Exp No 1.a) Analyze the trend of data Science Job Postings Over the Last decade.

Description: Use web Scrapping (e.g., Beautiful Soup) or API's (e.g., Linked API) to gather data on the number of data science Job Postings each year.Use Pandas for Data Manipulation and Matplotlib/Seaborn for Visualization.

```python
import pandas as pd
import matplotlib.pyplot as plt
data={'Year':list(range(2010,2021)),'Job Postings':[150,300,450,600,800,1200,1600,2100
df=pd.DataFrame(data)
plt.plot(df['Year'],df['Job Postings'],marker='o')
plt.title("Trend of Data Science Job Postings")
plt.xlabel('Year')
plt.ylabel('Number of Job Postings')
plt.show()
```


Trend of Data Science Job Postings
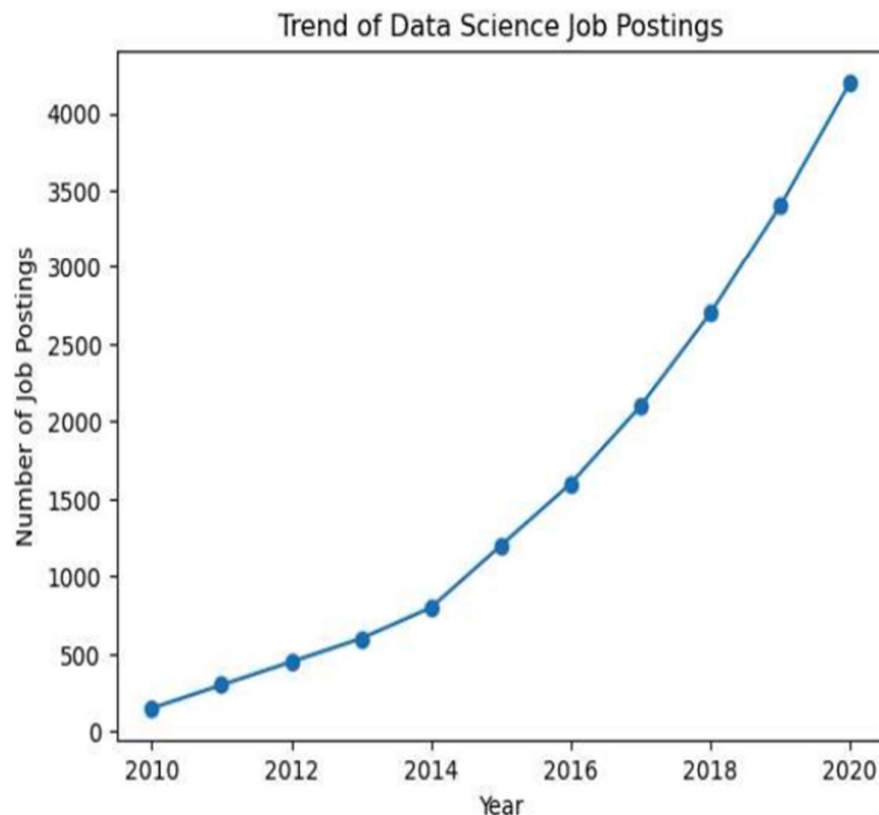
Exp No 1.b) Analyze and Visualize the distribution of various Data science roles(Data Analyst,Data Engineer,Data Scientist,etc..) from a dataset.
Description: Use a Dataset of Job Postings and Categorize them into different roles.Visualize the distribution using pie chart or Bar Plots.
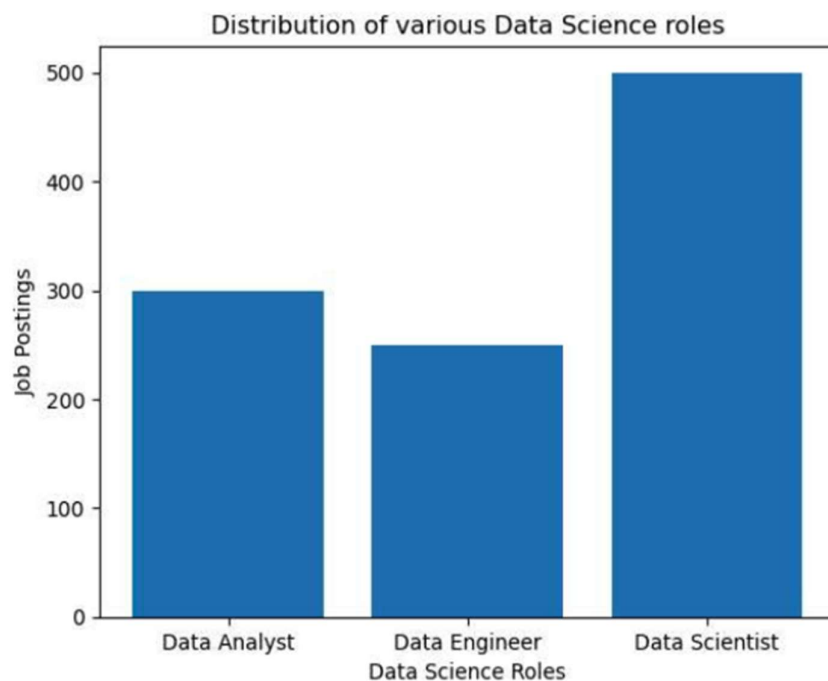**BAR PLOT:**

```
In [17]: import pandas as pd
         import matplotlib.pyplot as plt
         Roles=['Data Analyst','Data Engineer','Data Scientist']
         Postings=[300,250,500]
         plt.bar(Roles,Postings)
         plt.title("Distribution of various Data Science roles")
         plt.xlabel('Data Science Roles')
         plt.ylabel('Job Postings')
         plt.show()
```
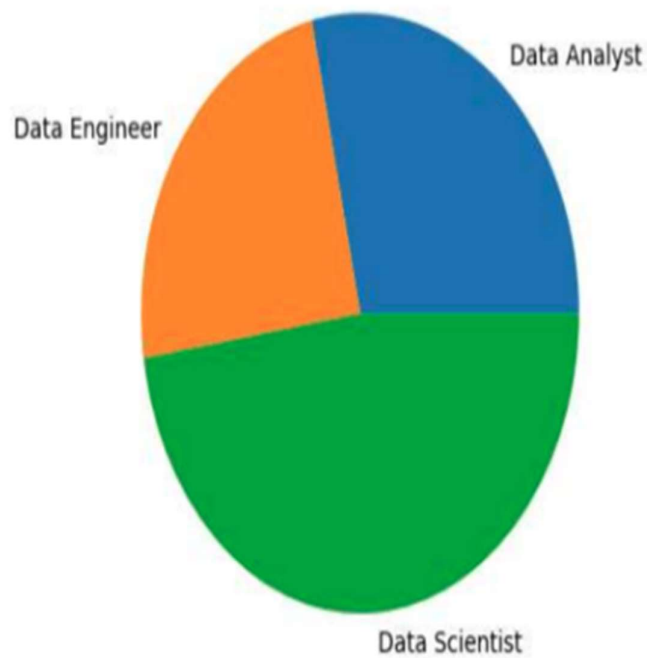
PIE CHART:

In [22]:

```python
import matplotlib.pyplot as plt
Roles=['Data Analyst','Data Engineer','Data Scientist']
Postings=[300,250,500]
plt.pie(Postings,labels=Roles)
plt.title("Distribution of various Data Science roles")
plt.show()
```


Distribution of various Data Science roles

Exp No1.c)Conduct an experiment to different Structured,Unstructured and Semi Structured Based on data sets given.

Description:Create Small Datasets for each type and explain its characteristics

```
In [1]: import pandas as pd
        data={
            'ID':[1,2,3],
            'Name':['Kumaran','Lokesh','Prasath'],
            'Age':[18,19,20]
        }
        df=pd.DataFrame(data)
        print("Structured Data:")
        print("College Details\n",df)

        Us={"Kumaran 18 230701159 chennai","Lokesh 19 230701166 chennai","Kathir 15 230761159 chennai"}
        ft = pd.DataFrame(Us)
        print("Unstructured Data:")
        print(ft)

        emp={
        "employees      ":[
            {"firstName":"John", "lastName":"Doe"},
            {"firstName":"Anna", "lastName":"Smith"},
            {"firstName":"Peter", "lastName":"Jones"}
        ]
        }
        Ssd=pd.DataFrame(emp)
        print("Semi Structured Data:")
        print(Ssd)
```

```
Structured Data:
College Details
    ID     Name  Age
0   1  Kumaran   18
1   2   Lokesh   19
2   3  Prasath   20
Unstructured Data:
                             0
0  Kumaran 18 230701159 chennai
1   Kathir 15 230761159 chennai
2   Lokesh 19 230701166 chennai
Semi Structured Data:
                            employees
0    {'firstName': 'John', 'lastName': 'Doe'}
1   {'firstName': 'Anna', 'lastName': 'Smith'}
2  {'firstName': 'Peter', 'lastName': 'Jones'}
```

Exp No1.d) Conduct an Experiment to encrypt and decrypt given sensitive data.

Description: Use the Cryptography Library to Encrypt and Decrypt a piece of data.

```python
In [4]:   from cryptography.fernet import Fernet
          key=Fernet.generate_key()
          f=Fernet(key)
          token=f.encrypt(b"Kumaran S")
          token
          b'...'
          f.decrypt(token)
          b'Kumaran S'
          key=Fernet.generate_key()
          cipher_suite=Fernet(key)
          plain_text=b'Kumaran S'
          cipher_text=cipher_suite.encrypt(plain_text)
          decrypted_text=cipher_suite.decrypt(cipher_text)
          print("Original Data:",plain_text)
          print("Encrypted Data:",cipher_text)
          print("Decrypted Data:",decrypted_text)
```

```
Original Data: b'Kumaran S'
Encrypted Data: b'gAAAAABmwrf3ssQCqZxJN1rLf9jXVZXBmVsvIJCyKvHSUcY-Si86_dm0wjXfflCb00z0bj_1vcmabXeIK7zmZO3qzVEq8yhyVg=='
Decrypted Data: b'Kumaran S'
```