1. (a)

import numpy as np

import pandas as pd

df = pd.read\_csv("DIM\_PLAYER\_MATCH.csv",delimiter=',',encoding='ISO-8859-1',skiprows=[1])

Young = lambda x :len(df[(df.Season\_year == x) & (df.Age\_As\_on\_match < 25)]['Player\_Name'].unique())

total = lambda x :len(df[df.Season\_year == x]['Player\_Name'].unique())

team = lambda x:df[(df.Age\_As\_on\_match<25)&(df.Season\_year==x)]['Player\_team'].value\_counts().index[0]

young = {}

Total = {}

Team = {}

for i in range(2008,2018):

young[i] = Young(i)

Total[i] = total(i)

Team[i] = team(i)

percentage = pd.Series(young)/pd.Series(Total)\*100

ans = pd.DataFrame([young,Total,percentage,Team],index = ['No. of young players','Total Players','Percentage of young Players','Team with most Young Players'])

print(ans)

OUTPUT

2008 2009 \

No. of young players 59 53

Total Players 163 165

Percentage of young Players 36.1963 32.1212

Team with most Young Players Delhi Daredevils Deccan Chargers

2010 2011 \

No. of young players 53 51

Total Players 181 199

Percentage of young Players 29.2818 25.6281

Team with most Young Players Deccan Chargers Royal Challengers Bangalore

2012 2013 \

No. of young players 53 51

Total Players 190 197

Percentage of young Players 27.8947 25.8883

Team with most Young Players Kings XI Punjab Kings XI Punjab

2014 2015 \

No. of young players 38 32

Total Players 152 145

Percentage of young Play 25 22.069

Team with most Young Players Kings XI Punjab Rajasthan Royals

2016 2017

No. of young players 30 34

Total Players 159 161

Percentage of young Players 18.8679 21.118

Team with most Young Players Delhi Daredevils Delhi Daredevils

1. (b)

import numpy as np

import pandas as pd

df = pd.read\_csv("DIM\_PLAYER\_MATCH.csv",delimiter=',',encoding="ISO-8859-1",skiprows=[1])

young = len(df[(df.Age\_As\_on\_match < 25) & (df.is\_manofThematch == 1)])

total = len(df[df.is\_manofThematch == 1])

perc = young/total\*100

print('percentage of young players is :',perc)

OUTPUT

percentage of young players is : 17.591125198098258

2. (a)

import numpy as np

import pandas as pd

df = pd.read\_csv("DIM\_PLAYER\_MATCH.csv",delimiter=',',encoding="ISO-8859-1",skiprows=[1])

df['Batting\_hand'] = df['Batting\_hand'].map({'Right-hand bat':'Right',

'Left-hand bat':'Left',

'\xa0Right-hand bat':'Right',

'Right-handed':'Right',

'\xa0Left-hand bat':'Left'})

df['Bowling\_skill']=df.Bowling\_skill.fillna('Legbreak')

df.loc[df['Bowling\_skill'] == 'Legbreak', 'Bowling\_skill'] = df['Batting\_hand']

df.loc[df['Bowling\_skill'] == '\xa0Legbreak', 'Bowling\_skill'] = df['Batting\_hand']

df.loc[df['Bowling\_skill'] == 'Legbreak googly', 'Bowling\_skill'] = df['Batting\_hand']

df['Bowling\_skill'] = df['Bowling\_skill'].map({'Right-arm medium':'Right',

'Right-arm off break':'Right',

'Right-arm fast-medium':'Right',

'Right-arm medium-fast':'Right',

'Left-arm fast-medium':'Left',

'Slow left-arm orthodox':'Left',

'Slow left-arm chinaman':'Left',

'Left-arm medium-fast':'Left',

'Right-arm fast':'Right',

'Right-arm bowler':'Right',

'Left-arm medium':'Left',

'Left-arm fast':'Left',

'Right-arm medium fast':'Right',

'\xa0Right-arm fast-medium':'Right',

'\xa0Right-arm medium-fast':'Right',

'\xa0Left-arm fast':'Left',

'\xa0Right-arm offbreak':'Right',

'Right':'Right',

'Left':'Left'})

BatRight = df[(df.Batting\_hand=='Right') & (df.is\_manofThematch==1)]

BowlRight = df[(df.Bowling\_skill=='Right') & (df.is\_manofThematch==1)]

BatLeft = df[(df.Batting\_hand=='Left') & (df.is\_manofThematch==1)]

BowlLeft = df[(df.Bowling\_skill=='Left') & (df.is\_manofThematch==1)]

Right = len(pd.concat([BatRight,BowlRight]))

Left = len(pd.concat([BatLeft,BowlLeft]))

print(Right,Left)

OUTPUT

750 332

It is evident that the performance of Right hand players is better than that of left.

2. (b)

import numpy as np

import pandas as pd

df = pd.read\_csv('DIM\_PLAYER\_MATCH.csv', delimiter = ',',skiprows = [1],encoding = 'ISO-8859-1')

df['Bowling\_skill'] = df['Bowling\_skill'].map({'Right-arm offbreak':'Spin',

'Right-arm medium':'Pace',

'Right-arm fast-medium':'Pace',

'Legbreak googly':'Spin',

'Right-arm medium-fast':'Pace',

'Left-arm fast-medium':'Pace',

'Slow left-arm orthodox':'Spin',

'Right-arm fast':'Pace',

'Slow left-arm chinaman':'Spin',

'Left-arm medium-fast':'Pace',

'Legbreak':'Spin',

'Left-arm medium':'Pace',

'Left-arm fast':'Pace',

'\xa0Left-arm fast':'Pace',

'\xa0Right-arm fast-medium':'Pace',

'Right-arm medium fast':'Pace',

'\xa0Right-arm medium-fast':'Pace',

'\xa0Right-arm offbreak':'Spin',

'\xa0Legbreak':'Spin'

})

totalSpin = len(df[df.Bowling\_skill == 'Spin'])

totalPace = len(df[df.Bowling\_skill == 'Pace'])

spin = len(df[(df.Bowling\_skill == 'Spin') & (df.is\_manofThematch == 1)])

pace = len(df[(df.Bowling\_skill == 'Pace') & (df.is\_manofThematch == 1)])

print('spinRatio',spin/totalSpin,' ‘,’paceRatio',pace/totalPace)

OUTPUT

spinRatio 0.04938474159146842 paceRatio 0.04531273213489823

It can be seen that spinners performed better than pacers.

3.

import numpy as np

import pandas as pd

df = pd.read\_csv('DIM\_PLAYER\_MATCH.csv', delimiter = ',',skiprows = [1],encoding = 'ISO-8859-1')

df['Batting\_hand'] = df['Batting\_hand'].map({'Right-hand bat':'Right',

'Left-hand bat':'Left',

'\xa0Right-hand bat':'Right',

'Right-handed':'Right',

'\xa0Left-hand bat':'Left'})

df['Bowling\_skill'] = df['Bowling\_skill'].map({'Right-arm offbreak':'Spin',

'Right-arm medium':'Pace',

'Right-arm fast-medium':'Pace',

'Legbreak googly':'Spin',

'Right-arm medium-fast':'Pace',

'Left-arm fast-medium':'Pace',

'Slow left-arm orthodox':'Spin',

'Right-arm fast':'Pace',

'Slow left-arm chinaman':'Spin',

'Left-arm medium-fast':'Pace',

'Legbreak':'Spin',

'Left-arm medium':'Pace',

'Left-arm fast':'Pace',

'\xa0Left-arm fast':'Pace',

'\xa0Right-arm fast-medium':'Pace',

'Right-arm medium fast':'Pace',

'\xa0Right-arm medium-fast':'Pace',

'\xa0Right-arm offbreak':'Spin',

'\xa0Legbreak':'Spin'

})s

df['Role\_Desc'] = df['Role\_Desc'].map({'Keeper':"Keeper",

'CaptainKeeper':'Keeper'})

RightBat = df[(df.Batting\_hand=='Right') & (df.is\_manofThematch==1) & (df.Bowling\_skill.isnull())]['Player\_Name'].value\_counts().index[:2]

LeftBat = df[(df.Batting\_hand=='Left') & (df.is\_manofThematch==1) & (df.Bowling\_skill.isnull())]['Player\_Name'].value\_counts().index[:2]

Wicketkeeper = df[(df.Role\_Desc=='Keeper') & (df.IsPlayers\_Team\_won==1)]['Player\_Name'].value\_counts().index[0]

Spin = df[(df.Bowling\_skill=='Spin') & (df.is\_manofThematch==1)]['Player\_Name'].value\_counts().index[:2]

Pace = df[(df.Bowling\_skill=='Pace') & (df.is\_manofThematch==1)]['Player\_Name'].value\_counts().index[:4]

Pace = Pace[[0,2,3]]

AllRound = df[(df.Bowling\_skill.notnull()) & (df.is\_manofThematch==1)]['Player\_Name'].value\_counts().index[:4]

AllRound = AllRound[2]

Team = pd.DataFrame({'Player\_name' : [\*RightBat,\*LeftBat,AllRound,\*Pace,\*Spin,Wicketkeeper],

'Role':['Right-hand Batsman','Right-hand Batsman','Left-hand batsman','Left-hand batsman','All-Rounder','Pacer','Pacer','Pacer','Spinner','Spinner','Wicket-keeper']})

print(Team)

OUTPUT

Player\_name Role

0 KD Karthik Right-hand Batsman

1 SV Samson Right-hand Batsman

2 PA Patel Left-hand batsman

3 RR Pant Left-hand batsman

4 DA Warner All-Rounder

5 AB de Villiers Pacer

6 AM Rahane Pacer

7 MEK Hussey Pacer

8 CH Gayle Spinner

9 YK Pathan Spinner

10 MS Dhoni Wicket-keeper

4.

import numpy as np

import pandas as pd

df = pd.read\_csv("DIM\_PLAYER\_MATCH.csv",delimiter=',',encoding="ISO-8859-1",skiprows=[1])

b = pd.crosstab([df.Player\_team],[df.Opposit\_Team,df.IsPlayers\_Team\_won])/11

c = b.max()

print(c)

OUTPUT

Opposit\_Team IsPlayers\_Team\_won

Chennai Super Kings 0 12

1 12

Deccan Chargers 0 6

1 7

Delhi Daredevils 0 9

1 12

Gujarat Lions 0 3

1 5

Kings XI Punjab 0 12

1 14

Kochi Tuskers Kerala 0 2

1 2

Kolkata Knight Riders 0 14

1 16

Mumbai Indians 0 16

1 10

Pune Warriors 0 3

1 5

Rajasthan Royals 0 10

1 11

Rising Pune Supergiants 0 4

1 3

Royal Challengers Bangalore 0 13

1 13

Sunrisers Hyderabad 0 8

1 8

We can see that Kolkata Knight Riders won 16 matches against Mumbai Indians.

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