Thomas Koutsidis

Assignment 4

In [1]:

```
import pandas as pd
```

In [2]:

```
csv_df = pd.read_csv("employees.csv")
```

1.

In [3]:

```
categories = pd.Categorical(csv_df['Team'])
teams = categories.value_counts()
print(teams)
```

```
Business Development    101
Client Services         106
Distribution             90
Engineering              92
Finance                 102
Human Resources          91
Legal                    88
Marketing                98
Product                  95
Sales                    94
dtype: int64
```

2.

In [4]:

```
teams_salaries = csv_df.groupby('Team')['Salary'].transform('mean')
csv_df['Salary'] = teams_salaries.round(2)
```

In [5]:

```
csv_df
```

Out[5]:

	First Name	Gender	Start Date	Last Login Time	Salary	Bonus %	Senior Management	Team
0	Douglas	Male	8/6/1993	12:42 PM	90435.59	6.945	True	Marketing
1	Thomas	Male	3/31/1996	6:53 AM	NaN	4.170	True	NaN
2	Maria	Female	4/23/1993	11:17 AM	92219.48	11.858	False	Finance
3	Jerry	Male	3/4/2005	1:00 PM	92219.48	9.340	True	Finance
4	Larry	Male	1/24/1998	4:47 PM	88224.42	1.389	True	Client Services
...	...	...	...	...	...	...	...	...
995	Henry	NaN	11/23/2014	6:09 AM	88500.47	16.655	False	Distribution
996	Phillip	Male	1/31/1984	6:30 AM	92219.48	19.675	False	Finance
997	Russell	Male	5/20/2013	12:39 PM	88665.51	1.421	False	Product
998	Larry	Male	4/20/2013	4:45 PM	91866.32	11.985	False	Business Development
999	Albert	Male	5/15/2012	6:24 PM	92173.44	10.169	True	Sales

1000 rows × 8 columns

3.

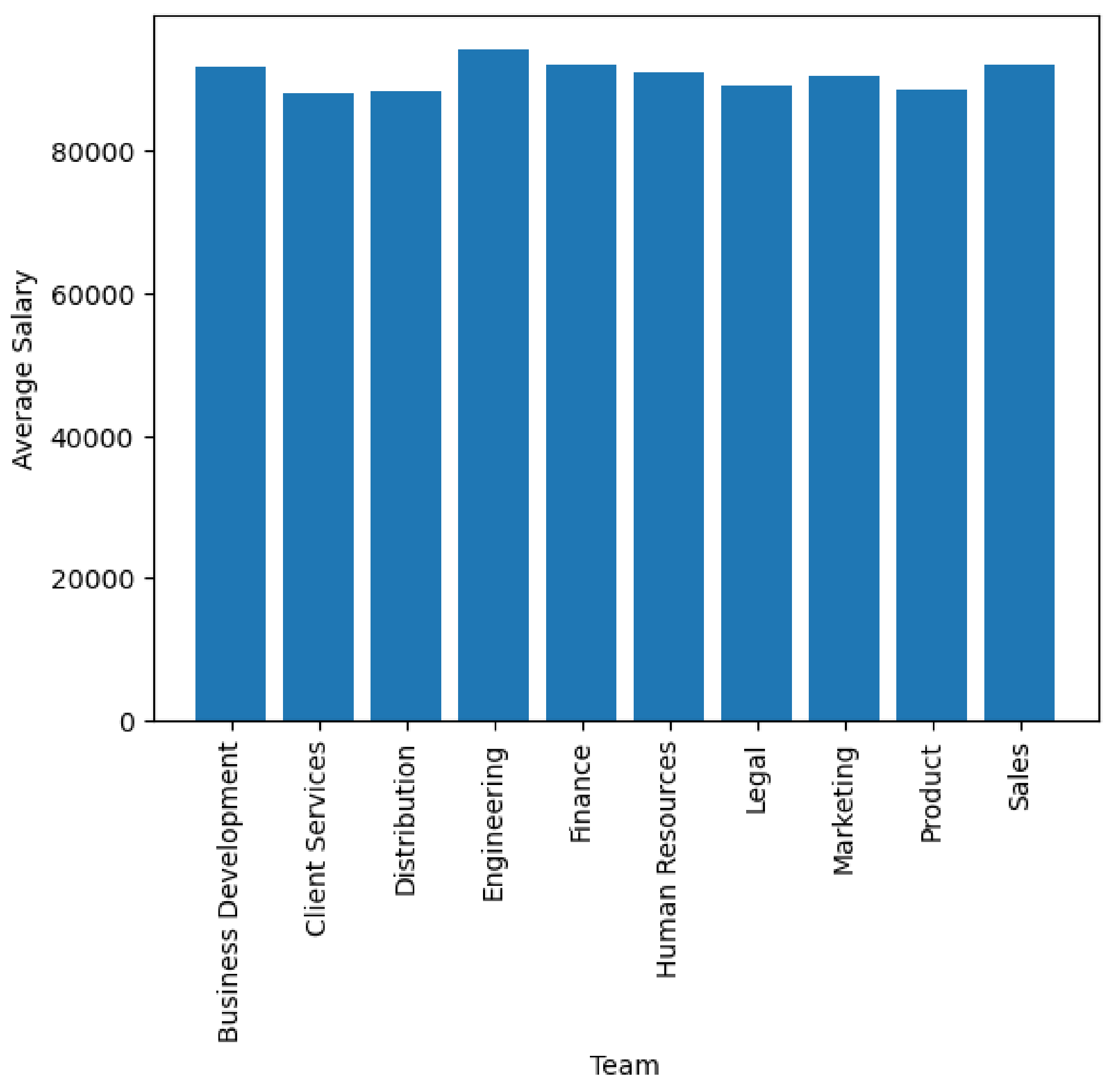
In [6]:

```
import matplotlib.pyplot as plt

avg_sal = csv_df.groupby('Team')['Salary'].mean()

plt.bar(avg_sal.index, avg_sal)
plt.xticks(rotation = 90)
plt.xlabel('Team')
plt.ylabel('Average Salary')
plt.show()

# Resources used:
# https://stackabuse.com/rotate-axis-labels-in-matplotlib/
```



4.

In [7]:

```
csv_df['Start Date'] = pd.to_datetime(csv_df['Start Date'])

# Resources used:
# https://pandas.pydata.org/docs/reference/api/pandas.to_datetime.html
```

In [8]:

```
csv_df['Start Date']
```

Out[8]:

```
0      1993-08-06
1      1996-03-31
2      1993-04-23
3      2005-03-04
4      1998-01-24
          ...
995    2014-11-23
996    1984-01-31
997    2013-05-20
998    2013-04-20
999    2012-05-15
Name: Start Date, Length: 1000, dtype: datetime64[ns]
```

5.

In [9]:

```
csv_df.set_index('Start Date', inplace = True)

bonuses = pd.Series(csv_df['Bonus %'])
```

In [10]:

```
bonuses
```

Out[10]:

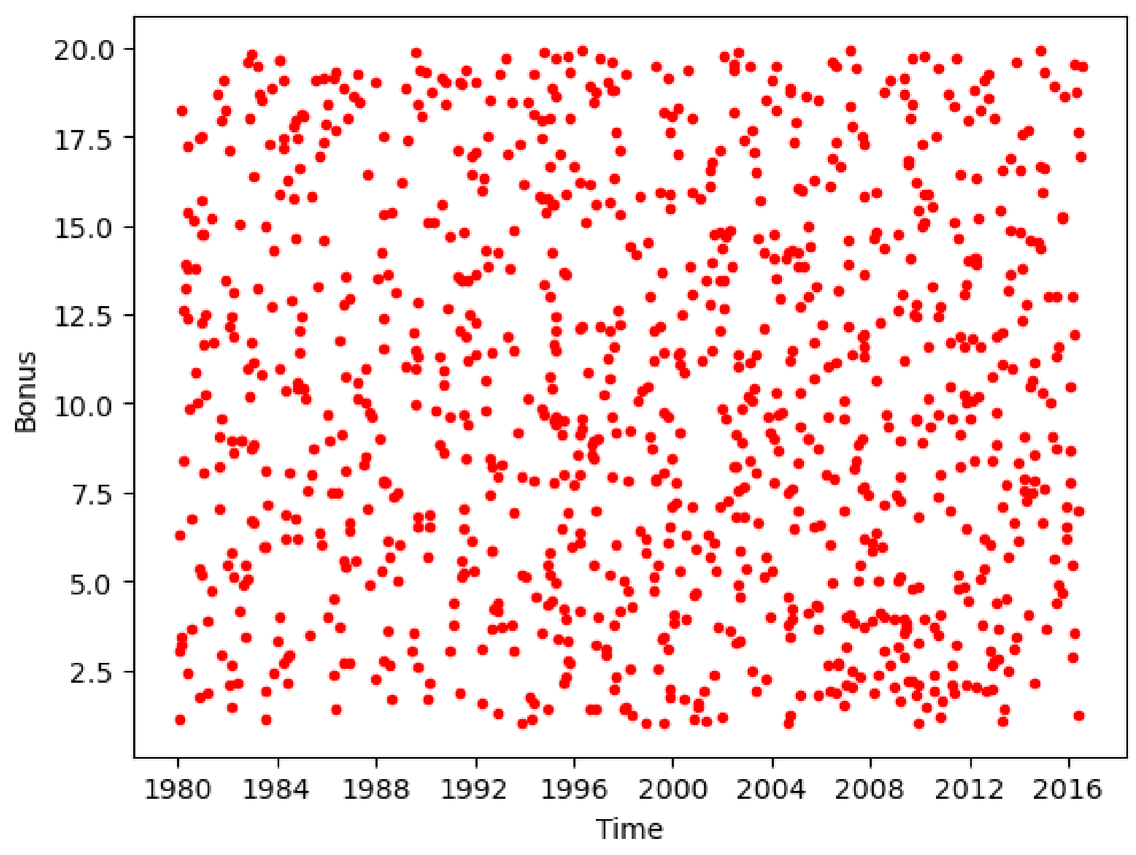
```
Start Date
1993-08-06     6.945
1996-03-31     4.170
1993-04-23    11.858
2005-03-04     9.340
1998-01-24     1.389
               ...
2014-11-23    16.655
1984-01-31    19.675
2013-05-20     1.421
2013-04-20    11.985
2012-05-15    10.169
Name: Bonus %, Length: 1000, dtype: float64
```

6.

In [11]:

```
plt.scatter(bonuses.index, bonuses, color = 'red', marker = '.')
plt.xlabel('Time')
plt.ylabel('Bonus')
plt.show()

# Resources used:
# https://e2eml.school/matplotlib_points.html
# https://matplotlib.org/stable/api/markers_api.html
```



7.

In [12]:

```
bonuses_08 = bonuses[bonuses.index < '2008-01-01']
```

In [13]:

```
bonuses_08
```

Out[13]:

```
Start Date
1993-08-06     6.945
1996-03-31     4.170
1993-04-23    11.858
2005-03-04     9.340
1998-01-24     1.389
               ...
1991-02-10     3.794
1987-07-24    10.982
2002-08-25    11.051
1997-05-15    19.040
1984-01-31    19.675
Name: Bonus %, Length: 753, dtype: float64
```

8.

In [14]:

```
downsample = bonuses.resample('3M').mean()
```

In [15]:

```
downsample
```

Out[15]:

```
Start Date
1980-01-31     3.507000
1980-04-30    10.426857
1980-07-31    10.192750
1980-10-31    12.474500
1981-01-31    11.314000
                ...
2015-07-31    10.327500
2015-10-31    10.002500
2016-01-31     9.347143
2016-04-30     9.394667
2016-07-31    13.511167
Freq: 3M, Name: Bonus %, Length: 147, dtype: float64
```