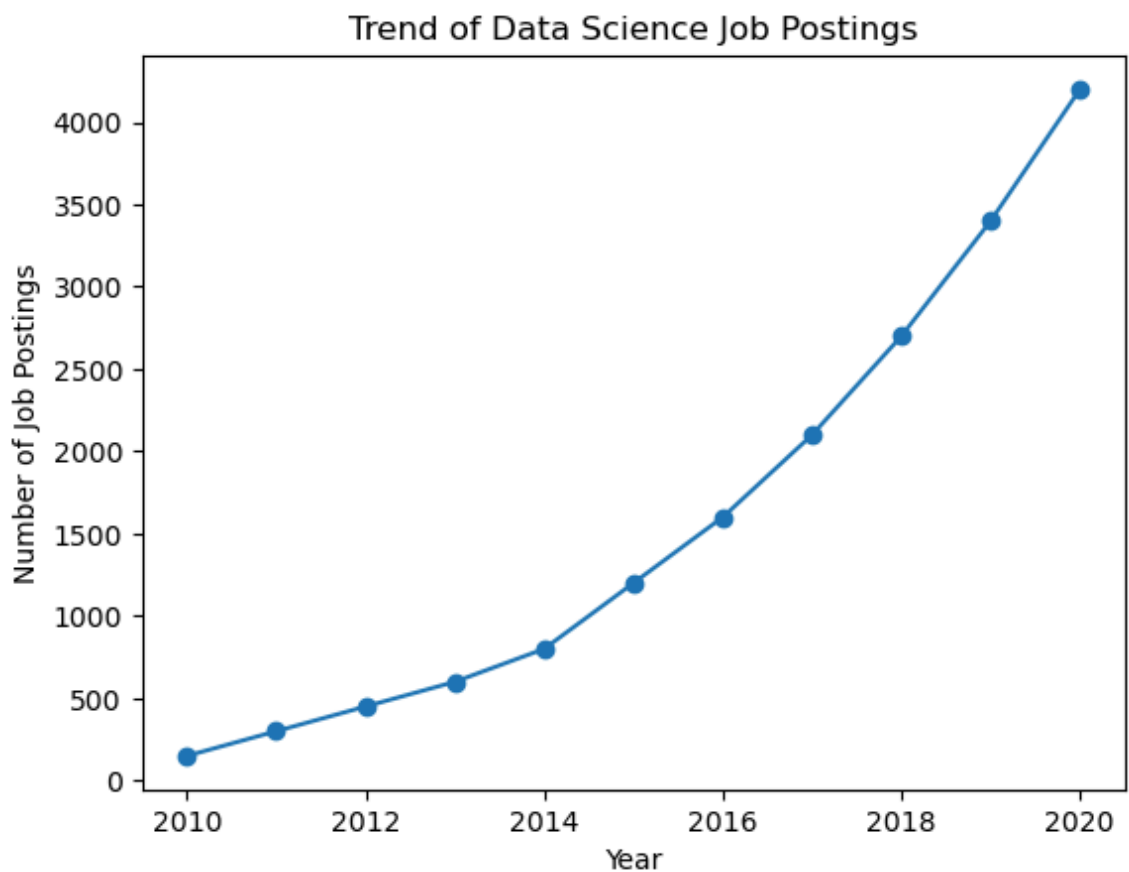


```
In [1]: #1(a)Analyze the trend of data science job postings over the last decade.

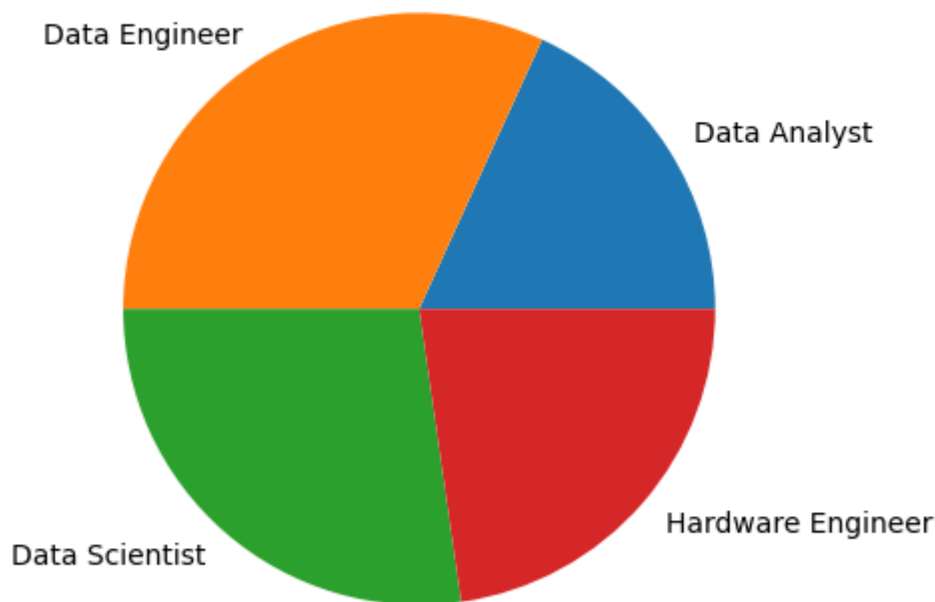
import pandas as pd
import matplotlib.pyplot as plt
data={'Year':list(range(2010,2021)), 'Job Postings':[150,300,450,600,800,1200,1600,2100,2700,3400,4200]}
df=pd.DataFrame(data)
plt.plot(df['Year'],df['Job Postings'],marker='o')
plt.title('Trend of Data Science Job Postings')
plt.xlabel('Year')
plt.ylabel('Number of Job Postings')
plt.show()
```



In [2]: *#1.(b)Analyze and visualize the distribution of various data science roles j*

```
import matplotlib.pyplot as plt
roles=['Data Analyst','Data Engineer','Data Scientist','Hardware Engineer']
vacancy=[200,350,300,250]
plt.title('Distribution of Data Science Roles')
plt.pie(vacancy,labels=roles,radius=1)
plt.show()
```

Distribution of Data Science Roles



In [3]: *#1.(c) Conduct an experiment to differentiate Structured based on data sets*

```
import pandas as pd
data = {
    'Name': ['Aasha', 'Bibi', 'Chachu', 'Didi', 'Fafa'],
    'Age': [25, 30, 35, 24, 13],
    'City': ['New York', 'Los Angeles', 'Chicago', 'Chennai', 'Bangalore']
}

df = pd.DataFrame(data)
print("Personal Details")
print(df)
```

Personal Details

	Name	Age	City
0	Aasha	25	New York
1	Bibi	30	Los Angeles
2	Chachu	35	Chicago
3	Didi	24	Chennai
4	Fafa	13	Bangalore

In [4]: #1.(c) Conduct an experiment to differentiate Semi-Structured based on data

```
import pandas as pd
data=[{'Name': 'Guru',
      'Roll no': '1001',
      'Email': 'guru97@gmailcom'},
      {'Name': 'Sasi',
      'Roll no': '1002',
      'Email': 'sasii78@gmailcom'},
      {'Name': 'Jaanu',
      'Roll no': '1003',
      'Email': 'jan09@gmailcom'}
]
df=pd.DataFrame(data)
print(df)
```

	Name	Roll no	Email
0	Guru	1001	guru97@gmailcom
1	Sasi	1002	sasii78@gmailcom
2	Jaanu	1003	jan09@gmailcom

In [5]: #1.(c) Conduct an experiment to differentiate UnStructured based on data set

```
import pandas as pd
data={"Manish 18 Chennai", "Madhu 19 Viluppuram" , "Janani 23 Bangalore"
}
df=pd.DataFrame(data)
print(df)
```

0	Janani 23 Bangalore
1	Manish 18 Chennai
2	Madhu 19 Viluppuram

In [6]: #1.(d)Conduct an experiment to encrypt and decrypt given sensitive data.

```
from cryptography.fernet import Fernet
key=Fernet.generate_key()
f=Fernet(key)
token=f.encrypt(b"Early morning birds")
token
'...'
f.decrypt(token)
b'Early morning birds'
key=Fernet.generate_key()
cipher_suite=Fernet(key)
plain_text=b"Early morning birds"
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'Early morning birds'  
 Encrypted Data: b'gAAAAABmwsRtu5C6UQkyhcbVmU4ea6puZ9xG-rED53I00M4rIeROWBF7  
 M5Xbh3qoTVUuYJFM18aGi8tMAMl02Y0pa51VqyP8E6FG-bVeQhccyywCie5XxEKI='  
 Decrypted Data: b'Early morning birds'