In [9]:

```
import numpy as np
import pandas as pd
import statistics as sd
```

In [2]:

```
from random import random
```

In [6]:

```
lst=[]
```

In [7]:

```
for i in range(100):
    lst.append(random())
```

In [10]:

```
mean=sd.mean(lst)
```

In [11]:

```
mean
```

Out[11]:

```
0.49280880883397643
```

In [12]:

```
median=sd.median(lst)
```

In [13]:

```
median
```

Out[13]:

```
0.49949089685117626
```

In [14]:

```
mode=sd.mode(lst)
```

In [15]:

```
mode
```

Out[15]:

```
0.6469930697435393
```

In [16]:

```
sv=sd.stdev(lst)
sv
```

Out[16]:

```
0.2997218786519942
```

In [17]:

```
Q1=np.median(lst[:50])
```

In [18]:

```
Q3=np.median(lst[50:])
```

In [19]:

```
iqr=Q3-Q1
iqr
```

Out[19]:

```
-0.03251262327524823
```

In [29]:

```
pr=np.percentile(lst,50)
```

In [30]:

```
pr
```

Out[30]:

```
0.49949089685117626
```

In [31]:

```
#question 2
```

In [34]:

```
df=pd.read_csv("C:/Users/91947/Downloads/IPL IMB381IPL2013.csv")
```

In [35]:

```
df
```

Out[35]:

	Sl.NO.	PLAYER NAME	AGE	COUNTRY	TEAM	PLAYING ROLE	T-RUNS	T-WKTS	ODI-RUNS-S	ODI-SR-B	...
0	1	Abdulla, YA	2	SA	KXIP	Allrounder	0	0	0	0.00	...
1	2	Abdur Razzak	2	BAN	RCB	Bowler	214	18	657	71.41	...
2	3	Agarkar, AB	2	IND	KKR	Bowler	571	58	1269	80.62	...
3	4	Ashwin, R	1	IND	CSK	Bowler	284	31	241	84.56	...
4	5	Badrinath, S	2	IND	CSK	Batsman	63	0	79	45.93	...
...	...	...	...	...	...	...	...	...	...	...	...
125	126	Yadav, AS	2	IND	DC	Batsman	0	0	0	0.00	...
126	127	Younis Khan	2	PAK	RR	Batsman	6398	7	6814	75.78	...
127	128	Yuvraj Singh	2	IND	KXIP+	Batsman	1775	9	8051	87.58	...
128	129	Zaheer Khan	2	IND	MI+	Bowler	1114	288	790	73.55	...
129	130	Zoysa, DNT	2	SL	DC	Bowler	288	64	343	95.81	...

130 rows × 26 columns

In [37]:

```
clm=df.columns.tolist()
clm
```

Out[37]:

```
['Sl.NO.',
 'PLAYER NAME',
 'AGE',
 'COUNTRY',
 'TEAM',
 'PLAYING ROLE',
 'T-RUNS',
 'T-WKTS',
 'ODI-RUNS-S',
 'ODI-SR-B',
 'ODI-WKTS',
 'ODI-SR-BL',
 'CAPTAINCY EXP',
 'RUNS-S',
 'HS',
 'AVE',
 'SR-B',
 'SIXERS',
 'RUNS-C',
 'WKTS',
 'AVE-BL',
 'ECON',
 'SR-BL',
 'AUCTION YEAR',
 'BASE PRICE',
 'SOLD PRICE']
```

```
1
```

In [40]:

```
row=df.index.tolist()
row
```

Out[40]:

```
[0,
 1,
 2,
 3,
 4,
 5,
 6,
 7,
 8,
 9,
 10,
 11,
 12,
 13,
 14,
 15,
 16,
 17,
```

In [41]:

```
transposed=df.T
```

In [42]:

```
transposed
```

Out[42]:

	0	1	2	3	4	5	6	7	
SI.NO.	1	2	3	4	5	6	7	8	
PLAYER NAME	Abdulla, YA	Abdur Razzak	Agarkar, AB	Ashwin, R	Badrinath, S	Bailey, GJ	Balaji, L	Bollinger, DE	Bo
AGE	2	2	2	1	2	2	2	2	
COUNTRY	SA	BAN	IND	IND	IND	AUS	IND	AUS	
TEAM	KXIP	RCB	KKR	CSK	CSK	CSK	CSK+	CSK	
PLAYING ROLE	Allrounder	Bowler	Bowler	Bowler	Batsman	Batsman	Bowler	Bowler	Allro
T-RUNS	0	214	571	284	63	0	51	54	
T-WKTS	0	18	58	31	0	0	27	50	
ODI-RUNS-S	0	657	1269	241	79	172	120	50	
ODI-SR-B	0.0	71.41	80.62	84.56	45.93	72.26	78.94	92.59	
ODI-WKTS	0	185	288	51	0	0	34	62	
ODI-SR-BL	0.0	37.6	32.9	36.8	0.0	0.0	42.5	31.3	
CAPTAINCY EXP	0	0	0	0	0	1	0	0	
RUNS-S	0	0	167	58	1317	63	26	21	
HS	0	0	39	11	71	48	15	16	
AVE	0.0	0.0	18.56	5.8	32.93	21.0	4.33	21.0	
SR-B	0.0	0.0	121.01	76.32	120.71	95.45	72.22	165.88	1
SIXERS	0	0	5	0	28	0	1	1	
RUNS-C	307	29	1059	1125	0	0	1342	693	
WKTS	15	0	29	49	0	0	52	37	
AVE-BL	20.47	0.0	36.52	22.96	0.0	0.0	25.81	18.73	
ECON	8.9	14.5	8.81	6.23	0.0	0.0	7.98	7.22	
SR-BL	13.93	0.0	24.9	22.14	0.0	0.0	19.4	15.57	
AUCTION YEAR	2009	2008	2008	2011	2011	2009	2011	2011	
BASE PRICE	50000	50000	200000	100000	100000	50000	100000	200000	2(
SOLD PRICE	50000	50000	350000	850000	800000	50000	500000	700000	9!

26 rows × 130 columns

In [44]:

```
sliced=transposed.iloc[0:4,3]
```

In [45]:

```
1 sliced
```

Out[45]:

```
Sl.NO.                  4
PLAYER NAME    Ashwin, R
AGE                     1
COUNTRY               IND
Name: 3, dtype: object
```

In [47]:

```
s=df.shape
s
```

Out[47]:

```
(130, 26)
```

In [48]:

```
i=df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 130 entries, 0 to 129
Data columns (total 26 columns):
 #   Column         Non-Null Count  Dtype  
---  ------         --------------  -----  
 0   Sl.NO.         130 non-null    int64  
 1   PLAYER NAME    130 non-null    object 
 2   AGE            130 non-null    int64  
 3   COUNTRY        130 non-null    object 
 4   TEAM           130 non-null    object 
 5   PLAYING ROLE   130 non-null    object 
 6   T-RUNS         130 non-null    int64  
 7   T-WKTS         130 non-null    int64  
 8   ODI-RUNS-S     130 non-null    int64  
 9   ODI-SR-B       130 non-null    float64
 10  ODI-WKTS       130 non-null    int64  
 11  ODI-SR-BL      130 non-null    float64
 12  CAPTAINCY EXP  130 non-null    int64  
 13  RUNS-S         130 non-null    int64  
 14  HS             130 non-null    int64  
 15  AVE            130 non-null    float64
 16  SR-B           130 non-null    float64
 17  SIXERS         130 non-null    int64  
 18  RUNS-C         130 non-null    int64  
 19  WKTS           130 non-null    int64  
 20  AVE-BL         130 non-null    float64
 21  ECON           130 non-null    float64
 22  SR-BL          130 non-null    float64
 23  AUCTION YEAR   130 non-null    int64  
 24  BASE PRICE     130 non-null    int64  
 25  SOLD PRICE     130 non-null    int64  
dtypes: float64(7), int64(15), object(4)
memory usage: 26.5+ KB
```

In [51]:

```
d= df['TEAM'].value_counts()
```

In [52]:

```
d
```

Out[52]:

```
CSK      14
RCB+     12
KKR+     12
DD+      10
DC+      10
RR+       9
RCB       9
DC        7
KXIP+     7
MI        6
DD        6
MI+       6
RR        6
CSK+      5
KKR       5
KXIP      5
KXI+      1
Name: TEAM, dtype: int64
```

In [ ]:

```
1
```

In [56]:

```
l=len(df)
l
```

Out[56]:

```
130
```

In [57]:

```
percentage=d*100/l
```

In [58]:

```
percentage
```

Out[58]:

```
CSK      10.769231
RCB+      9.230769
KKR+      9.230769
DD+       7.692308
DC+       7.692308
RR+       6.923077
RCB       6.923077
DC        5.384615
KXIP+     5.384615
MI        4.615385
DD        4.615385
MI+       4.615385
RR        4.615385
CSK+      3.846154
KKR       3.846154
KXIP      3.846154
KXI+      0.769231
Name: TEAM, dtype: float64
```

In [64]:

```
cross_tab = pd.crosstab(df['TEAM'], df['COUNTRY'])
```

In [65]:

```
cross_tab
```

Out[65]:

COUNTRY TEAM	AUS	BAN	ENG	IND	NZ	PAK	SA	SL	WI	ZIM
CSK	4	0	1	6	1	0	2	0	0	0
CSK+	0	0	0	3	1	0	0	1	0	0
DC	0	0	0	1	0	1	1	3	1	0
DC+	3	0	0	5	1	0	0	0	1	0
DD	2	0	0	1	0	2	0	1	0	0
DD+	2	0	0	5	1	0	1	1	0	0
KKR	1	0	0	1	0	2	0	0	0	1
KKR+	3	0	0	5	1	0	1	1	1	0
KXI+	1	0	0	0	0	0	0	0	0	0
KXIP	2	0	0	1	0	0	1	0	1	0
KXIP+	1	0	0	4	0	0	0	2	0	0
MI	0	0	0	2	0	0	1	3	0	0
MI+	0	0	0	4	0	0	1	0	1	0
RCB	1	1	0	4	0	1	1	0	1	0
RCB+	1	0	1	5	2	0	3	0	0	0
RR	1	0	0	0	0	3	2	0	0	0
RR+	0	0	1	6	0	0	2	0	0	0

In [67]:

```
cpr=pd.crosstab(df['COUNTRY'],df['PLAYING ROLE'])
```

In [68]:

```
cpr
```

Out[68]:

PLAYING ROLE / COUNTRY	Allrounder	Batsman	Bowler	W. Keeper
AUS	6	9	6	1
BAN	0	0	1	0
ENG	2	1	0	0
IND	7	18	23	5
NZ	4	2	0	1
PAK	2	2	4	1
SA	7	3	4	2
SL	4	2	5	1
WI	3	2	1	0
ZIM	0	0	0	1

In [69]:

```
#f
```

In [72]:

```
sort=df.sort_values(by="SOLD PRICE",ascending=False)
```

In [73]:

```
sort
```

Out[73]:

	Sl.NO.	PLAYER NAME	AGE	COUNTRY	TEAM	PLAYING ROLE	T-RUNS	T-WKTS	ODI-RUNS-S	ODI-SR-B	...
93	94	Sehwag, V	2	IND	DD	Batsman	8178	40	8090	104.68	...
127	128	Yuvraj Singh	2	IND	KXIP+	Batsman	1775	9	8051	87.58	...
50	51	Kohli, V	1	IND	RCB	Batsman	491	0	3590	86.31	...
111	112	Tendulkar, SR	3	IND	MI	Batsman	15470	45	18426	86.23	...
113	114	Tiwary, SS	1	IND	MI+	Batsman	0	0	49	87.50	...
...	...	...	...	...	...	...	...	...	...	...	...
34	35	Henriques, MC	1	AUS	KKR+	Allrounder	0	0	18	60.00	...
5	6	Bailey, GJ	2	AUS	CSK	Batsman	0	0	172	72.26	...
0	1	Abdulla, YA	2	SA	KXIP	Allrounder	0	0	0	0.00	...
46	47	Kamran Khan	1	IND	RR+	Bowler	0	0	0	0.00	...
73	74	Noffke, AA	2	AUS	RCB	Allrounder	0	0	0	0.00	...

130 rows × 26 columns

In [74]:

```
country_stats = df.groupby('COUNTRY')['SOLD PRICE'].agg(['mean', 'max', 'min']).reset_inc
country_stats.columns = ['COUNTRY', 'Average SOLD PRICE', 'Maximum SOLD PRICE', 'Minimum

print(country_stats)
```

```
  COUNTRY  Average SOLD PRICE  Maximum SOLD PRICE  Minimum SOLD PRICE
0     AUS        4.340909e+05             1350000               20000
1     BAN        5.000000e+04               50000               50000
2     ENG        1.066667e+06             1550000              100000
3     IND        6.523396e+05             1800000               24000
4      NZ        5.264286e+05             1000000              160000
5     PAK        3.305556e+05              675000              100000
6      SA        4.275000e+05              950000               50000
7      SL        4.237500e+05              975000              100000
8      WI        2.791667e+05              800000              100000
9     ZIM        1.250000e+05              125000              125000
```

In [75]:

```
role_stats = df.groupby('PLAYING ROLE')['SOLD PRICE'].agg(['mean', 'max', 'min']).reset_i
role_stats.columns = ['PLAYING ROLE', 'Average SOLD PRICE', 'Maximum SOLD PRICE', 'Minimu

print(role_stats)
```

```
  PLAYING ROLE  Average SOLD PRICE  Maximum SOLD PRICE  Minimum SOLD PRICE
0   Allrounder       519571.428571             1550000               20000
1      Batsman       647435.897436             1800000               50000
2       Bowler       419977.272727              950000               24000
3    W. Keeper       487083.333333             1500000              100000
```

In [76]:

```
#h
```

In [77]:

```
role_max_price = df.groupby('PLAYING ROLE')['SOLD PRICE'].max().reset_index()
role_max_price.columns = ['PLAYING ROLE', 'Maximum SOLD PRICE']

role_avg_price = df.groupby('PLAYING ROLE')['SOLD PRICE'].mean().reset_index()
role_avg_price.columns = ['PLAYING ROLE', 'Average SOLD PRICE']


merged_df = pd.merge(role_avg_price, role_max_price, on='PLAYING ROLE')

print(merged_df)
```

```
  PLAYING ROLE  Average SOLD PRICE  Maximum SOLD PRICE
0   Allrounder       519571.428571             1550000
1      Batsman       647435.897436             1800000
2       Bowler       419977.272727              950000
3    W. Keeper       487083.333333             1500000
```

In [78]:

```
#i
```

In [79]:

```
more70=df[df['SIXERS']>70]
```

In [80]:

```
NAME=more70['PLAYER NAME']
```

In [81]:

```
NAME
```

Out[81]:

```
26        Gayle, CH
28    Gilchrist, AC
82       Pathan, YK
88        Raina, SK
93        Sehwag, V
97       Sharma, RG
Name: PLAYER NAME, dtype: object
```

In [ ]:

```

```