Exp No:1.a Analyze the trend of data science job postings over the last Decade.

Code:

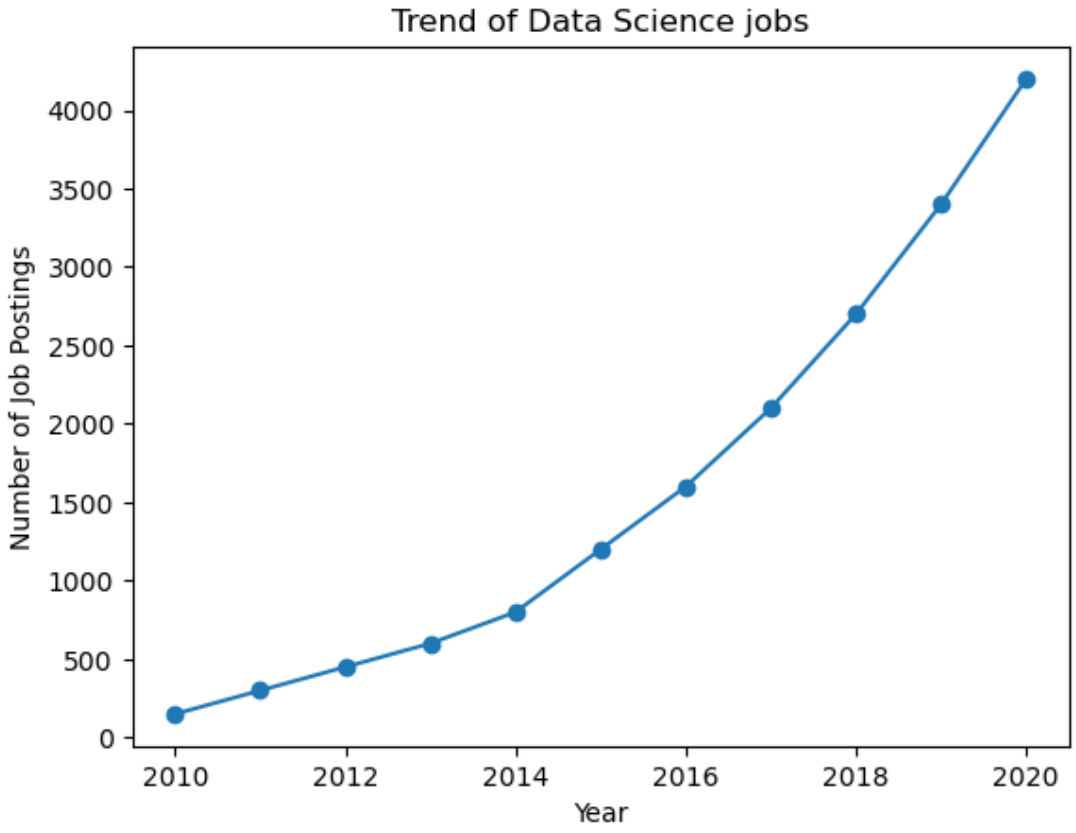
```
import pandas as pd

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 jobs')

plt.xlabel('Year')

plt.ylabel('Number of Job Postings')

plt.show()
```

Sample Data Input:

Year =2010, 2021

Job Postings=150, 300, 450, 600, 800, 1200, 1600, 2100, 2700, 3400, 4200

Sample Output:



Exp No:1.b Analyze and visualize the distribution of various data science roles (Data Analyst, Data Engineer, Data Scientist, etc.) from a dataset.

Code:

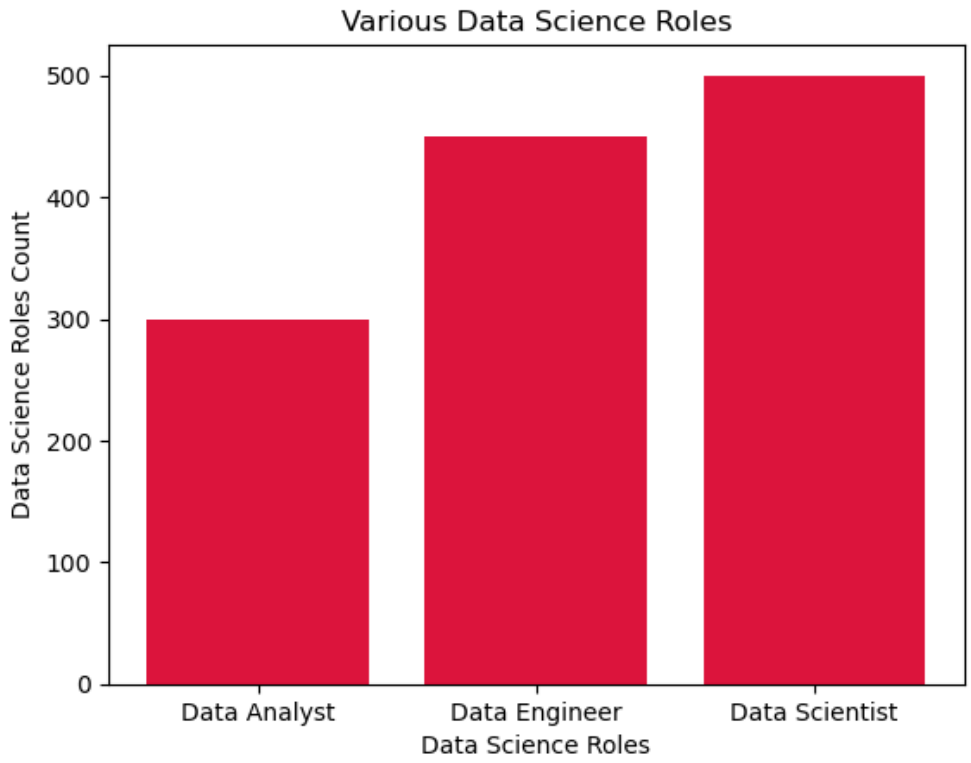
```
import matplotlib.pyplot as plt
role=['Data Analyst','Data Engineer','Data Scientist']
count=[300,450,500]
plt.title('Various Data Science Roles')
plt.bar(role,count,color='crimson')
plt.xlabel('Data Science Roles')
plt.ylabel('Data Science Roles Count')
plt.show()
```

Sample Data Input:

roles = Data Analyst, Data Engineer, Data Scientist, ML Engineer, Business Analyst.

counts = 300, 500, 450, 200, 150.

Sample Output:



Exp No:1.c Conduct an experiment to differentiate Structured , Un-structured and Semi structured data based on data sets given.

Code:

```
#structured data example
import pandas as pd
structured_data=pd.DataFrame({
   'ID':[1,2,3],
   'Name':['Alice','Bob','Charlie'],
   'Age':[25,30,35]
})
print("Structured Data:\n",structured_data)
```

```
#unstructured data example

unstructured_data="Example of unstructured data can be in the form of text,audio,vidoes\n"

print("Unstructured Data: ",unstructured_data)

#semi structured data example

semistructured_data={'ID':1,'Name':'Alice','Age':25,'Attributes':{'Height':'180cm','Weight':'78kg'}}

print("Semi Structured data: ",semistructured_data)
```

Output:

```
Structured Data:
    ID     Name  Age
0   1    Alice   25
1   2      Bob   30
2   3  Charlie   35
Unstructured Data:  Example of unstructured data can be in the form of tex
t,audio,vidoes

Semi Structured data:  {'ID': 1, 'Name': 'Alice', 'Age': 25, 'Attributes':
{'Height': '180cm', 'Weight': '78kg'}}
```

Exp No:1.d Conduct an experiment to encrypt and decrypt given sensitive data.

Code:

```
from cryptography.fernet import Fernet

key=Fernet.generate_key()

f=Fernet(key)

fkey=f.encrypt(b'Kaif Rehman - CSE')

fkey

b'...'

f.decrypt(fkey)

b'Kaif Rehman - CSE'

key=Fernet.generate_key()

cipher=Fernet(key)

plain_txt=b'Kaif Rehman - CSE'

cipher_txt=cipher.encrypt(plain_txt)
```

```
decrypt_txt=cipher.decrypt(cipher_txt)

print("Original data:",plain_txt)

print("Encrypted data:",cipher_txt)

print("Decrypted data:",decrypt_txt)
```

OUTPUT:

```
Original data: b'Kaif Rehman - CSE'
Encrypted data: b'gAAAAABmwrJmvg5KBa0eps9jZGw14SAe1XG6UB-RYDJyGjZ6S8hlCCKV
NPMsFTXO7rPaZ1PPjAiVulwxWy4OwlJQBano55qwyNcauPtTDCl4Cj6vr2f_eeo='
Decrypted data: b'Kaif Rehman - CSE'
```