

## Slip 19 - Q.2) Python Program

```
import pandas as pd
import numpy as np

data = pd.DataFrame({
    'Name': ['Amit', 'Sneha', 'Rohit', 'Priya', 'Karan', 'Neha', 'Raj', 'Simran', 'Tin'],
    'Age': [21, 22, 23, 24, 25, 23, 24, 22, 21, 26],
    'Percentage': [78, 82, 69, 90, 75, 85, 79, 88, 80, 77]
})
print(data.info())
print(data.describe())

data.loc[10:14] = [np.nan, np.nan, np.nan]
data['Remarks'] = ''
print(data)
```

## Slip 20 - Q.2) Python Program

```
import numpy as np
import matplotlib.pyplot as plt

data = np.random.randint(1, 100, 50)

plt.figure(figsize=(10,6))
plt.subplot(2,2,1)
plt.plot(data, color='blue')
plt.title('Line Chart')
plt.subplot(2,2,2)
plt.scatter(range(50), data, color='red')
plt.title('Scatter Plot')
plt.subplot(2,2,3)
plt.hist(data, bins=10, color='green')
plt.title('Histogram')
plt.subplot(2,2,4)
plt.boxplot(data)
plt.title('Box Plot')
plt.tight_layout()
plt.show()

data = np.append(data, [150, -20])
plt.boxplot(data)
plt.title("Box Plot with Outliers")
plt.show()
```

## Slip 21 - Q.2) Python Program

```
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv('iris.csv')
plt.bar(df['species'].value_counts().index, df['species'].value_counts().values, color='blue')
plt.title("Frequency of Iris Species")
plt.show()

for species in df['species'].unique():
```

```
plt.hist(df[df['species']==species]['sepal_length'], alpha=0.5, label=species)
plt.legend()
plt.title("Histogram of Sepal Length by Species")
plt.show()
```

## Slip 22 - Q.2) Python Program

```
import pandas as pd
from sklearn.preprocessing import MinMaxScaler, StandardScaler, Normalizer

df = pd.read_csv('winequality-red.csv')

scaler = MinMaxScaler()
scaled = scaler.fit_transform(df)
print("Rescaled Data:", scaled[:5])

standard = StandardScaler()
standardized = standard.fit_transform(df)
print("Standardized Data:", standardized[:5])

normalizer = Normalizer()
normalized = normalizer.fit_transform(df)
print("Normalized Data:", normalized[:5])
```

## Slip 23 - Q.2) Python Program

```
import pandas as pd
from sklearn.preprocessing import MinMaxScaler, StandardScaler, Binarizer

df = pd.read_csv('winequality-red.csv')

scaler = MinMaxScaler()
print(scaler.fit_transform(df)[:5])

standard = StandardScaler()
print(standard.fit_transform(df)[:5])

binarizer = Binarizer(threshold=0.5)
print(binarizer.fit_transform(df)[:5])
```

## Slip 24 - Q.2) Python Program

```
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv('iris.csv')
plt.bar(df['species'].value_counts().index, df['species'].value_counts().values, color='red')
plt.title("Iris Species Frequency")
plt.show()

for species in df['species'].unique():
    plt.hist(df[df['species']==species]['sepal_length'], alpha=0.5, label=species)
plt.legend()
plt.title("Histogram by Species")
plt.show()
```

## Slip 25 - Q.2) Python Program

```
import numpy as np
import matplotlib.pyplot as plt

data = np.random.randint(1,100,50)

plt.figure(figsize=(10,6))
plt.subplot(2,2,1)
plt.plot(data, color='blue')
plt.title('Line Chart')
plt.subplot(2,2,2)
plt.scatter(range(50), data, color='red')
plt.title('Scatter Plot')
plt.subplot(2,2,3)
plt.hist(data, bins=10, color='green')
plt.title('Histogram')
plt.subplot(2,2,4)
plt.boxplot(data)
plt.title('Box Plot')
plt.tight_layout()
plt.show()

subjects = ['Math','CS','AI','DS','Python']
marks = [78,85,90,88,80]
plt.pie(marks, labels=subjects, autopct='%1.1f%%')
plt.title("Subject Marks Pie Chart")
plt.show()
```

## Slip 26 - Q.2) Python Program

```
import numpy as np
import matplotlib.pyplot as plt

data = np.random.randint(1,100,50)

plt.figure(figsize=(10,6))
plt.subplot(2,2,1)
plt.plot(data, color='blue')
plt.title('Line Chart')
plt.subplot(2,2,2)
plt.scatter(range(50), data, color='red')
plt.title('Scatter Plot')
plt.subplot(2,2,3)
plt.hist(data, bins=10, color='green')
plt.title('Histogram')
plt.subplot(2,2,4)
plt.boxplot(data)
plt.title('Box Plot')
plt.tight_layout()
plt.show()

subjects = ['Math','CS','AI','DS','Python']
marks = [78,85,90,88,80]
plt.bar(subjects, marks, color='purple')
```

```
plt.title("Marks Bar Chart")
plt.show()
```

## Slip 27 - Q.2) Python Program

```
import pandas as pd
from sklearn.preprocessing import OneHotEncoder, LabelEncoder

df = pd.read_csv('data.csv')

onehot = OneHotEncoder()
encoded = onehot.fit_transform(df[['Country']]).toarray()
print(encoded)

label = LabelEncoder()
df['Purchased_Label'] = label.fit_transform(df['Purchased'])
print(df.head())
```

## Slip 28 - Q.2) Python Program

```
import pandas as pd
import numpy as np

data = pd.DataFrame({
    'Name': ['Amit', 'Sneha', 'Rohit', 'Priya', 'Karan', 'Neha', 'Raj', 'Simran', 'Tina'],
    'Age': [21, 22, 23, 24, 25, 23, 24, 22, 21, 26],
    'Percentage': [78, 82, 69, 90, 75, 85, 79, 88, 80, 77]
})

print(data.info())
print(data.describe())

data.loc[10:14] = [np.nan, np.nan, np.nan]
data['Remarks'] = ''
print(data)
```

## Slip 29 - Q.2) Python Program

```
import pandas as pd
from sklearn.preprocessing import OneHotEncoder, LabelEncoder

df = pd.read_csv('data.csv')

onehot = OneHotEncoder()
encoded = onehot.fit_transform(df[['Country']]).toarray()
print(encoded)

label = LabelEncoder()
df['Purchased_Label'] = label.fit_transform(df['Purchased'])
print(df.head())
```

## Slip 30 - Q.2) Python Program

```
import numpy as np
import matplotlib.pyplot as plt
```

```
data = np.random.randint(1,100,50)
plt.figure(figsize=(10,6))
plt.subplot(2,2,1)
plt.plot(data, color='blue')
plt.title('Line Chart')
plt.subplot(2,2,2)
plt.scatter(range(50), data, color='red')
plt.title('Scatter Plot')
plt.subplot(2,2,3)
plt.hist(data, bins=10, color='green')
plt.title('Histogram')
plt.subplot(2,2,4)
plt.boxplot(data)
plt.title('Box Plot')
plt.tight_layout()
plt.show()

subjects = ['Math', 'CS', 'AI', 'DS', 'Python']
marks = [78,85,90,88,80]
plt.bar(subjects, marks, color='orange')
plt.title("Marks Bar Chart")
plt.show()
```