**1. Numpy:**

Using NumPy create random vector of size 15 having only Integers in the range 1-20.  
  
Code:  
Graphical user interface, text

Description automatically generated

1. Reshape the array to 3 by 5  
Text

Description automatically generated

2. Print array shape.  
Graphical user interface, text, application

Description automatically generated

3. Replace the max in each row by 0  
Graphical user interface, text

Description automatically generated

**2. Pandas:**

1. Read the provided CSV file ‘data.csv’.

Table

Description automatically generated

2. Show the basic statistical description about the data.  
Table

Description automatically generated

3. Check if the data has null values.  
Table

Description automatically generated

a. Replace the null values with the mean  
Table

Description automatically generated with medium confidence

4. Select at least two columns and aggregate the data using: min, max, count, mean.  
Graphical user interface, application

Description automatically generated

5. Filter the data frame to select the rows with calories values between 500 and 1000.   
A picture containing graphical user interface

Description automatically generated

6. Filter the dataframe to select the rows with calories values > 500 and pulse < 100.   
Graphical user interface, text, application

Description automatically generated

7. Create a new “df\_modified” dataframe that contains all the columns from df except for “Maxpulse”.  
Graphical user interface, text, application

Description automatically generated

8. Delete the “Maxpulse” column from the main df dataframe  
A picture containing table

Description automatically generated

9. Convert the datatype of Calories column to int datatype.  
Graphical user interface, text, application

Description automatically generated

10. Using pandas create a scatter plot for the two columns (Duration and Calories).  
Chart, scatter chart

Description automatically generated

**3. Matplotlib**

1. Write a Python programming to create a below chart of the popularity of programming Languages.  
Graphical user interface, text, application, Word

Description automatically generated

2. Sample data:

Programming languages: Java, Python, PHP, JavaScript, C#, C++

Popularity: 22.2, 17.6, 8.8, 8, 7.7, 6.7  
Chart, pie chart

Description automatically generated