core.frame.DataFrame data[['team1', 'team2', 'winner']].shape (636, 3) data.iloc[1:11:2] id season city date team1 team2 toss_winner toss_decision result dl_ 1 2 2017 Pune 2017- Mumbai Rising Pune Supergiant Supergiant Supergiant Supergiant Supergiant Punjab field normal 3 4 2017 Indore 2017- Rising Pune Supergiant Punjab Field normal 5 6 2017 Hyderabad 2017- Gujarat Lions Hyderabad Punjab Punjab Field normal 7 8 2017 Indore 2017- Challengers Bangalore Rising XI Punjab Challengers Bangalore Bangalore Bangalore Mumbai Indians Field normal Field normal	636	5 rov	vs × 3 co	olumns							
data[['team1', 'team2', 'winner']].shape (636, 3) data.iloc[1:11:2] id season city date team1 team2 toss_winner toss_decision result dl_ 1 2 2017 Pune 2017- Mumbai Indians Pune Supergiant Supergiant Supergiant Field normal 3 4 2017 Indore 2017- Rising Pune Supergiant Punjab Punjab Field normal 5 6 2017 Hyderabad 2017- O4-09 Gujarat Sunrisers Sunrisers Hyderabad Hyderabad Hyderabad Hyderabad Hyderabad Field normal 7 8 2017 Indore 2017- O4-10 Challengers Bangalore Royal Challengers Bangalore Bangalore Mumbai Indians Field normal Field normal	ty	pe(data[['	team1','te	am2',	'winner']])					
data.iloc[1:11:2] id season city date team1 team2 toss_winner toss_decision result dl_ 1 2 2017 Pune 2017- O4-06 Indians Pune Supergiant Supergiant Supergiant Field normal 3 4 2017 Indore 2017- O4-08 Supergiant Supergiant Punjab Punjab Field normal 5 6 2017 Hyderabad 2017- O4-09 Challengers Hyderabad Hyderabad Punjab Challengers Bangalore 7 8 2017 Indore 2017- O4-10 Challengers Bangalore Mindians Mumbai Indians Mumbai Indians Field normal	ра	ndas	s.core.d	frame.Data	Frame						
data.iloc[1:11:2] id season city date team1 team2 toss_winner toss_decision result dl_ 1 2 2017 Pune 2017- O4-06 Indians Pune Supergiant Supergiant Supergiant Field normal 3 4 2017 Indore 2017- O4-08 Supergiant Supergiant Punjab Punjab Field normal 5 6 2017 Hyderabad 2017- O4-09 Challengers Hyderabad Hyderabad Punjab Challengers Bangalore 7 8 2017 Indore 2017- O4-10 Challengers Bangalore Mindians Mumbai Indians Mumbai Indians Field normal											
data.iloc[1:11:2] id season city date team1 team2 toss_winner toss_decision result dl_ 1 2 2017 Pune 2017- O4-06 Mumbai Indians Rising Pune Supergiant Rising Pune Supergiant Field Normal 3 4 2017 Indore 2017- O4-08 Supergiant Kings XI Punjab Kings XI Punjab Field Normal 5 6 2017 Hyderabad Gujarat Lions Sunrisers Hyderabad Sunrisers Hyderabad Field Normal 7 8 2017 Indore 2017- O4-10 Challengers Bangalore Kings XI Punjab Royal Challengers Bangalore bat Normal 9 10 2017 Mumbai O4-12 Mumbai Hyderabad Mumbai Indians Mumbai Indians Field Normal				','team2',	'winn	er']].shape					
idseasoncitydateteam1team2toss_winnertoss_decisionresultdl_122017Pune 04-06Mumbai IndiansRising Pune SupergiantRising Pune SupergiantRising Pune SupergiantField normal342017Indore 04-08Rising Pune 04-08Kings XI PunjabKings XI PunjabField normal562017HyderabadGujarat 1cons HyderabadSunrisers HyderabadSunrisers HyderabadSunrisers HyderabadField normal782017Indore 04-10Challengers BangaloreKings XI PunjabRoyal Challengers Bangalorebat normal9102017Mumbai 2017- 04-12Sunrisers HyderabadMumbai IndiansMumbai Indiansfield normal	(6	36,	3)								
122017Pune2017- 04-06Mumbai IndiansRising Pune SupergiantRising Pune SupergiantRising Pune SupergiantRising Pune SupergiantRising Pune SupergiantRising Pune SupergiantRising Rising Pune SupergiantRising Rising Pune SupergiantRising XI PunjabRising XI PunjabPunjabRising XI PunjabRising XI PunjabRising XI Punjab <th></th>											
122017Pune2017- O4-06Mumbal IndiansPune SupergiantRising Pune SupergiantRising Pune SupergiantRising Pune Supergiant342017Indore2017- O4-08Rising Pune O4-08Kings XI PunjabKings XI PunjabKings XI PunjabField normal562017Hyderabad2017- O4-09Gujarat LionsSunrisers HyderabadSunrisers HyderabadSunrisers HyderabadField normal782017Indore2017- O4-10Royal Challengers BangaloreKings XI PunjabRoyal Challengers Bangalorebat normal9102017MumbaiMumbai O4-12Mumbai HyderabadMumbai IndiansMumbai Indiansfield normal	da	ta.	iloc[1:	11:2]							
562017Hyderabad2017- 04-09Gujarat LionsSunrisers HyderabadSunrisers HyderabadSunrisers HyderabadSunrisers HyderabadSunrisers HyderabadSunrisers HyderabadField normal782017Indore 2017- 04-10Royal Challengers BangaloreKings XI PunjabRoyal Challengers Bangalorebat normal9102017Mumbai 2017- Sunrisers HyderabadMumbai IndiansMumbai Indiansfield normal	da				date	team1	team2	toss_winner	toss_decision	result	dl_a _l
7 8 2017 Hyderabad 04-09 Lions Hyderabad Hyderabad Hyderabad Royal Challengers Bangalore Numbai 2017 Sunrisers Mumbai Indians Mumbai Indians Mumbai Indians Field normal field normal		id	season	city	2017-	Mumbai	Rising Pune	Rising Pune			dl_a _l
7 8 2017 Indore 2017- Challengers Bangalore Challengers Bangalore Challengers Bangalore 9 10 2017 Mumbai 2017- Sunrisers Mumbai Indians Indians field normal	1	id 2	season 2017	city Pune	2017- 04-06	Mumbai Indians Rising Pune	Rising Pune Supergiant Kings XI	Rising Pune Supergiant Kings XI	field	normal	dl_a _l
9 10 2017 Mumbai 04-12 Hyderabad Indians Indians	1	id 2	2017 2017	Pune	2017- 04-06 2017- 04-08	Mumbai Indians Rising Pune Supergiant Gujarat	Rising Pune Supergiant Kings XI Punjab	Rising Pune Supergiant Kings XI Punjab	field	normal	dl_a _l
	1 3 5	id 2 4 6	2017 2017 2017	city Pune Indore Hyderabad	2017- 04-06 2017- 04-08 2017- 04-09	Mumbai Indians Rising Pune Supergiant Gujarat Lions Royal Challengers	Rising Pune Supergiant Kings XI Punjab Sunrisers Hyderabad	Rising Pune Supergiant Kings XI Punjab Sunrisers Hyderabad Royal Challengers	field	normal normal	dl_a _l
	1 3 5	id 2 4 6 8	2017 2017 2017 2017	city Pune Indore Hyderabad	2017- 04-06 2017- 04-08 2017- 04-09 2017- 04-10	Mumbai Indians Rising Pune Supergiant Gujarat Lions Royal Challengers Bangalore Sunrisers	Rising Pune Supergiant Kings XI Punjab Sunrisers Hyderabad Kings XI Punjab Mumbai	Rising Pune Supergiant Kings XI Punjab Sunrisers Hyderabad Royal Challengers Bangalore Mumbai	field field bat	normal normal	dl_a _l

Fancy Indexing

In [50]:	da	ta.	iloc[[1	,5,6]]							
Out[50]:		id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_appli
	1	2	2017	Pune	2017- 04-06	Mumbai Indians	Rising Pune Supergiant	Rising Pune Supergiant	field	normal	
	5	6	2017	Hyderabad	2017- 04-09	Gujarat Lions	Sunrisers Hyderabad	Sunrisers Hyderabad	field	normal	
	6	7	2017	Mumbai	2017- 04-09	Kolkata Knight Riders	Mumbai Indians	Mumbai Indians	field	normal	
4)
In [51]:	da	ta.	iloc[:,	[4,5,10]]							
Out[51]:	•			te	eam1		tea	am2	win	ner	
		0	Su	ınrisers Hyder	abad	Royal Chall	engers Banga	lore 5	Sunrisers Hydera	bad	
		1	Mumbai Indians		dians	Rising	Pune Superg	iant Ris	ing Pune Superg	iant	
		2		Gujarat	Lions	Kolk	ata Knight Ri	ders K	Kolkata Knight Riders		
		3	Risin	g Pune Super	giant		Kings XI Pu	njab	Kings XI Punjab		
		4	Royal Cha	llengers Bang	alore		Delhi Dared	evils Royal Ch	Royal Challengers Bangalore		
	•	••									
	63								nallengers Banga		
	63			Gujarat		-		,	nallengers Banga		
	633		Su	ınrisers Hyder			ata Knight Ri		Sunrisers Hydera		
	634			Gujarat			nrisers Hydera		Sunrisers Hydera		
	63 6		Su ws × 3 c	inrisers Hyder olumns	abad	Koyai Chall	engers Banga	iore S	Sunrisers Hydera	uaɑ	
				-							

In [52]: data.head()

Out[52]:		id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_a
	0	1	2017	Hyderabad	2017- 04-05	Sunrisers Hyderabad	Royal Challengers Bangalore	Royal Challengers Bangalore	field	normal	
	1	2	2017	Pune	2017- 04-06	Mumbai Indians	Rising Pune Supergiant	Rising Pune Supergiant	field	normal	
	2	3	2017	Rajkot	2017- 04-07	Gujarat Lions	Kolkata Knight Riders	Kolkata Knight Riders	field	normal	
	3	4	2017	Indore	2017- 04-08	Rising Pune Supergiant	Kings XI Punjab	Kings XI Punjab	field	normal	
	4	5	2017	Bangalore	2017- 04-08	Royal Challengers Bangalore	Delhi Daredevils	Royal Challengers Bangalore	bat	normal	
1											•

Data Masling

```
mask=data['city']=='Hyderabad'
In [53]:
         data[mask].shape[0]
Out[53]:
In [79]:
         def get_city_match_count(city):
             mask=data['city']==city
             # return data[mask]
             return data[mask].shape[0]
         get_city_match_count('Rajkot')
In [80]:
Out[80]:
In [82]:
         mask1=data['city']=='Hyderabad'
         mask2=data['date']>'2010-01-01'
         data[mask1 & mask2].shape[0]
Out[82]:
```

Value Count

```
In [84]: data['winner'].value_counts()
```

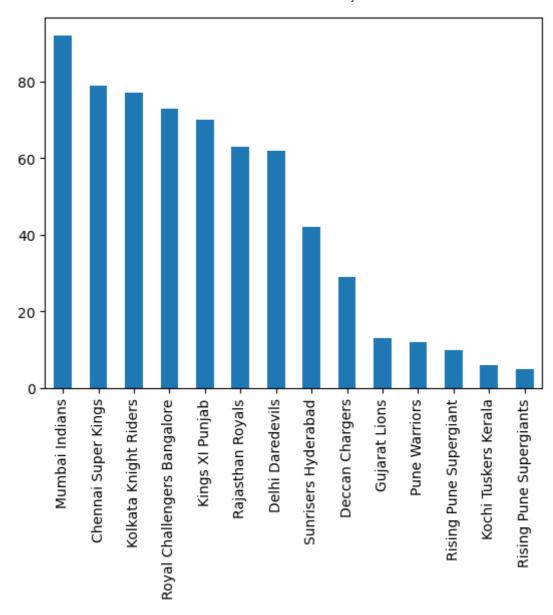
```
Mumbai Indians
                                        92
Out[84]:
         Chennai Super Kings
                                        79
         Kolkata Knight Riders
                                        77
         Royal Challengers Bangalore
                                        73
         Kings XI Punjab
                                         70
         Rajasthan Royals
                                         63
         Delhi Daredevils
                                         62
         Sunrisers Hyderabad
                                        42
         Deccan Chargers
                                        29
         Gujarat Lions
                                        13
         Pune Warriors
                                        12
         Rising Pune Supergiant
                                        10
         Kochi Tuskers Kerala
                                         6
         Rising Pune Supergiants
                                          5
         Name: winner, dtype: int64
```

The Pandas Plot()

Bar Chart

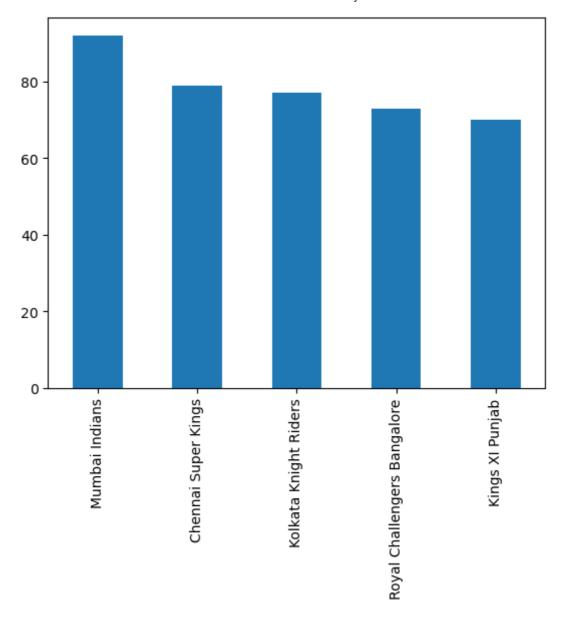
```
In [87]: # The Pandas Plot()
import matplotlib.pyplot as plt

In [88]: data['winner'].value_counts().plot(kind='bar')
Out[88]: <Axes: >
```



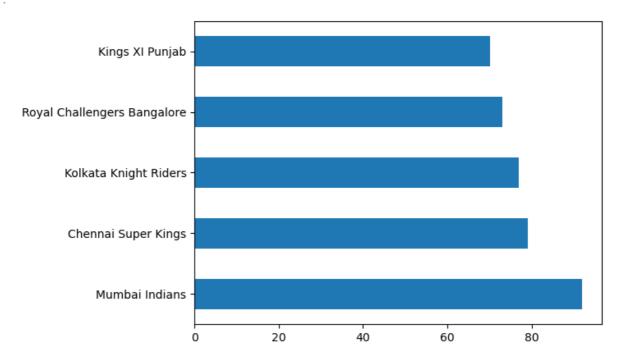
```
In [100... data['winner'].value_counts().head().plot(kind='bar')
```

Out[100]: <Axes: >

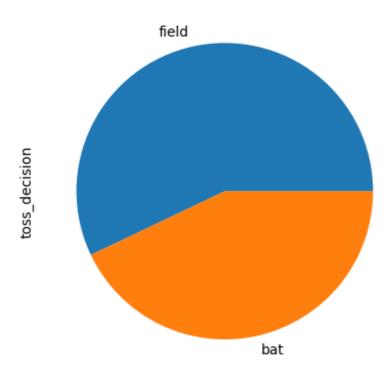


In [102... data['winner'].value_counts().head().plot(kind='barh')

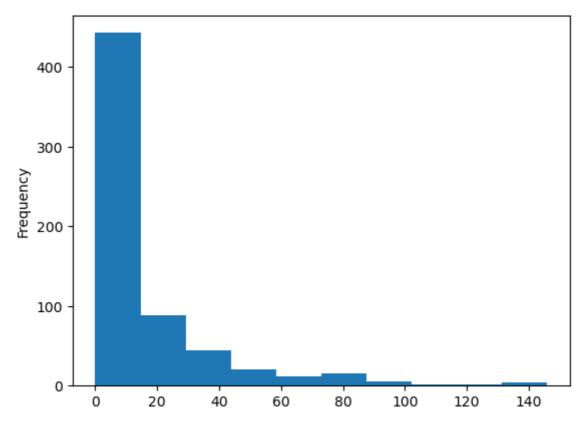
Out[102]: <Axes: >



8/9/23, 12:57 AM IPL Data Analysis



```
In [104... data['win_by_runs'].plot(kind='hist')
Out[104]: <Axes: ylabel='Frequency'>
```



```
In [106...
           myseries=data['winner'].value_counts()
In [108...
           myseries.index
           Index(['Mumbai Indians', 'Chennai Super Kings', 'Kolkata Knight Riders',
Out[108]:
                  'Royal Challengers Bangalore', 'Kings XI Punjab', 'Rajasthan Royals',
                  'Delhi Daredevils', 'Sunrisers Hyderabad', 'Deccan Chargers',
                  'Gujarat Lions', 'Pune Warriors', 'Rising Pune Supergiant',
                  'Kochi Tuskers Kerala', 'Rising Pune Supergiants'],
                 dtype='object')
           type(data['winner'].value_counts())
In [110...
           pandas.core.series.Series
Out[110]:
In [111...
           myseries.values
           array([92, 79, 77, 73, 70, 63, 62, 42, 29, 13, 12, 10, 6,
Out[111]:
                 dtype=int64)
           myseries.head()
In [113...
           Mumbai Indians
Out[113]:
                                           79
           Chennai Super Kings
           Kolkata Knight Riders
                                           77
           Royal Challengers Bangalore
                                           73
           Kings XI Punjab
                                           70
           Name: winner, dtype: int64
           myseries['Kings XI Punjab']
In [116...
Out[116]:
           data['team2'].value_counts()
In [118...
```

```
Delhi Daredevils
                                           84
Out[118]:
           Royal Challengers Bangalore
                                           82
           Kolkata Knight Riders
                                           80
           Mumbai Indians
                                           75
           Kings XI Punjab
                                           71
           Rajasthan Royals
                                           64
                                           54
           Chennai Super Kings
           Deccan Chargers
                                           32
           Sunrisers Hyderabad
                                           30
           Pune Warriors
                                           26
           Gujarat Lions
                                           16
           Rising Pune Supergiant
                                            8
                                            7
           Kochi Tuskers Kerala
                                            7
           Rising Pune Supergiants
           Name: team2, dtype: int64
```

Top five team who played highest match in IPL

```
data['team2'].value_counts() + data['team1'].value_counts()
In [119...
          Chennai Super Kings
                                           131
Out[119]:
          Deccan Chargers
                                            75
          Delhi Daredevils
                                           147
          Gujarat Lions
                                            30
          Kings XI Punjab
                                           148
           Kochi Tuskers Kerala
                                            14
           Kolkata Knight Riders
                                           148
          Mumbai Indians
                                           157
          Pune Warriors
                                            46
           Rajasthan Royals
                                           118
           Rising Pune Supergiant
                                            16
           Rising Pune Supergiants
                                            14
           Royal Challengers Bangalore
                                           152
           Sunrisers Hyderabad
                                            76
           dtype: int64
```

Sorted Value

```
In [125...
           (data['team2'].value_counts() + data['team1'].value_counts()).sort_values().tail()
          Delhi Daredevils
                                           147
Out[125]:
          Kings XI Punjab
                                           148
           Kolkata Knight Riders
                                           148
           Royal Challengers Bangalore
                                           152
          Mumbai Indians
                                           157
           dtype: int64
           (data['team2'].value_counts() + data['team1'].value_counts()).sort_values(ascending)
In [126...
```

```
Mumbai Indians
                                          157
Out[126]:
           Royal Challengers Bangalore
                                          152
           Kings XI Punjab
                                          148
           Kolkata Knight Riders
                                          148
           Delhi Daredevils
                                          147
           Chennai Super Kings
                                          131
           Rajasthan Royals
                                          118
           Sunrisers Hyderabad
                                           76
           Deccan Chargers
                                           75
           Pune Warriors
                                           46
           Gujarat Lions
                                           30
           Rising Pune Supergiant
                                           16
           Kochi Tuskers Kerala
                                           14
           Rising Pune Supergiants
                                           14
           dtype: int64
```

In [129... data.sort_values('city',ascending=False)

Out[129]:		id	season	city	date	team1	team2	toss_winner	toss_decision	resu
	312	313	2012	Visakhapatnam	2012- 04-07	Chennai Super Kings	Deccan Chargers	Deccan Chargers	field	norm
	622	623	2016	Visakhapatnam	2016- 05-15	Mumbai Indians	Delhi Daredevils	Delhi Daredevils	field	norm
	615	616	2016	Visakhapatnam	2016- 05-10	Sunrisers Hyderabad	Rising Pune Supergiants	Sunrisers Hyderabad	bat	norm
	612	613	2016	Visakhapatnam	2016- 05-08	Sunrisers Hyderabad	Mumbai Indians	Mumbai Indians	field	norm
	624	625	2016	Visakhapatnam	2016- 05-17	Delhi Daredevils	Rising Pune Supergiants	Rising Pune Supergiants	field	norm
	•••									
	466	467	2014	NaN	2014- 04-23	Chennai Super Kings	Rajasthan Royals	Rajasthan Royals	field	norm
	468	469	2014	NaN	2014- 04-25	Sunrisers Hyderabad	Delhi Daredevils	Sunrisers Hyderabad	bat	norm
	469	470	2014	NaN	2014- 04-25	Mumbai Indians	Chennai Super Kings	Mumbai Indians	bat	norm
	474	475	2014	NaN	2014- 04-28	Royal Challengers Bangalore	Kings XI Punjab	Kings XI Punjab	field	norm
	476	477	2014	NaN	2014- 04-30	Sunrisers Hyderabad	Mumbai Indians	Mumbai Indians	field	norm
	636 r	ows >	× 18 colu	ımns						
4										•

Permanently sorting in the actual datasheet

8/9/23, 12:57 AM

data.sort_values('city',ascending=False,inplace=True) In [130... data.sort_values(['city','date'],ascending=[True,False]) In [132... dl_ap Out[132]: id date team1 toss_winner toss_decision result city team2 season Kolkata 2014-Rajasthan Rajasthan Abu 475 476 2014 Knight bat tie Dhabi 04-29 Royals Royals Riders Kolkata Kolkata 2014-Kings XI Abu 471 472 2014 Knight Knight field normal Dhabi 04-26 Punjab Riders Riders Royal 2014-Rajasthan Rajasthan Abu 470 471 2014 Challengers field normal Dhabi 04-26 Royals Royals Bangalore Chennai 2014-Abu Delhi Chennai 464 465 2014 Super bat normal Dhabi 04-21 Daredevils **Super Kings** Kings Abu 2014-Sunrisers Rajasthan Rajasthan 460 461 2014 field normal Dhabi 04-18 Hyderabad Royals Royals 2014-Sunrisers Delhi **Sunrisers** 468 469 2014 NaN bat normal 04-25 Hyderabad **Daredevils** Hyderabad Chennai Mumbai Mumbai 2014-469 470 2014 NaN Super bat normal 04-25 **Indians Indians** Kings Chennai 2014-Rajasthan Rajasthan 466 467 2014 NaN field normal Super 04-23 Royals Royals Kings Royal Royal 2014-Mumbai 461 462 2014 NaN Challengers Challengers field normal 04-19 Indians Bangalore Bangalore Kolkata Kolkata 2014-Delhi Knight **462** 463 2014 NaN Knight bat normal 04-19 Daredevils Riders Riders 636 rows × 18 columns

Eleminate the duplicate data using drop_duplicates() methods

In [133... data.drop_duplicates(subset=['city'])

Out[133]:		id	season	city	date	team1	team2	toss_winner	toss_decision	resu
	312	313	2012	Visakhapatnam	2012- 04-07	Chennai Super Kings	Deccan Chargers	Deccan Chargers	field	norm
	473	474	2014	Sharjah	2014- 04-27	Sunrisers Hyderabad	Chennai Super Kings	Sunrisers Hyderabad	bat	norm
	498	499	2014	Ranchi	2014- 05-18	Chennai Super Kings	Royal Challengers Bangalore	Chennai Super Kings	bat	norm
	19	20	2017	Rajkot	2017- 04-18	Royal Challengers Bangalore	Gujarat Lions	Gujarat Lions	field	norm
	560	561	2015	Raipur	2015- 05-09	Sunrisers Hyderabad	Delhi Daredevils	Sunrisers Hyderabad	bat	norm
	531	532	2015	Pune	2015- 04-18	Kings XI Punjab	Kolkata Knight Riders	Kolkata Knight Riders	field	norm
	152	153	2009	Port Elizabeth	2009- 05-10	Mumbai Indians	Royal Challengers Bangalore	Mumbai Indians	bat	norm
	219	220	2010	Nagpur	2010- 04-12	Deccan Chargers	Royal Challengers Bangalore	Royal Challengers Bangalore	field	norm
	49	50	2017	Mumbai	2017- 05-11	Kings XI Punjab	Mumbai Indians	Mumbai Indians	field	norm
	212	213	2010	Kolkata	2010- 04-07	Kolkata Knight Riders	Delhi Daredevils	Kolkata Knight Riders	bat	norm
	236	237	2011	Kochi	2011- 04-09	Kochi Tuskers Kerala	Royal Challengers Bangalore	Kochi Tuskers Kerala	bat	norm
	154	155	2009	Kimberley	2009- 05-11	Deccan Chargers	Rajasthan Royals	Deccan Chargers	bat	norm
	51	52	2017	Kanpur	2017- 05-13	Gujarat Lions	Sunrisers Hyderabad	Sunrisers Hyderabad	field	norm
	142	143	2009	Johannesburg	2009- 05-03	Mumbai Indians	Royal Challengers Bangalore	Mumbai Indians	bat	norm
	266	267	2011	Jaipur	2011- 04-29	Mumbai Indians	Rajasthan Royals	Rajasthan Royals	field	norm

	id	season	city	date	team1	team2	toss_winner	toss_decision	resu
293	294	2011	Indore	2011- 05-15	Rajasthan Royals	Kochi Tuskers Kerala	Kochi Tuskers Kerala	field	norm
597	598	2016	Hyderabad	2016- 04-26	Sunrisers Hyderabad	Rising Pune Supergiants	Rising Pune Supergiants	field	norm
137	138	2009	East London	2009- 05-01	Mumbai Indians	Kolkata Knight Riders	Mumbai Indians	bat	norm
134	135	2009	Durban	2009- 04-29	Kings XI Punjab	Mumbai Indians	Kings XI Punjab	bat	norm
292	293	2011	Dharamsala	2011- 05-15	Kings XI Punjab	Delhi Daredevils	Delhi Daredevils	field	norm
199	200	2010	Delhi	2010- 03-29	Delhi Daredevils	Kolkata Knight Riders	Delhi Daredevils	bat	norm
347	348	2012	Cuttack	2012- 05-01	Deccan Chargers	Pune Warriors	Deccan Chargers	bat	norm
346	347	2012	Chennai	2012- 04-30	Chennai Super Kings	Kolkata Knight Riders	Chennai Super Kings	bat	norm
578	579	2016	Chandigarh	2016- 04-11	Kings XI Punjab	Gujarat Lions	Gujarat Lions	field	norm
155	156	2009	Centurion	2009- 05-12	Kolkata Knight Riders	Royal Challengers Bangalore	Royal Challengers Bangalore	field	norm
118	119	2009	Cape Town	2009- 04-18	Royal Challengers Bangalore	Rajasthan Royals	Royal Challengers Bangalore	bat	norm
160	161	2009	Bloemfontein	2009- 05-15	Delhi Daredevils	Kings XI Punjab	Kings XI Punjab	field	norm
57	58	2017	Bangalore	2017- 05-19	Kolkata Knight Riders	Mumbai Indians	Mumbai Indians	field	norm
539	540	2015	Ahmedabad	2015- 04-24	Rajasthan Royals	Royal Challengers Bangalore	Royal Challengers Bangalore	field	norm
457	458	2014	Abu Dhabi	2014- 04-16	Kolkata Knight Riders	Mumbai Indians	Kolkata Knight Riders	bat	norm
461	462	2014	NaN	2014- 04-19	Mumbai Indians	Royal Challengers Bangalore	Royal Challengers Bangalore	field	norm

8/9/23, 12:57 AM

id season city date team1 team2 toss_winner toss_decision resu

```
data.drop_duplicates(subset=['city']).shape
In [134...
            (31, 18)
Out[134]:
In [136...
            data.drop_duplicates(subset=['city','season']).shape
            (107, 18)
Out[136]:
            data.drop_duplicates('season',keep='last')[['season','winner']].sort_values('season')
In [141...
Out[141]:
                 season
                                            winner
                                    Mumbai Indians
             89
                   2008
            164
                   2009
                                    Delhi Daredevils
            179
                   2010
                                    Delhi Daredevils
            301
                   2011
                          Royal Challengers Bangalore
            316
                   2012
                                Kolkata Knight Riders
            451
                         Royal Challengers Bangalore
                   2013
            476
                   2014
                                Sunrisers Hyderabad
            525
                   2015
                                    Rajasthan Royals
            635
                   2016
                                Sunrisers Hyderabad
             44
                   2017
                                Kolkata Knight Riders
```