Practice Assignment - 1 for Machine Learning Lab

1. Write a python program -
   i. Assign any value to a variable and print the value and its type.
   ii. Assign values to two variables and perform the following operations (addition,subtraction, multiplication,division).
   iii. Assign any string to a variable and print the length of the string.
   iv. Assign a value as string to a variable and then change the type of that variable to integer.

2. Write a python program to swap the value of two variables without using a temporary variable and with using a temporary variable.

3. Given a string - str ="I am a computer science student"
   i. Prints the first character of the string.
   ii. Prints the character starting from 3rd to 5th.
   iii. Prints the character starting from the 3rd character.

4. Write a python program-
   i. Create a list of 6 items and display it.
   ii. Print the all elements of the list from 3rd to the end of the list
   iii. Insert an element 100 to the middle of the list and also append an element 8 to the end of the list.
   iv. Print the 3rd, 4th and 5th element of the list.

5. Write a program to merge two lists and display it as a single list.Print the even numbers from the final list.

6. Write a python program-
   i. Create a tuple of mixed data type and print it.
   ii. Create a tuple with the repetition of the words "**programming**" 3 times.
   iii. Create two tuples and concatenate both the tuples.

7. Write a python program-
   i. Given a dictionary person = { 'first_name': 'John','last_name': 'Doe','age': 25,'favorite_colors': ['blue', 'green'],'active': True}. Print the dictionary.
   ii. Print the keys and values of the dictionary separately.
   iii. Print the value for the 2nd key.

8. Write a python program by taking a number as input and check whether it is even or odd using the if else condition.

9. Write a program to display numbers from a list using for loops.

10. Write a Python function that takes a list and returns a new list with unique elements of the first list.

11. Given an array of integers- [1,6,7,9],[7,9,3,5]

Write a program to print-

i. Dimension of the array
ii. Shape of the array
iii. Size of the array

12. Create two random arrays of any dimension and perform the following operations:

i. Concatenate two arrays.
ii. Sort both the arrays.
iii. Add the two arrays
iv. Subtract the two arrays
v. Multiply two arrays
vi. Divide the two arrays.

13. Write a NumPy program-

i. Create a 4 x 5 matrix with values ranging from 1 to 10, also find the transpose of the matrix.
ii. Create an array of 10 zeros,10 ones, 10 fives.
iii. Create an array of all the even integers from 10 to 50.
iv. Generate a random number between 0 and 1.
v. Save the matrix (generated in question iv) to a text file and load it.

14. Create a random matrix of 10 x 5 (where columns are the features and rows are the patterns) and find the maximum and minimum values from each feature.

15. Create a random matrix of size 10 x 5 (where columns are the features and rows are the patterns) and find the number of patterns having the same ith feature (i=1,2,...number of features).

16. Write a python program to read an image and save the image as a matrix to a .csv file using pandas.

17. Write a program to import excel data from the .csv file (generated in question 16) by excluding the last row and last column.

18. Write a Pandas program to create today's date.

19. Please download the dataset using the link given below

Link: Click Here. Write a python program to read the dataset and print the number of features, number of patterns, range of output available in the dataset. Write a program to randomly split the dataset in X:Y ratio. Here, the values of X and Y are as follows (X+Y = 100% always):

a. X = 10:10:90 (i.e., initial: 10%, increment by 10%, maximum is 90%)
b. Y = 90:10:10 (i.e., initial: 90%, decrement by 10%, minimum is 10%)

20. Write a program to calculate the row-wise,column-wise, and overall mean, median, mode, and standard deviation of the dataset.