

# FUNDAMENTALS OF DATA SCIENCE LAB

## List of Experiments:

### 1. Creating a NumPy Array

- a) Basic ndarray
- b) Array of zeros
- c) Array of ones
- d) Random numbers in ndarray
- e) An array of your choice
- f) Imatrix in NumPy
- g) Evenly spaced ndarray

### 2. The Shape and Reshaping of NumPy Array

- a) Dimensions of NumPy array
- b) Shape of NumPy array
- c) Size of NumPy array
- d) Reshaping a NumPy array
- e) Flattening a NumPy array
- f) Transpose of a NumPy array

### 3. Expanding and Squeezing a NumPy Array

- a) Expanding a NumPy array
- b) Squeezing a NumPy array
- c) Sorting in NumPy Arrays

### 4. Indexing and Slicing of NumPy Array

- a) Slicing 1-D NumPy arrays
- b) Slicing 2-D NumPy arrays

- c) Slicing 3-D NumPy arrays
- d) Negative slicing of NumPy arrays

## 5. Stacking and Concatenating Numpy Arrays

- a) Stacking ndarrays
- b) Concatenating ndarrays
- c) Broadcasting in Numpy Arrays

## 6. Perform following operations using pandas

- a) Creating dataframe
- b) Concat()
- c) Setting conditions
- d) Adding a new column

## 7. Perform following operations using pandas

- a) Filling NaN with string
- b) Sorting based on column values
- c) Groupby()

## 8. Read the following file formats using pandas

- a) Text files
- b) CSV files
- c) Excel files
- d) JSON files

## 9. Read the following file formats

- a) Pickle files
- b) Image files using PIL
- c) Multiple files using Glob

d) Importing data from database

10. Demonstrate web scraping using python

11. Perform following preprocessing techniques on loan prediction dataset

a) Feature Scaling

b) Feature Standardization

c) Label Encoding

d) One Hot Encoding

12. Perform following visualizations using matplotlib

a) Bar Graph

b) Pie Chart

c) Box Plot

d) Histogram

e) Line Chart and Subplots

f) Scatter Plot