▾ Exploratory Data Analysis of ICC World Cup Matches

```
#importing libraries
import pandas as pd
from·matplotlib·import·pyplot·as·plt
```

```
#Reading datasets(.csv files)
players = pd.read_csv('WC_players.csv')
ground_data = pd.read_csv('Ground_Averages.csv')
batsman = pd.read_csv('Batsman_Data.csv')
bowler = pd.read_csv('Bowler_data.csv')
odi_total = pd.read_csv('ODI_Match_Totals.csv')
odi_total = pd.read_csv('ODI_Match_Totals.csv')
```

```
#Displaying First five players
players.head()
```

	Player	ID	Country
0	Gulbadin Naib (c)	352048	Afghanistan
1	Rashid Khan (vc)	793463	Afghanistan
2	Aftab Alam	440963	Afghanistan
3	Asghar Afghan	320652	Afghanistan
4	Dawlat Zadran	516561	Afghanistan

```
#Filtering Indians Players
Indian_players = players[players['Country'] == "India"]

#Displaying Indain players
Indian_players
```

	Player	ID	Country
61	Virat Kohli (c)	253802	India
62	Rohit Sharma (vc)	34102	India
63	Shikhar Dhawan	28235	India
64	K. L. Rahul	422108	India
65	Vijay Shankar	477021	India
66	MS Dhoni (wk)	28081	India
67	Kedar Jadhav	290716	India
68	Dinesh Karthik	30045	India

```
#Displaying First five batsmen
batsman.head()
```

	Unnamed: 0	Bat1	Runs	BF	SR	4s	6s	Opposition	Ground	Start Date	Match_ID	Bats
0	1	DNB	-	-	-	-	-	v India	Nagpur	18 Dec 2009	ODI # 2933	Osh Thor
1	2	DNB	-	-	-	-	-	v India	Kolkata	24 Dec 2009	ODI # 2935	Osh Thor
2	3	DNB	-	-	-	-	-	v India	Delhi	27 Dec 2009	ODI # 2936	Osh Thor

```
#Displaying match total
odi_total.head()
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date	Mat
0	412	250	48.3	5.15	NaN	1	won	v India	Kolkata	3 Jan 2013	
1	680	165	48.0	3.43	251.0	2	lost	v Pakistan	Kolkata	3 Jan 2013	
2	413	157	48.5	3.21	168.0	2	lost	v India	Delhi	6 Jan 2013	

▾ Data Analysis of Indian Team

```
#Creating Dataframe 'India'
India = odi_total[odi_total['Country'] == 'India']
```

```python
def isWin(val):
  if val in ['won','lost']:
    if val ==  'won':
      color = 'green'
    elif val == 'lost':
      color = 'red'
    else:
      color = 'yellow'
  else:
    color = 'black'
  return 'color: %s' % color
India.style.applymap(isWin)
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
1	680	165	48.000000	3.43	251.000000	2	lost	v Pakistan	Kolkata	3 Jan 2013
3	681	167	43.400000	3.82	nan	1	won	v Pakistan	Delhi	6 Jan 2013
6	682	316/9	50.000000	6.32	326.000000	2	lost	v England	Rajkot	11 Jan 2013
10	683	285/6	50.000000	5.70	nan	1	won	v England	Kochi	15 Jan 2013
14	684	157/3	28.100000	5.57	156.000000	2	won	v England	Ranchi	19 Jan 2013
24	685	258/5	47.300000	5.43	258.000000	2	won	v England	Mohali	23 Jan 2013
28	686	226	49.400000	4.55	nan	1	lost	v England	Dharamsala	27 Jan 2013
81	687	331/7	50.000000	6.62	nan	1	won	v South Africa	Cardiff	6 Jun 2013
91	688	236/2	39.100000	6.02	234.000000	2	won	v West Indies	The Oval	11 Jun 2013
99	689	102/2	19.100000	5.32	102.000000	2	won	v Pakistan	Birmingham	15 Jun 2013
107	690	182/2	35.000000	5.20	182.000000	2	won	v Sri Lanka	Cardiff	20 Jun 2013
108	691	129/7	20.000000	6.45	nan	1	won	v England	Birmingham	23 Jun 2013
113	692	229/7	50.000000	4.58	nan	1	lost	v West Indies	Kingston	30 Jun 2013
115	693	187	44.500000	4.17	349.000000	2	lost	v Sri Lanka	Kingston	2 Jul 2013
117	694	311/7	50.000000	6.22	nan	1	won	v West Indies	Port of Spain	5 Jul 2013
121	695	119/3	29.000000	4.10	nan	1	won	v Sri Lanka	Port of Spain	9 Jul 2013
123	696	203/9	49.400000	4.08	202.000000	2	won	v Sri Lanka	Port of Spain	11 Jul 2013
136	697	230/4	44.500000	5.13	229.000000	2	won	v Zimbabwe	Harare	24 Jul

							won	v Zimbabwe	Harare	2013
139	698	294/8	50.000000	5.88	nan	1	won	v Zimbabwe	Harare	26 Jul 2013
142	699	187/3	35.300000	5.26	184.000000	2	won	v Zimbabwe	Harare	28 Jul 2013
147	700	145/1	30.500000	4.70	145.000000	2	won	v Zimbabwe	Bulawayo	1 Aug 2013
148	701	167/3	34.000000	4.91	164.000000	2	won	v Zimbabwe	Bulawayo	3 Aug 2013
164	702	232	49.400000	4.67	305.000000	2	lost	v Australia	Pune	13 Oct 2013
166	703	362/1	43.300000	8.32	360.000000	2	won	v Australia	Jaipur	16 Oct 2013
168	704	303/9	50.000000	6.06	nan	1	lost	v Australia	Mohali	19 Oct 2013
170	705	27/0	4.100000	6.48	296.000000	2	n/r	v Australia	Ranchi	23 Oct 2013
174	706	351/4	49.300000	7.09	351.000000	2	won	v Australia	Nagpur	30 Oct 2013
182	707	383/6	50.000000	7.66	nan	1	won	v Australia	Bengaluru	2 Nov 2013
199	708	212/4	35.200000	6.00	212.000000	2	won	v West Indies	Kochi	21 Nov 2013
201	709	288/7	50.000000	5.76	nan	1	lost	v West Indies	Visakhapatnam	24 Nov 2013
205	710	266/5	46.100000	5.76	264.000000	2	won	v West Indies	Kanpur	27 Nov 2013
211	711	217	41.000000	5.29	359.000000	2	lost	v South Africa	Johannesburg	5 Dec 2013
213	712	146	35.100000	4.15	281.000000	2	lost	v South Africa	Durban	8 Dec 2013
215	713	DNB	0.000000	-	nan	0	n/r	v South Africa	Centurion	11 Dec 2013
239	714	268	48.400000	5.50	293.000000	2	lost	v New Zealand	Napier	19 Jan 2014

243	715	277/9	41.300000	6.67	293.000000	2	lost	v New Zealand	Hamilton	22 Jan 2014
247	716	314/9	50.000000	6.28	315.000000	2	tied	v New Zealand	Auckland	25 Jan 2014
251	717	278/5	50.000000	5.56	nan	1	lost	v New Zealand	Hamilton	28 Jan 2014
253	718	216	49.400000	4.34	304.000000	2	lost	v New Zealand	Wellington	31 Jan 2014
263	719	280/4	49.000000	5.71	280.000000	2	won	v Bangladesh	Fatullah	26 Feb 2014
268	720	264/9	50.000000	5.28	nan	1	lost	v Sri Lanka	Fatullah	28 Feb 2014
274	721	245/8	50.000000	4.90	nan	1	lost	v Pakistan	Dhaka	2 Mar 2014
281	722	160/2	32.200000	4.94	160.000000	2	won	v Afghanistan	Dhaka	5 Mar 2014
303	723	153/3	24.500000	6.16	150.000000	2	won	v Bangladesh	Dhaka	15 Jun 2014
305	724	105	25.300000	4.11	nan	1	won	v Bangladesh	Dhaka	17 Jun 2014
307	725	119/9	34.200000	3.46	nan	1	n/r	v Bangladesh	Dhaka	19 Jun 2014
335	726	304/6	50.000000	6.08	nan	1	won	v England	Cardiff	27 Aug 2014

```
# Finding null values
India.isnull()
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date	Ma
1	False	False	False	False	False	False	False	False	False	False	
3	False	False	False	False	True	False	False	False	False	False	
6	False	False	False	False	False	False	False	False	False	False	

```
#Droping null values
India = India.dropna()

#Displaying DataFrame
India
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
1	680	165	48.0	3.43	251.0	2	lost	v Pakistan	Kolkata	3 Jan 2013
6	682	316/9	50.0	6.32	326.0	2	lost	v England	Rajkot	11 Jan 2013
14	684	157/3	28.1	5.57	156.0	2	won	v England	Ranchi	19 Jan 2013
24	685	258/5	47.3	5.43	258.0	2	won	v England	Mohali	23 Jan 2013
91	688	236/2	39.1	6.02	234.0	2	won	v West Indies	The Oval	11 Jun 2013
...	...	...	...	...	...	...	...	...	...	...
								v New		23

```
India = odi_total[odi_total['Country'] == 'India']

listInd = []
for item in India['RPO'].tolist():
  if item == '-':
    continue
  listInd.append(float(item))

plt.ylabel('RPO')
plt.xlabel('Match Number')
plt.plot(range(0,155),listInd)
plt.title('RPO trend in Different matches')
plt.show()
```

4/28/22, 9:45 PM

4/28/22, 9:45 PM   MiniProject.ipynb - Colaboratory

RPO trend in Different matches
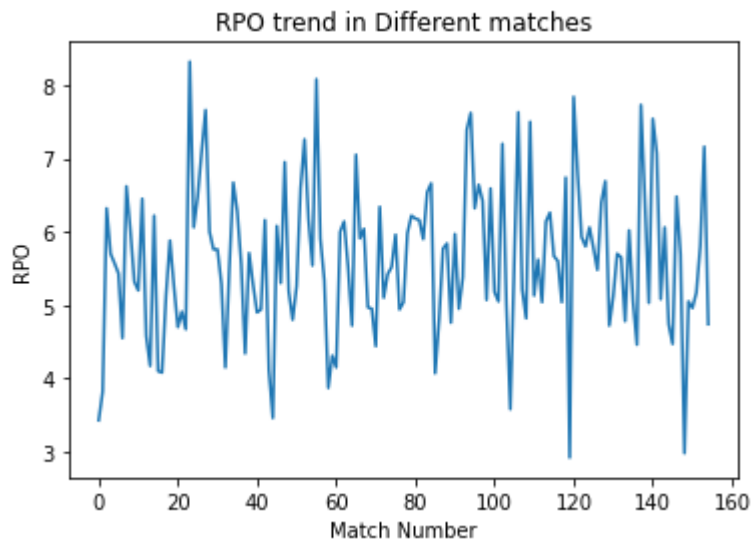

```
#displaying matches which India had won.
India_win = India[India['Result'] == 'won']
India_win
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
3	681	167	43.4	3.82	NaN	1	won	v Pakistan	Delhi	6 Jan 2013
10	683	285/6	50.0	5.70	NaN	1	won	v England	Kochi	15 Jan 2013
14	684	157/3	28.1	5.57	156.0	2	won	v England	Ranchi	19 Jan 2013
24	685	258/5	47.3	5.43	258.0	2	won	v England	Mohali	23 Jan 2013
81	687	331/7	50.0	6.62	NaN	1	won	v South Africa	Cardiff	6 Jun 2013
...	...	...	...	...	...	...	...	...	...	...
1212	827	324/4	50.0	6.48	NaN	1	won	v New Zealand	Mount Maunganui	26 Jan

```
#Displaying opposition against whom India has won.
India_win['Opposition'].value_counts()
```

```
      v Sri Lanka      15
      v West Indies    13
      v Zimbabwe       12
      v Australia      12
      v England        10
```

https://colab.research.google.com/drive/1IMm9J1AXFE4urD2zS9z3kRQqYv-sTUXO#scrollTo=cdIFKJZAOHpJ&printMode=true   8/20

```
v South Africa      10
v New Zealand        9
v Bangladesh         8
v Pakistan           6
v U.A.E.             1
v Hong Kong          1
v Afghanistan        1
v Ireland            1
Name: Opposition, dtype: int64
```

```python
#plotting bar chart of matches won by india
plt.figure(figsize=(8,5))
plt.bar(list(India_win['Opposition'].value_counts()[0:5].keys()), list(India_win['Opposition'
plt.title('Wins of INDIA')
plt.xlabel('Opponent Country')
plt.ylabel('Number of matches')
plt.show()
```
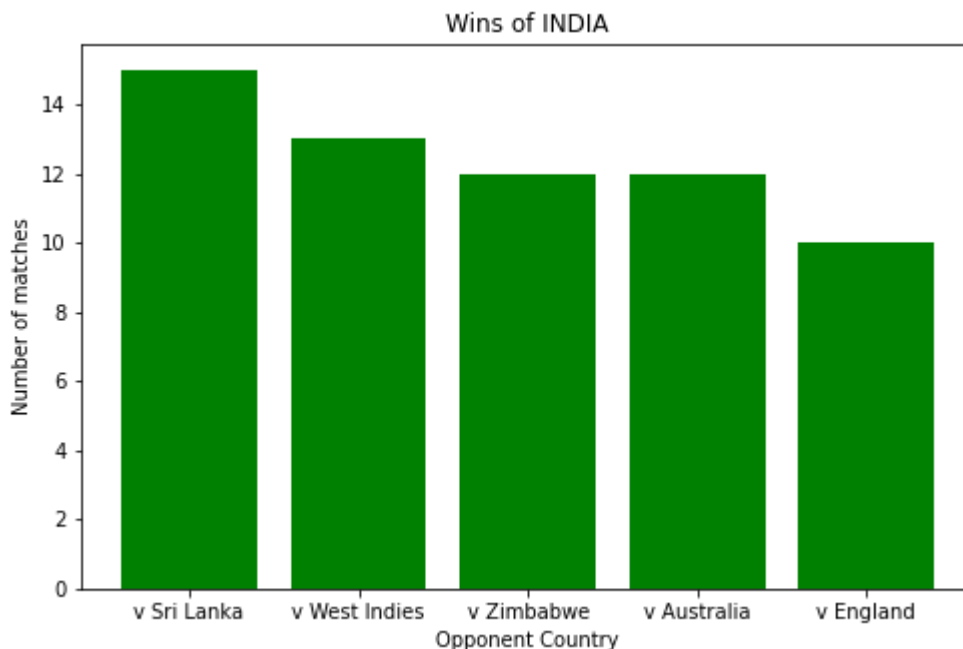


```python
#Plotting a pie chart of matches Won by India
plt.figure(figsize=(7,7))
plt.pie(list(India_win['Opposition'].value_counts()),labels=list(India_win['Opposition'].valu
plt.legend(labels=list(India_win['Opposition'].value_counts().keys()))
plt.title('Percentage of Matches INDIA Won Against different countries')
plt.show()
```

Percentage of Matches INDIA Won Against different countries
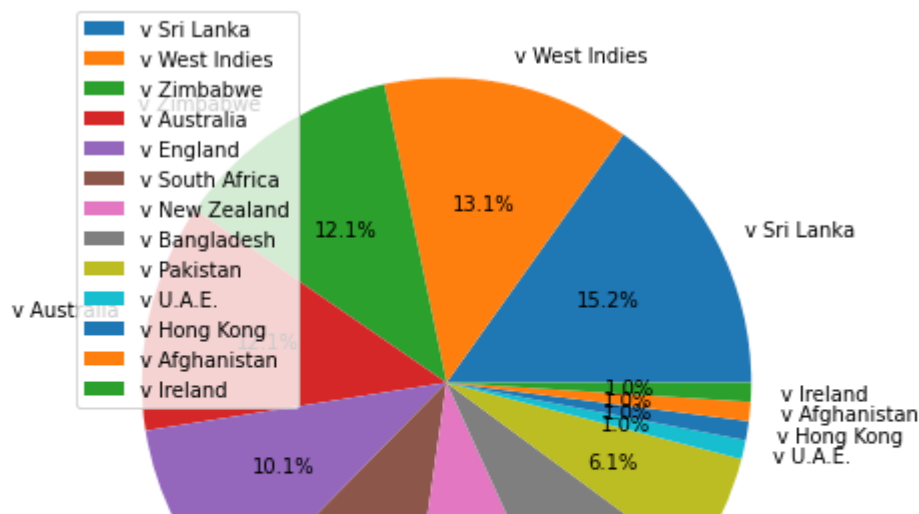

```
#displaying matches which India had lost.
India_loss = India[India['Result']=='lost']
#dropping null values
India_loss = India_loss.dropna()

#Displaying Dataframe
India_loss.head()
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
1	680	165	48.0	3.43	251.0	2	lost	v Pakistan	Kolkata	3 Jan 2013
6	682	316/9	50.0	6.32	326.0	2	lost	v England	Rajkot	11 Jan 2013
115	693	187	44.5	4.17	349.0	2	lost	v Sri Lanka	Kingston	2 Jul 2013

```
#Displaying opposition against whom India has lost.
India_loss['Opposition'].value_counts()
```

```
v Australia       7
v South Africa    5
v New Zealand     5
v England         4
v West Indies     3
v Pakistan        2
v Bangladesh      1
v Sri Lanka       1
Name: Opposition, dtype: int64
```

```
#plotting bar chart of matches lost by India.
plt.figure(figsize=(8,5))
plt.bar(list(India_loss['Opposition'].value_counts()[0:3].keys()),list(India_loss['Opposition
```

```
plt.title('Lost of INDIA')
plt.xlabel('Opponent Country')
plt.ylabel('Number of matches')
plt.show()
```
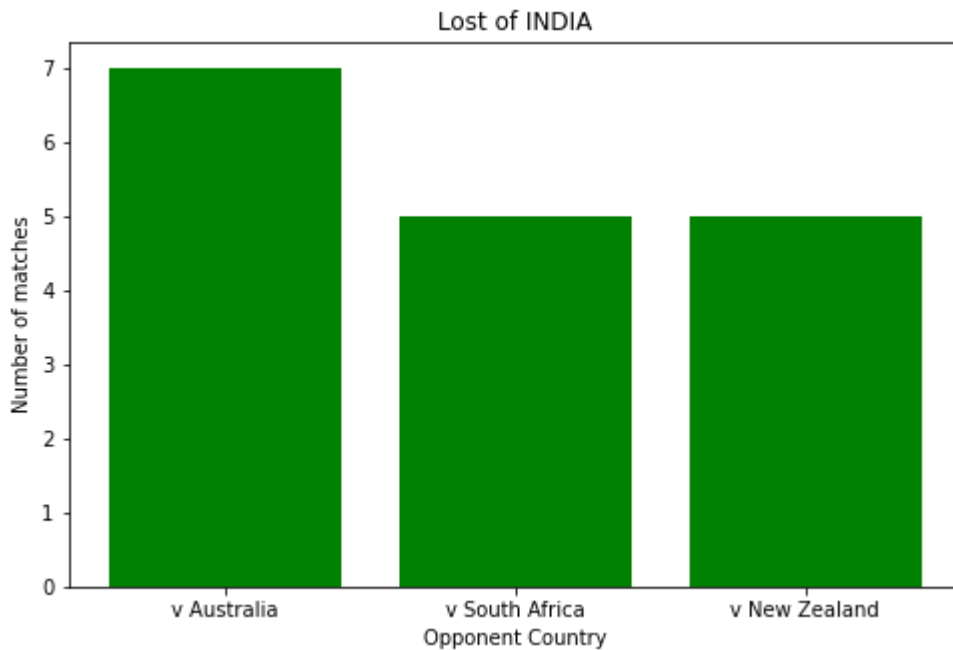


```
#Plotting a pie chart of Matches lost by India
plt.figure(figsize=(7,7))
plt.pie(list(India_loss['Opposition'].value_counts()),labels=list(India_loss['Opposition'].va
plt.legend(labels=list(India_loss['Opposition'].value_counts().keys()))
plt.title('Percentage of Matches INDIA lost Against different countries')
plt.show()
```

Percentage of Matches INDIA lost Against different countries

v Australia

▾ Data analysis of Australian Team

v Pakistan

```
#Creating Dataframe 'Australia'
Australia = odi_total[odi_total['Country'] == 'Australia']

#dropping null values
Australia = Australia.dropna()

#Displaying Dataframe
Australia.head()
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
31	1081	71/1	9.2	7.60	71.0	2	won	v West Indies	Perth	1 Feb 2013
37	1084	221/5	44.5	4.92	221.0	2	won	v West Indies	Sydney	8 Feb 2013
85	1086	221/9	50.0	4.42	270.0	2	lost	v England	Birmingham	8 Jun 2013

```
#Plotting RPO in Diffrent Matches
Australia = odi_total[odi_total['Country'] == 'Australia']

listAus = []
for item in Australia['RPO'].tolist():
  if item == '-':
    continue
  listAus.append(float(item))

plt.ylabel('RPO')
plt.xlabel('Match Number')
plt.plot(range(0,128),listAus)
plt.title('RPO trend in Different matches')
plt.show()
```

RPO trend in Different matches
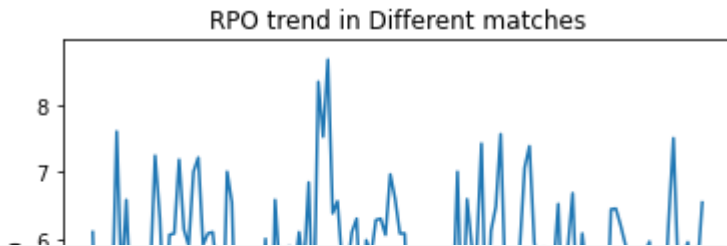

```
#Filtering matches which Australia has won
Australia_win = Australia[Australia['Result']=='won']
Australia_win
```

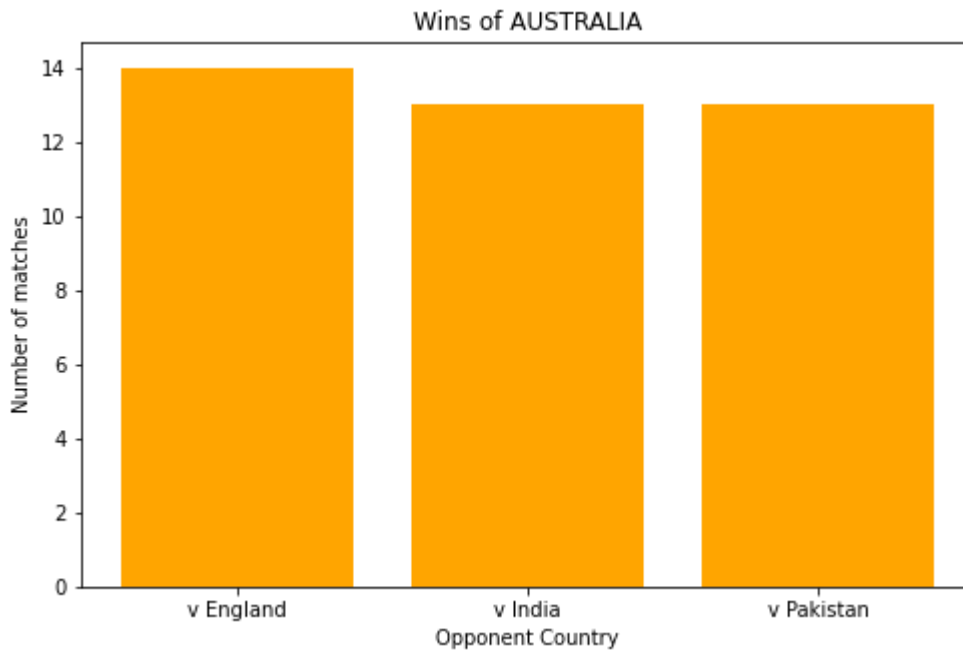|	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
5	1076	305/5	50.0	6.10	NaN	1	won	v Sri Lanka	Melbourne	11 Jan 2013
23	1080	247/5	50.0	4.94	NaN	1	won	v Sri Lanka	Hobart	23 Jan 2013
31	1081	71/1	9.2	7.60	71.0	2	won	v West Indies	Perth	1 Feb 2013
33	1082	266/7	50.0	5.32	NaN	1	won	v West Indies	Perth	3 Feb 2013
35	1083	329/7	50.0	6.58	NaN	1	won	v West Indies	Canberra	6 Feb 2013
...	...	...	...	...	...	...	...	...	...	...
1265	1202	281/2	49.0	5.73	281.0	2	won	v Pakistan	Sharjah	22 Mar 2019

```
#displaying opponent team against whom australia has won
Australia_win['Opposition'].value_counts()
```

```
v England          14
v India            13
v Pakistan         13
v West Indies       8
v South Africa      7
v Sri Lanka         7
v New Zealand       5
v Ireland           2
v Scotland          2
v Zimbabwe          1
v Afghanistan       1
Name: Opposition, dtype: int64
```

```
#plotting bar chart
```

```python
plt.figure(figsize=(8,5))
plt.bar(list(Australia_win['Opposition'].value_counts()[0:3].keys()),list(Australia_win['Oppo
plt.title('Wins of AUSTRALIA')
plt.xlabel('Opponent Country')
plt.ylabel('Number of matches')
plt.show()
```



```python
#Filtering matches which Australia has won
Australia_loss = Australia[Australia['Result']=='lost']
Australia_loss
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Star Dat
9	1077	170	46.5	3.62	NaN	1	lost	v Sri Lanka	Adelaide	1 Ja 201
13	1078	74	26.4	2.77	NaN	1	lost	v Sri Lanka	Brisbane	1 Ja 201
85	1086	221/9	50.0	4.42	270.0	2	lost	v England	Birmingham	8 Ju 201
103	1088	233	42.3	5.48	254.0	2	lost	v Sri Lanka	The Oval	1 Ju 201
159	1092	227	48.2	4.69	NaN	1	lost	v England	Cardiff	1 Se 201
167	1095	359/5	50.0	7.18	NaN	1	lost	v India	Jaipur	1 Oc 201
175	1098	350/6	50.0	7.00	NaN	1	lost	v India	Nagpur	3 Oc 201
183	1099	326	45.1	7.21	384.0	2	lost	v India	Bengaluru	2 No 201
245	1103	259	47.4	5.43	317.0	2	lost	v England	Perth	2 Ja 201

```
#displaying opponent team against whom australia has lost
Australia_loss['Opposition'].value_counts()
```

```
v England        15
v India          12
v South Africa   11
v New Zealand     5
v Sri Lanka       4
v West Indies     1
v Pakistan        1
v Zimbabwe        1
Name: Opposition, dtype: int64
```

Africa
201

▾ Data Analysis of England Team

201

```
#Creating Dataframe 'England'
England = odi_total[odi_total['Country']=='England']
```

```
England

#dropping null values
England = England.dropna()

#Displaying Dataframe
England
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
11	837	158	36.0	4.38	286.0	2	lost	v India	Kochi	15 Jan 2013
29	840	227/3	47.2	4.79	227.0	2	won	v India	Dharamsala	27 Jan 2013
43	842	270/2	47.4	5.66	270.0	2	won	v New Zealand	Napier	20 Feb 2013
46	843	186/5	37.3	4.96	186.0	2	won	v New Zealand	Auckland	23 Feb 2013
77	845	273	44.1	6.18	360.0	2	lost	v New Zealand	Southampton	2 Jur 2013
...	...	...	...	...	...	...	...	...	...	...
								v West		20

```
#Plotting RPO in Diffrent matches
listEng = []
for item in England['RPO'].tolist():
  if item == '-':
    continue
  listEng.append(float(item))
plt.ylabel('RPO')
plt.xlabel('Match Number')

plt.plot(range(0,142),listEng)
plt.show()
```
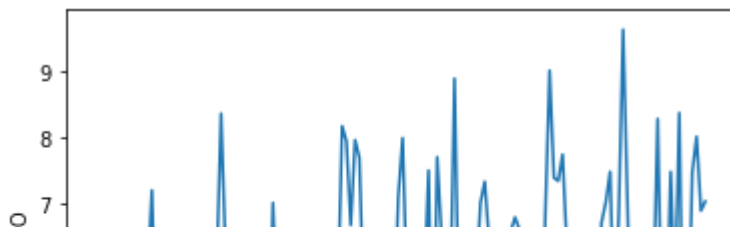
```
#dropping null values
England = England.dropna()

#Displaying Dataframe
England
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
11	837	158	36.0	4.38	286.0	2	lost	v India	Kochi	15 Jan 2013
29	840	227/3	47.2	4.79	227.0	2	won	v India	Dharamsala	27 Jan 2013
43	842	270/2	47.4	5.66	270.0	2	won	v New Zealand	Napier	20 Feb 2013
46	843	186/5	37.3	4.96	186.0	2	won	v New Zealand	Auckland	23 Feb 2013
77	845	273	44.1	6.18	360.0	2	lost	v New Zealand	Southampton	2 Jun 2013
...	...	...	...	...	...	...	...	...	...	...
								v West		20

```
#Filtering matches which England has won
England_win = England[England['Result']=='won']
England_win
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
29	840	227/3	47.2	4.79	227.0	2	won	v India	Dharamsala	27 Jan 2013
43	842	270/2	47.4	5.66	270.0	2	won	v New Zealand	Napier	20 Feb 2013
46	843	186/5	37.3	4.96	186.0	2	won	v New Zealand	Auckland	23 Feb 2013
105	850	179/3	37.3	4.77	176.0	2	won	v South Africa	The Oval	19 Jun 2013
152	852	274/4	43.0	6.37	270.0	2	won	v Ireland	Dublin (Malahide)	3 Sep 2013
158	855	231/7	49.3	4.66	228.0	2	won	v Australia	Cardiff	14 Sep 2013
276	863	163/7	44.5	3.63	160.0	2	won	v West Indies	North Sound	2 Mar 2014
298	868	73/0	12.1	6.00	68.0	2	won	v Sri Lanka	Manchester	28 May 2014
403	877	236/5	33.4	7.00	236.0	2	won	v Sri Lanka	Hambantota	3 Dec 2014
410	879	240/5	49.1	4.88	240.0	2	won	v Sri Lanka	Pallekele	10 Dec 2014
444	883	156/1	27.3	5.67	154.0	2	won	v India	Brisbane	20 Jan 2015
462	885	201/7	46.5	4.29	201.0	2	won	v India	Perth	30 Jan

```
#displaying opponent team against whom England has won
England_win['Opposition'].value_counts()
```

```
v Australia      8
v Sri Lanka      7
v West Indies    6
v Pakistan       6
v New Zealand    6
v India          4
v Ireland        3
```

```
v Bangladesh       2
v South Africa     2
v Afghanistan      1
Name: Opposition, dtype: int64
```

```
#Filtering matches which England has lost
England_loss = England[England['Result']=='lost']
England_loss
```

	Unnamed: 0	Score	Overs	RPO	Target	Inns	Result	Opposition	Ground	Start Date
11	837	158	36.0	4.38	286.0	2	lost	v India	Kochi	15 Jan 2013
77	845	273	44.1	6.18	360.0	2	lost	v New Zealand	Southampton	2 Jun 2013
109	851	124/8	20.0	6.20	130.0	2	lost	v India	Birmingham	23 Jun 2013
154	853	227	44.2	5.12	316.0	2	lost	v Australia	Manchester	8 Sep 2013
160	856	249	48.0	5.18	299.0	2	lost	v Australia	Southampton	16 Sep 2013
248	861	212	49.4	4.26	218.0	2	lost	v Australia	Adelaide	26 Jan 2014
270	862	254/6	50.0	5.08	270.0	2	lost	v West Indies	North Sound	28 Feb 2014
296	867	99	26.1	3.78	257.0	2	lost	v Sri Lanka	Chester-le-Street	25 May 2014
300	869	293/8	50.0	5.86	301.0	2	lost	v Sri Lanka	Lord's	31 May 2014
336	871	161	38.1	4.21	295.0	2	lost	v India	Cardiff	27 Aug 2014
394	875	292	47.1	6.19	318.0	2	lost	v Sri Lanka	Colombo (RPS)	26 Nov 2014
414	880	202	41.3	4.86	293.0	2	lost	v Sri Lanka	Pallekele	13 Dec 2014

```
#displaying opponent team against whom England has lost
England_loss['Opposition'].value_counts()
```

```
v Australia       7
v Sri Lanka       6
v India           4
v West Indies     2
v Bangladesh      2
v New Zealand     2
v Scotland        1
Name: Opposition, dtype: int64
```