```
In [34]: import numpy as np
         import pandas as pd
```

```
In [35]: data=pd.read_csv('matches.csv')
```

```
In [36]: type(data)
```

Out[36]: `pandas.core.frame.DataFrame`

```
In [37]: data.head(1)
```

Out[37]:

| | id | season | city | date | team1 | team2 | toss_winner | toss_decision | result | dl_ap |
|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 1 | 2017 | Hyderabad | 2017-04-05 | Sunrisers Hyderabad | Royal Challengers Bangalore | Royal Challengers Bangalore | field | normal | |

◄ ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬ ►

```
In [38]: data.tail(1)
```

Out[38]:

| | id | season | city | date | team1 | team2 | toss_winner | toss_decision | result | dl |
|---|---|---|---|---|---|---|---|---|---|---|
| **635** | 636 | 2016 | Bangalore | 2016-05-29 | Sunrisers Hyderabad | Royal Challengers Bangalore | Sunrisers Hyderabad | bat | normal | |

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```
In [39]: data.shape
```

Out[39]: `(636, 18)`

```
In [40]: data.info()
```

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

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# Series

In [43]:
```python
data['winner']
```

Out[43]:
```
0            Sunrisers Hyderabad
1         Rising Pune Supergiant
2          Kolkata Knight Riders
3                Kings XI Punjab
4    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]:
```python
type(data['winner'])
```

Out[44]:
```
pandas.core.series.Series
```

In [45]:
```python
data['winner'].shape
```

Out[45]:
```
(636,)
```

# Data Frame

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

Out[46]:

| | team1 | team2 | winner |
|---|---|---|---|
| 0 | Sunrisers Hyderabad | Royal Challengers Bangalore | Sunrisers Hyderabad |
| 1 | Mumbai Indians | Rising Pune Supergiant | Rising Pune Supergiant |
| 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 |
| ... | ... | ... | ... |
| 631 | Delhi Daredevils | Royal Challengers Bangalore | Royal Challengers Bangalore |
| 632 | Gujarat Lions | Royal Challengers Bangalore | Royal Challengers Bangalore |
| 633 | Sunrisers Hyderabad | Kolkata Knight Riders | Sunrisers Hyderabad |
| 634 | Gujarat Lions | Sunrisers Hyderabad | Sunrisers Hyderabad |
| 635 | Sunrisers Hyderabad | Royal Challengers Bangalore | Sunrisers Hyderabad |

636 rows × 3 columns

In [47]:
```python
type(data[['team1','team2','winner']])
```

Out[47]: pandas.core.frame.DataFrame

In [48]:
```python
data[['team1','team2','winner']].shape
```

Out[48]: (636, 3)

In [49]:
```python
data.iloc[1:11:2]
```

Out[49]:

| | id | season | city | date | team1 | team2 | toss_winner | toss_decision | result | dl_a |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 2017 | Pune | 2017-04-06 | Mumbai Indians | Rising Pune Supergiant | Rising Pune Supergiant | field | normal | |
| 3 | 4 | 2017 | Indore | 2017-04-08 | Rising Pune Supergiant | Kings XI Punjab | Kings XI Punjab | field | normal | |
| 5 | 6 | 2017 | Hyderabad | 2017-04-09 | Gujarat Lions | Sunrisers Hyderabad | Sunrisers Hyderabad | field | normal | |
| 7 | 8 | 2017 | Indore | 2017-04-10 | Royal Challengers Bangalore | Kings XI Punjab | Royal Challengers Bangalore | bat | normal | |
| 9 | 10 | 2017 | Mumbai | 2017-04-12 | Sunrisers Hyderabad | Mumbai Indians | Mumbai Indians | field | normal | |

# Fancy Indexing

In [50]: `data.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 | |

In [51]: `data.iloc[:,[4,5,10]]`

Out[51]:

| | team1 | team2 | winner |
|---|---|---|---|
| **0** | Sunrisers Hyderabad | Royal Challengers Bangalore | Sunrisers Hyderabad |
| **1** | Mumbai Indians | Rising Pune Supergiant | Rising Pune Supergiant |
| **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 |
| **...** | ... | ... | ... |
| **631** | Delhi Daredevils | Royal Challengers Bangalore | Royal Challengers Bangalore |
| **632** | Gujarat Lions | Royal Challengers Bangalore | Royal Challengers Bangalore |
| **633** | Sunrisers Hyderabad | Kolkata Knight Riders | Sunrisers Hyderabad |
| **634** | Gujarat Lions | Sunrisers Hyderabad | Sunrisers Hyderabad |
| **635** | Sunrisers Hyderabad | Royal Challengers Bangalore | Sunrisers Hyderabad |

636 rows × 3 columns

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 | |

# Data Masling

In [53]:
```python
mask=data['city']=='Hyderabad'
data[mask].shape[0]
```

Out[53]: 49

In [79]:
```python
def get_city_match_count(city):
    mask=data['city']==city
    # return data[mask]
    return data[mask].shape[0]
```

In [80]:
```python
get_city_match_count('Rajkot')
```

Out[80]: 10

In [82]:
```python
mask1=data['city']=='Hyderabad'
mask2=data['date']>'2010-01-01'

data[mask1 & mask2].shape[0]
```

Out[82]: 42

# Value Count

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

```
Out[84]:   Mumbai Indians                   92
           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
```
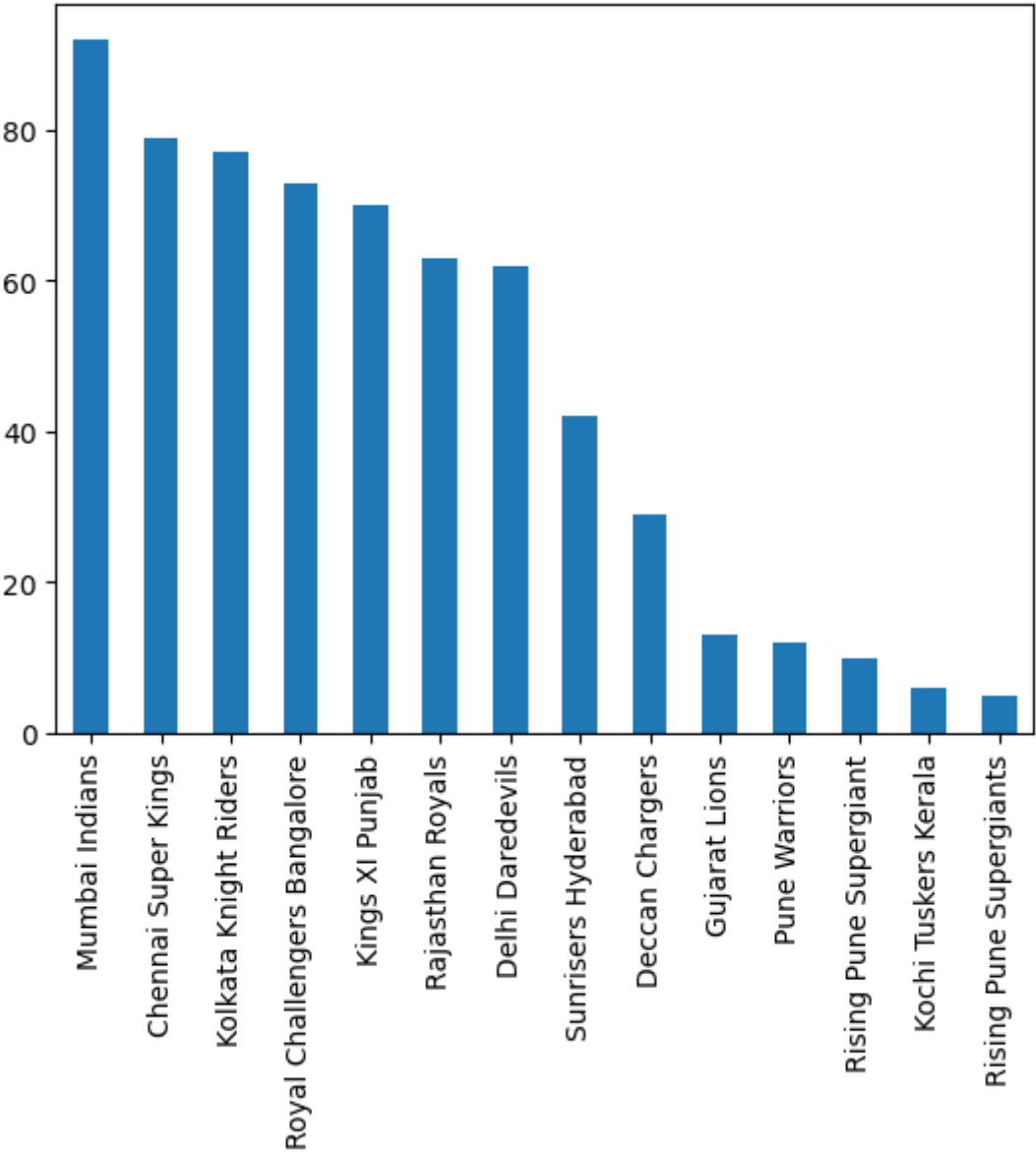
# The Pandas Plot()

## Bar Chart

```
In [87]:   # The Pandas Plot()
           import matplotlib.pyplot as plt
```
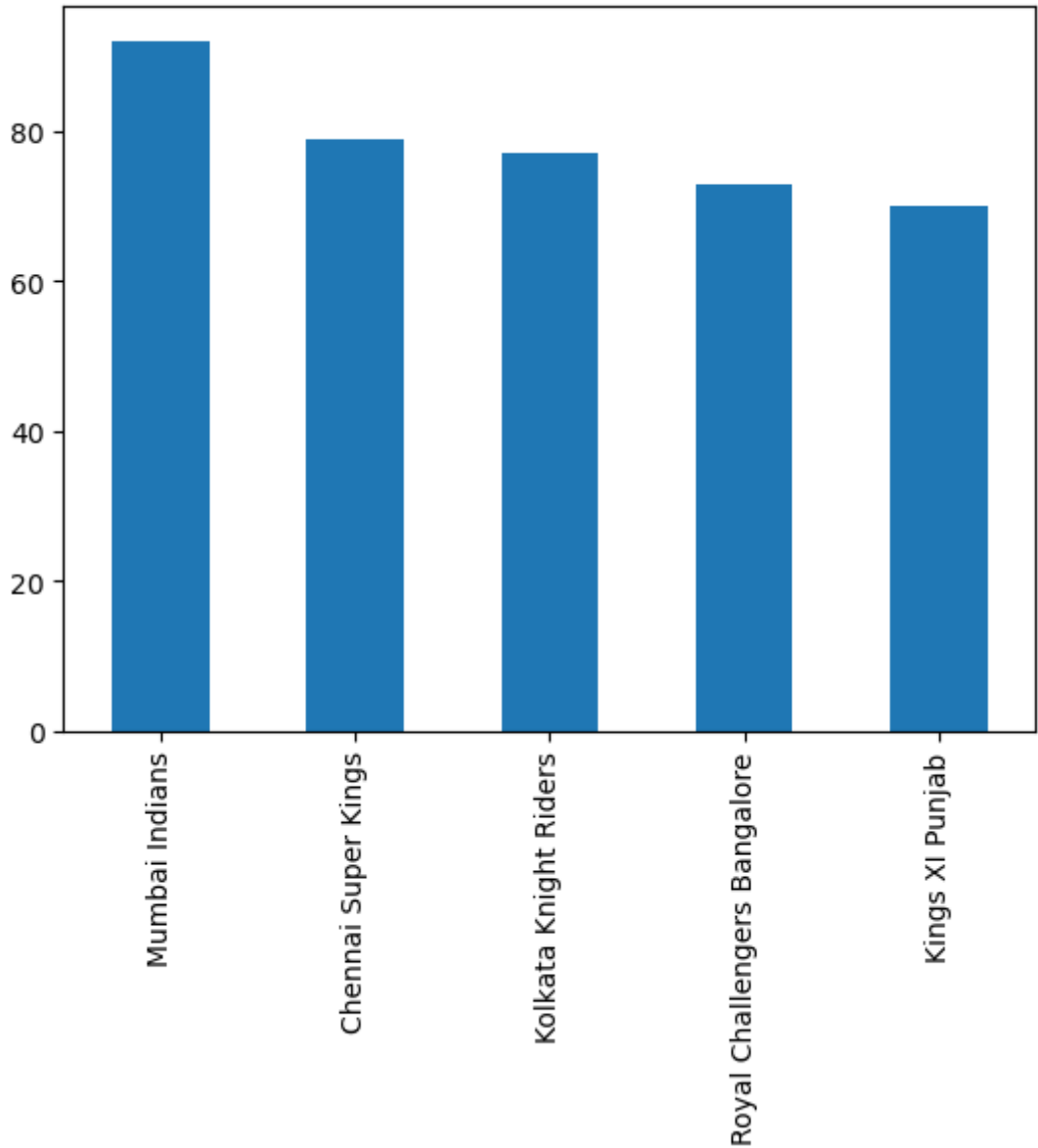
```
In [88]:   data['winner'].value_counts().plot(kind='bar')
```
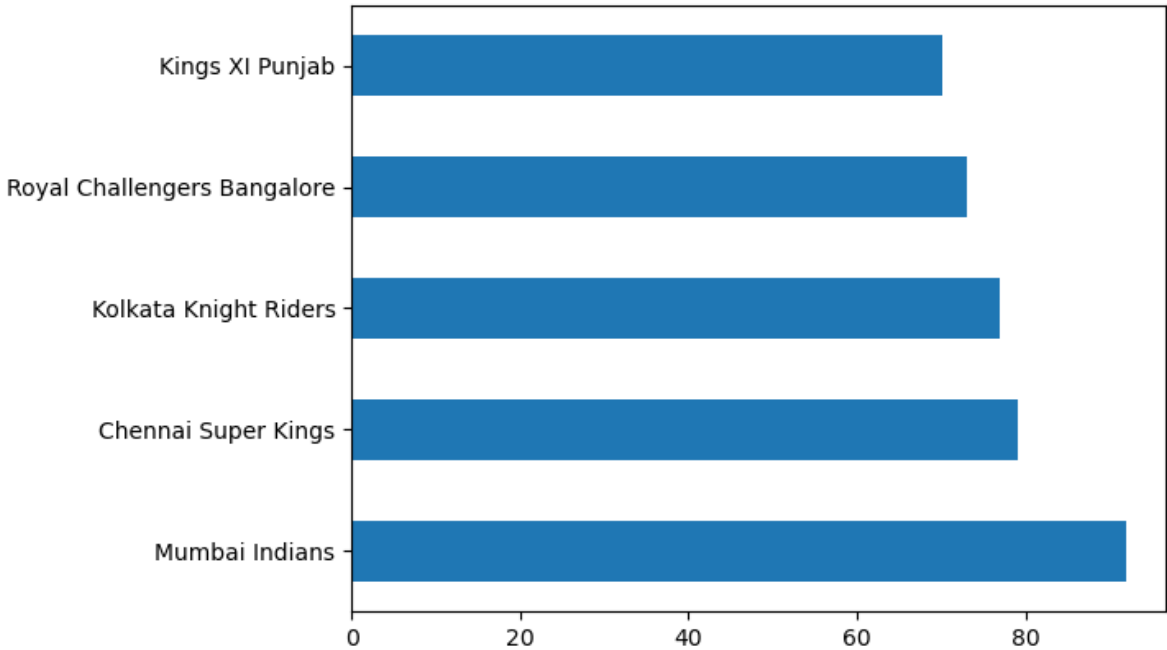
```
Out[88]:   <Axes: >
```

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

In [100…

Out[100]:   `<Axes: >`

```
In [102… data['winner'].value_counts().head().plot(kind='barh')
```
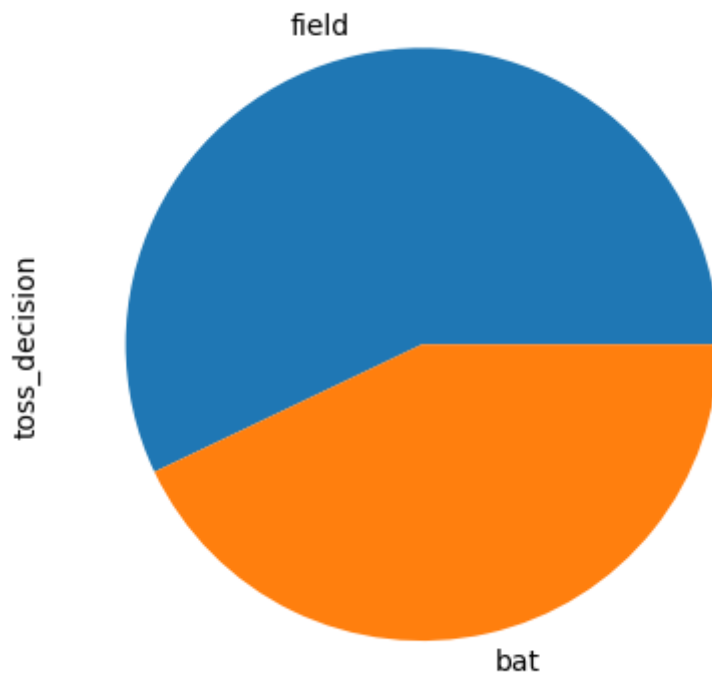
Out[102]:  `<Axes: >`

In [95]:
```python
data['toss_decision'].value_counts()
```

Out[95]:
```
field    363
bat      273
Name: toss_decision, dtype: int64
```
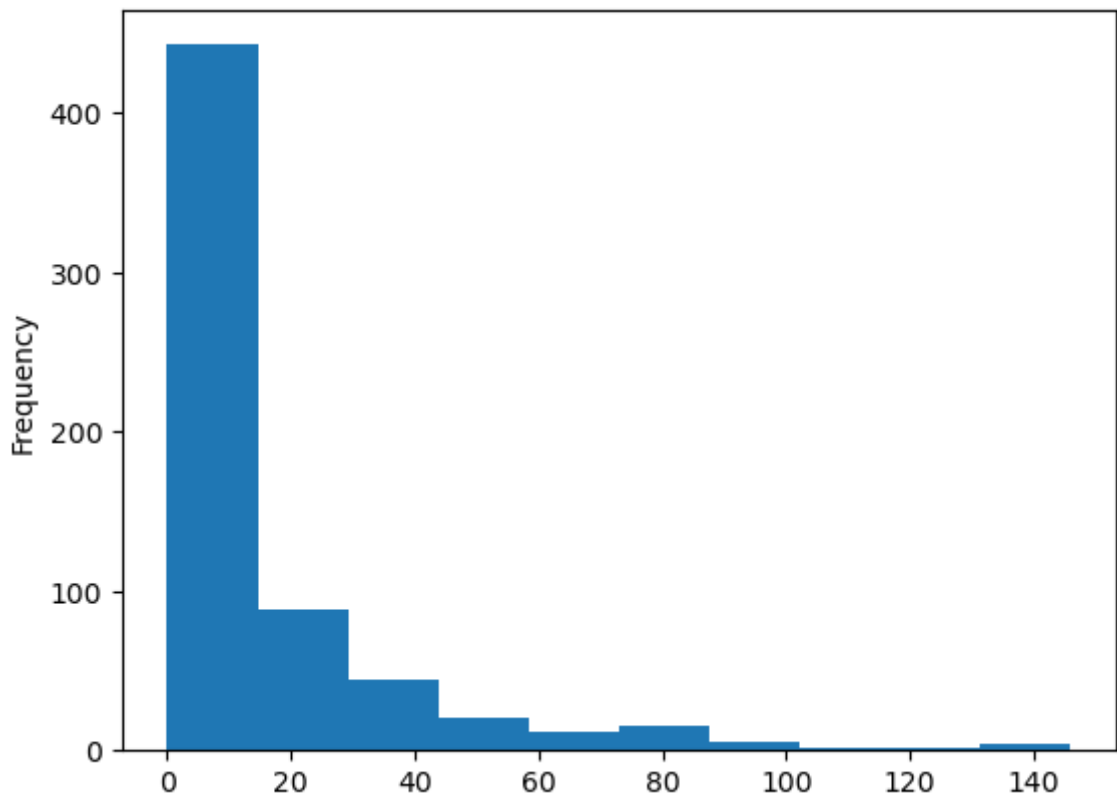
In [98]:
```python
data['toss_decision'].value_counts().plot(kind='pie')
```

Out[98]:
```
<Axes: ylabel='toss_decision'>
```



In [104…
```python
data['win_by_runs'].plot(kind='hist')
```

Out[104]:
```
<Axes: ylabel='Frequency'>
```

```
In [106…  myseries=data['winner'].value_counts()
```

```
In [108…  myseries.index
```

```
Out[108]:  Index(['Mumbai Indians', 'Chennai Super Kings', 'Kolkata Knight Riders',
                  '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')
```

```
In [110…  type(data['winner'].value_counts())
```

```
Out[110]:  pandas.core.series.Series
```

```
In [111…  myseries.values
```

```
Out[111]:  array([92, 79, 77, 73, 70, 63, 62, 42, 29, 13, 12, 10,  6,  5],
                 dtype=int64)
```

```
In [113…  myseries.head()
```

```
Out[113]:  Mumbai Indians                  92
           Chennai Super Kings             79
           Kolkata Knight Riders           77
           Royal Challengers Bangalore     73
           Kings XI Punjab                 70
           Name: winner, dtype: int64
```

```
In [116…  myseries['Kings XI Punjab']
```

```
Out[116]:  70
```

```
In [118…  data['team2'].value_counts()
```

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

# Top five team who played highest match in IPL

```
In [119…   data['team2'].value_counts() + data['team1'].value_counts()
```

```
Out[119]:   Chennai Super Kings                131
            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()
```

```
Out[125]:   Delhi Daredevils                   147
            Kings XI Punjab                    148
            Kolkata Knight Riders              148
            Royal Challengers Bangalore        152
            Mumbai Indians                     157
            dtype: int64
```

```
In [126…   (data['team2'].value_counts() + data['team1'].value_counts()).sort_values(ascending
```

Out[126]:
```
Mumbai Indians                  157
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…
```python
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 rows × 18 columns

# Permanently sorting in the actual datasheet

```
In [130…  data.sort_values('city',ascending=False,inplace=True)
```
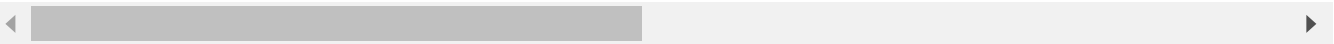
```
In [132…  data.sort_values(['city','date'],ascending=[True,False])
```

Out[132]:

| | id | season | city | date | team1 | team2 | toss_winner | toss_decision | result | dl_ap |
|---|---|---|---|---|---|---|---|---|---|---|
| **475** | 476 | 2014 | Abu Dhabi | 2014-04-29 | Rajasthan Royals | Kolkata Knight Riders | Rajasthan Royals | bat | tie | |
| **471** | 472 | 2014 | Abu Dhabi | 2014-04-26 | Kings XI Punjab | Kolkata Knight Riders | Kolkata Knight Riders | field | normal | |
| **470** | 471 | 2014 | Abu Dhabi | 2014-04-26 | Royal Challengers Bangalore | Rajasthan Royals | Rajasthan Royals | field | normal | |
| **464** | 465 | 2014 | Abu Dhabi | 2014-04-21 | Chennai Super Kings | Delhi Daredevils | Chennai Super Kings | bat | normal | |
| **460** | 461 | 2014 | Abu Dhabi | 2014-04-18 | Sunrisers Hyderabad | Rajasthan Royals | Rajasthan Royals | field | normal | |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| **468** | 469 | 2014 | NaN | 2014-04-25 | Sunrisers Hyderabad | Delhi Daredevils | Sunrisers Hyderabad | bat | normal | |
| **469** | 470 | 2014 | NaN | 2014-04-25 | Mumbai Indians | Chennai Super Kings | Mumbai Indians | bat | normal | |
| **466** | 467 | 2014 | NaN | 2014-04-23 | Chennai Super Kings | Rajasthan Royals | Rajasthan Royals | field | normal | |
| **461** | 462 | 2014 | NaN | 2014-04-19 | Mumbai Indians | Royal Challengers Bangalore | Royal Challengers Bangalore | field | normal | |
| **462** | 463 | 2014 | NaN | 2014-04-19 | Kolkata Knight Riders | Delhi Daredevils | Kolkata Knight Riders | bat | normal | |

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 |

| id | season | city | date | team1 | team2 | toss_winner | toss_decision | resu |
|----|--------|------|------|-------|-------|-------------|---------------|------|

In [134…
```
data.drop_duplicates(subset=['city']).shape
```

Out[134]:
```
(31, 18)
```

In [136…
```
data.drop_duplicates(subset=['city','season']).shape
```

Out[136]:
```
(107, 18)
```

In [141…
```
data.drop_duplicates('season',keep='last')[['season','winner']].sort_values('seaso
```

Out[141]:

|     | season | winner |
|-----|--------|--------|
| 89  | 2008   | Mumbai Indians |
| 164 | 2009   | Delhi Daredevils |
| 179 | 2010   | Delhi Daredevils |
| 301 | 2011   | Royal Challengers Bangalore |
| 316 | 2012   | Kolkata Knight Riders |
| 451 | 2013   | Royal Challengers Bangalore |
| 476 | 2014   | Sunrisers Hyderabad |
| 525 | 2015   | Rajasthan Royals |
| 635 | 2016   | Sunrisers Hyderabad |
| 44  | 2017   | Kolkata Knight Riders |

In [ ]: