

EX: NO: 1A

DATE 28/12/2025

## WORKING WITH NUMPY ARRAYS

AIM:

Write a python program to basic array characteristics.

ALGORITHM:

Step 1: Start

Step 2: Import Numpy Module

Step 3: print the basic characteristics of array

Step 4: Stop.

## RESULT:

Thus the Python program working with NumPy array has been implemented and executed successfully.

Ex.NO : 1B

DATE : 28/2/25

## PROGRAM TO PERFORM ARRAY SLICING

### SLICING:

Similar to python lists Numpy arrays can be sliced. Since arrays may be multidimensional slice for each dimension - the array.

### AIM :

Write a Python program to perform Array slicing.

### ALGORITHM:

Step1: Start

Step2: import Numpy module

Step3: Create an array and apply the Slicing operator .

Step4: Print the output

Step5: Stop.

## RESULT:

Thus the Python program to perform array slicing has been implemented and executed successfully.

EX: NO : 1 C

DATE : 28/2/25

## PROGRAM TO PERFORM ARRAY SLICING

### AIM

Write a python program to perform  
Array slicing.

### ALGORITHM:

Step 1 : Start

Step 2 : Import Numpy Module

Step 3 : Create an array and apply the Slicing  
Operator

Step 4 : Print the Output

Step 5 : Stop.

RESULT:

Thus the python program to perform array  
Slicing has been implemented and executed successfully

EX: NO: 2A

DATE: 7/3/25

## WORKING WITH PANDAS DATA FRAME

### PANDAS:

It is a python library. pandas is used to analyze data. A pandas Dataframe is a 2 dimensional datastructure like a table with rows and column.

### AIM

Write a program to create a data frame using a list of element.

### ALGORITHM:

Step 1 : Start

Step 2 : import Numpy and pandas module

Step 3 : create a data frame using list of element

Step 4 : Print the output

Step 5 : Stop.

RESULT:

Thus the python program for data frame  
using list of element has been implemented  
and executed successfully.

Ex: NO: 2B  
DATE 7/8/25

## CREATE A DATA FRAME USING DICTIONARY

### AIM:

Write a program to create a data frame  
Using dictionary of element

### ALGORITHM:

Step1 : Start

Step2 : Import Numpy and pandas module

Step3 : Create a data frame Using the dictionary

Step4 : Print the output

Step5 : Stop.

## RESULT:

Thus the python to create dataframe using dictionary program has been implemented and executed successfully.

Ex: NO: 2C

DATE 7/8/25

## COLUMN SELECTION

### COLUMN SELECTION:

In order to select a column in pandas Dataframe, we can either access the columns by calling them by their column Name.

### AIM:

Write a program to Select a Column from data frame

### ALGORITHM:

Step1 : Start

Step2 : import pandas module

Step3 : Create a dataframe using the dictionary

Step4 : Select the Specific column and print o/p

Step5 : Stop.

RESULT:

Thus the python program for column Selection  
has been implemented and Executed Successfully.

EX: NO: 21  
DATE: 7/3/25

## CHECKING FOR MISSING VALUES USING ISNULL() AND NOTNULL()

IN order to check missing values in pandas Dataframe, we use a function isnull() and notnull(). Both function help in checking whether a value is Nan or Not. These function can also be used in pandas Series in order to find Null value in a series.

AIM:

Write a program to check the missing value from the data frame

ALGORITHM:

Step1 : Start

Step2 : Import pandas Module

Step3 : Create a dataframe Using the dictionary

Step4 : Check the Missing value using isnull() function

Step5 : print the Output!

Step6 : Stop.

## RESULT:

Thus the python program checking for missing value using isnull () and nonNull () has been implemented and executed successfully.

Ex: NO: 2E

DATE: 7/3/25

## DROPPING MISSING VALUES USING DROPNA()

In order to drop a null value from a data frame, we used dropna() function this function drop rows/column of data sets with null values in different ways.

AIM:

Write a program to drop rows with at least one (NaN value)

ALGORITHM:

Step 1 : Start

Step 2 : import pandas module

Step 3 : Create a data frame using the dictionary

Step 4 : Drop the Null Value using dropna() function

Step 5 : Print the Output

Step 6 : Stop.

RESULT:

Thus the python program for Drop Missing  
Value has been implemented and Executed Successfully.

Ex.NO: 3A

DATE 8/3/25

## BASIC PLOTS USING MATPLOTLIB

## AIM

Write a python program to create a simple plot using plot() function

## ALGORITHM:

Step 1: Define the x-axis and y-axis value as lists

Step 2: plot them on canvas using plot() function

Step 3: Give a name to x-axis and y-axis using xlabel and ylabel() function.

Step 4: Give a title to your plot using title() function

Step 5: Finally to view your plot. we use show() function

Step 6: Stop.

RESULT :

Thus the python program for basic Matplotlib has been implemented and executed successfully.

Ex: NO: 3B

DATE: 8/3/25

COMPUTE THE X AND Y COORDINATES

AND CREATE A PLOT

AIM:

Write a python program to create a plot by  
computing the x and y coordinates

ALGORITHM:

Step 1: Compute the x and y coordinates for points  
on a sine curve

Step 2: plot the point using Matplotlib

Step 3: Display the output

Step 4: Stop.

RESULT:

Thus the python program to compute x and y coordinate has been implemented and executed successfully.

Ex: NO: 3C

DATE 8/3/25

## DRAWING MULTIPLE LINES USING PLOT FUNCTION:

AIM:

Write a python program to draw multiple lines using plot() function

ALGORITHM

Step1: Compute the x and y coordinates for point on a Sine and Cosine curve

Step2: plot the point using matplotlib

Step3: Display the output

Step4: Stop

RESULT:

Thus the python program multiple line using plot function has been implemented and executed successfully

Ex: NO: 31

DATE 8/3/25

## BASIC PLOT USING MATPLOTLIB

AIM:

Write a python program for basic plot using  
Matplotlib

ALGORITHM:

Step1 Import the library

Step2 Plot the point using Matplotlib

Step3 Display the output

Step4 Stop

## RESULT:

using Thus the python program for basic plot  
Matplotlib has been implemented and  
Executed Successfully

Ex: NO: 4A

DATE 14/3/25

## CONDITIONAL FREQUENCY

## DISTRIBUTION

## CONDITIONAL FREQUENCY:

In the previous topic you have studied about frequency Distribution freq Dist function computes the frequency of each item in a list. While computing a frequency distribution you observe occurrence count of an event.

## AIM:

To write a python program to show the Conditional frequency distribution

## ALGORITHM:

Step1: Start

Step2: Import pandas Numpy and NLTK

Step3: List the item AS F for fruits and V for vegetable

Step4: Display the frequency of each item in list

Step5: stop.

RESULT:

Thus the python program for Conditional frequency distribution has been implemented and Executed Successfully -

Ex: No : AB

DATE: 14/3/25

## FREQUENCY OF WORDS OF A PARTICULAR GENRE IN Brown CORPUS.

AIM:

To write a python program determine  
the frequency of words of a particular genre in  
brown

ALGORITHM:

Step1 : Start

Step2 : Import All Necessary Libraries

Step3 : Display The frequency of Each items  
In the list .

Step4 : Setting Cumulative Argument value of true

Step5 : Stop.

## RESULT:

Thus the python program frequency of words of a particular genre in brown Corpus has been implemented and Executed Successfully

Ex. NO: 4C

DATE: 14/3/25

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## FREQUENCY OF LAST CHARACTER

AIM:

To write a python program for frequency of last character appearing in all Names Associated with males and females Respectively and Compares them

ALGORITHM:

Step1: Start

Step2: Import All Necessary Libraries

Step3: Display the frequency of Each item in the list

Step4: plot

Step5: Stop

Thus the Python program frequency of last character appearing in all names associated with males and females respectively and compares them has been implemented and Executed Successfully.

Ex: NO: 4D

DATE 14/8/25

## AVERAGE OF LIST USING LOOP

AIM:

To write a python program for  
finding a average of list using loop.

ALGORITHM:

Step1: Start

Step2: Define A class cal-Average

Step3:  $\text{Sum\_Num} = \text{Sum\_Num} + T$ Step4:  $\text{Avg} = \text{Sum\_Num} / \text{Len}(\text{Num})$ 

Step5: Stop

## RESULT:

Thus the python program finding a average of  
list using loop has been implemented and  
executed successfully.

EX: NO: 4E

DATE 14/3/25

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## AVERAGE OF LIST USING BUILT IN FUNCTION

AIM:

To write a python program to find  
the average of list using built in function

ALGORITHM:

Step 1: Start Step 1

Step 2: Define a list

Step 3:  $\text{Avg} = \text{Sum}(\text{Number\_list}) / \text{len}(\text{Number\_list})$

Step 4: print avg

Step 5: Stop

## RESULT:

Thus the python program finding a average of list using built in functions has been implemented and executed successfully.

EX.NO: 4F

DATE 14/3/25

# AVERAGE OF LIST USING MEAN FUNCTION

## Aim

TO write a python program to find the average of list using mean function

## ALGORITHM:

Step1: Start

Step2: Define A List

Step3 : Import Mean from Statistic

Step4 : Avg = Mean (Number\_List)

Step5: print avg

Step6: stop

RESULT:

The python program average of list using  
mean function has been implemented and executed  
successfully -

EX: NO : 401

DATE : 14/3/25

## AVERAGE OF LIST USING NUMPY LIBRARY

AIM:

To write a python program to find the average of list using Numpy library

ALGORITHM :

Step1 : Start

Step2 : import mean from Numpy

Step3 : Define A list

Step4 : Avg = mean (Number\_list)

Step5 : print avg

Step6 : Stop

## RESULT:

Thus the python average of list Numpy library has been implemented and execute successfully

EX: NO : 4H

DATE: 14/3/25

## VARIANCE OF SAMPLE SET:

### AIM

To write a python program to show  
Variance of Sample Set

### ALGORITHM:

Step1: Start

Step2: Import Statistics

Step3: Define A list

Step4: print Statistics variance (sample) Step

Step5: Stop

## RESULT

Thus the python program to show variance of sample set has been implemented and executed successfully

EX: NO: A1

DATE 14/3/25

## VARIANCE ON A RANGE OF DATA-TYPES

AIM:

To write a python program to show  
variance on a range of data-types

ALGORITHM:

Step1 : Start

Step2 : Import All Necessary Libraries

Step3 : Define Samples

Step4 : Point Variance of Sample.

Step5 : Stop

## RESULT

Thus the Python program to Show Variance  
on a range of data-types has been implemented and  
executed Successfully.

Ex:No: 45

DATE 14/3/25

## STATISTICS

### AIM

To write a python program to show  
statistics

### ALGORITHM:

Step 1 Start

Step 2 Import statistics

Step 3 Define a list

Step 4 M= statistics.mean(sample)

Step 5 Stop

## RESULT:

Thus the python program to show Statistics has been implemented and executed successfully.

Ex: NO : 5A

DATE 21/3/25

CREATE

NORMAL CURVE

AIM:

To write a python program to create a Normal Curve

ALGORITHM:

Step 1: Start

Step 2: import all Necessary package

Step 3: Create distribution

Step 4: Visualize the distribution

Step 5: Stop.

RESULT :

Thus the python program to create a Normal Curve has been implemented and executed successfully

EX: NO: 5B

DATE 21/3/24

## CORRELATION AND SCATTER PLOTS

AIM

To write a python program Correlation  
and scatter plots

ALGORITHM:

Step1: Importing the libraries.

Step2: Finding the correlation between two variable

Step3: plotting the graph here we are using  
Scatter plots. A Scatter plot is a diagram where each  
value in the data set is represented by a dot  
Also it shows a relationship between two variable

## RESULT:

Thus the Python program to correlation and scatter plots has been implemented and executed successfully

### i) SIMPLE SCATTER PLOT

#### PROGRAM:

```
x = range(50)
y = range(50) + np.random.randint(0,30,50)
plt.scatter(x, y)
plt.rcParams.update({'figure.figsize':(10,8), 'figure.dpi':100})
plt.title('Simple Scatter plot')
plt.xlabel('X - value')
plt.ylabel('Y - value')
plt.show()
```

Aim:

To write a python program Simple Scatter plot

#### ALGORITHM:

Step 1: Importing the libraries

Step 2: Finding the correlation between two variable

Step 3: Plotting the graph Here we are using scatter plots. A scatter plot is a diagram where each value in the data set is represented by dot.

## RESULT

Thus the python program for Simple Scatter plot has been implemented and executed successfully.

## ii) SIMPLE SCATTER PLOT WITH COLORED POINTS

### PROGRAM:

```
x = range(50)  
y = range(50) + np.random.randint(0,30,50)  
plt.rcParams.update({'figure.figsize':(10,8), 'figure.dpi':100})  
plt.scatter(x, y, c=y, cmap='Spectral')  
  
plt.colorbar()  
plt.title('Simple Scatter plot')  
plt.xlabel('X - value')  
plt.ylabel('Y - value')  
plt.show()
```

### AIM:

To write a python program Sample of  
Scatter plot with colored points

### ALGORITHM

Step 1: Importing the libraries

Step 2: finding the correlation between two variable

Step 3: plotting the graph.

## RESULT:

Thus the python program Simple Scatter plot with colored point has been implemented and executed successfully.

EX: NO: 5C

DATE 21/3/25

## CORRELATION COEFFICIENT

## AIM

To write a program to calculate the Correlation coefficient

## ALGORITHM:

Step 1: Import the Numpy packages

Step 2: Define two NumPy array call them x and y

Step 3: call Np. corrcoef() with both arrays as arguments

Step 4: corrcoef() Return the correlation matrix with two-dimensional array with the correlation coefficient

## RESULT:

Thus the python program calculate the correlation coefficient has been implemented and executed successfully.

## PEARSON'S CORRELATION

The Pearson Correlation Coefficient can be used to summarize the strength of the linear relationship between two data sample. The Pearson's correlation coefficient is calculated as the covariance of the two variable divided by product of the standard deviation of each data sample.

$$\text{Pearson's Correlation Coefficient} = \frac{\text{Covariance}(x,y)}{\text{stdv}(x) * \text{stdv}(y)}$$

### AIM:

To write a program to calculate the Pearson Correlation coefficient between two variable

### ALGORITHM

Step 1: Import the needed package

Step 2: provide the data

Step 3: The pearsonr() Scipy function can be used to calculate the Pearson's Correlation

Step 4: Display the Correlation Coefficient

Result:

Thus the python program to calculate the Pearson Correlation Coefficient between two variable has been implemented and executed successfully.

EX: NO: 6A

DATE 4/4/25

SIMPLE LINEAR REGRESSION WITH  
SCIKIT LEARN

AIM:

TO write a program Simple linear  
Regression with Scikit - Learn

ALGORITHM

Step1: Import the packages And classes

Step2: provide Data To work with And Eventually  
Do APPORPRIATE Transformation

Step3: Create a Regression Model And fit It with  
Existing Data

Step4: check the result of model fitting TO know  
whether The model's satisfactory

Step5: Applied the model for predictions

RESULT:

Thus the Python program Simple linear Regression with Scikit-learn has been implemented and executed successfully.

Ex: NO: 6B

88

DATE 4/4/25

## MULTIPLE LINEAR REGRESSION WITH SCIKIT - LEARN

AIM:

TO write a program multiple linear regression with Scikit - learn

ALGORITHM:

Step1: Import packages And classes

Step2: Provide Data

Step3: Create A Model and fit it Step

Step4: Get Result

Step5: predict response.

## RESULT.

Thus the Python program multiple linear regression with Scikit - learn has been implemented and executed successfully

Ex: NO: 7

91

DATE 5/4/25

## Z- TEST CASE STUDIES

AIM

To perform z-test

ALGORITHM

Step1: Start

Step2: Import math, Numpy, statsmodels & ztest

Step3: Create a list & print the z-test int

Step4: Stop.

RESULT:

Mean = 110.17 Stdv = 2.34 Reject

Null Hypothesis. Thus the program for z-test car  
Studies has been executed and verified successfully

EX: NO : 8

DATE 11/4/25

## T - TEST CASE STUDIES

AIM:

TO perform T-test for Sampling distribution

ALGORITHM:

Step 1: Start

Step 2: Import random & numpy

Step 3: calculate the Standard deviation

Step 4: Stop.

## RESULT

Thus the program for T-test case studies has been executed and verified successfully

EX: NO: 9

DATE: 25/4/25

## ANOVA CASE STUDIES

AIM:

TO perform ANOVA test

ALGORITHM:

Step1 : Start

Step2 : Import Scipy

Step3 : import Stats model.

Step4 : calculate ANOVA and p-value

Step5 : Stop.

RESULT:

Thus the program for ANOVA Case Studies has been executed and verified successfully.

EX: NO: 10

102

DATE 21/5/25

## CROSS-VALIDATION WITH LINEAR REGRESSION

AIM:

TO perform Linear regression

ALGORITHM:

Step1: Start

Step2: Import NumPy, Pandas, Seaborn, Matplotlib

Step3: Calculate linear regression using the appropriate function

Step4: Display the result

Step5: Stop.

RESULT:

Thus the program for linear Regression has been  
executed and verified successfully

EX: NO : 11

DATE 9/5/25

## LOGISTIC REGRESSION

AIM:

TO perform Logistic regression

ALGORITHM:

Step1: Start

Step2: Import Numpy , pandas , Seaborn , matplotlib

Step3: calculate logistic Regression using the appropriate function

Step4: Display the result

Step5: Stop.

```
Parch      891 non-null int64  
Ticket     891 non-null object  
Fare       891 non-null float64  
Cabin      204 non-null object  
Embarked   889 non-null object  
dtypes: float64(2), int64(5), object(5)  
memory usage: 83.6+ KB
```

RESULT:

Thus the program for logistics Regression has been verified successfully

Ex: no: 12

DATE 9/5/25.

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## TIME SERIES ANALYSIS

AIM:

To perform Time Series analysis

ALGORITHM

Step 1: Start

Step 2: Import Numpy, Pandas, Matplotlib & Seaborn

Step 3: draw the plot

Step 4: Display the plot

Step 5: Stop.

RESULT:

Thus the program for Time Series analysis  
has been executed and verified successfully.