

Indian Institute of Space Science and Technology – Thiruvananthapuram

Assignment-IV

1. Write a function that could perform the following tasks: (a) Generate 1000 data points that satisfy $-8x - 3y + 2z - 11 = 0$. (b) Create a folder in the current directory and store the data generated in text as well as CSV format.
2. Write a function for the following tasks:
 - (a) Generate 10 random values between 0 and 1.
 - (b) Generate 10 random integer values between -20 and 30.
 - (c) Generate 10 random numbers from a Gaussian distribution with mean -1 and standard deviation 2.
3. Perform the following tasks:
 - (a) Generate 20 data points (x, y) that satisfy $y = \sin 3x$.
 - (b) Add random noise to y , that is generate $y' = y + \epsilon$ where $\epsilon \sim \mathcal{N}(0, 1)$
 - (c) Plot (x, y) and (x, y') in the same figure.
4. Plot
 - (a) An undirected graph with vertices: $\{v_1, v_2, v_3, v_4\}$ having edges $(v_1, v_2), (v_2, v_3), (v_3, v_4)$. Mark edges as E_1, E_2 and E_3 .
 - (b) A directed graph using the above information.
5. Write a function that could perform the following tasks: Ask the user to enter a integer n .
 - (a) Display all the even integers less than or equal to n .
 - (b) Display all the multiples of 5 less than or equal to n .
 - (c) Display the first n terms of the $\exp(x)$ series.
 - (d) Display the first n terms of the Fibonacci series.
6. Write a function that could perform the following tasks: Ask the user to enter n English words. Sort the words in alphabetic (dictionary) order.

7. Write a function that could perform the following tasks: Ask the user to enter the name of a famous person. Load the Wikipedia page related to that topic. Find the number of distinct words in that page. Create a dictionary using those words. Display the count of those words in that page.
8. Write a function that could perform the following tasks: Load an image from a folder. Convert the image into matrix and tensor forms. Save those forms in the selected folder.
9. Create a GUI that has the following provisions: (a) start button (b) stop button. When the user clicks the start button, an animated clock should appear and with the stop button, it should disappear.
10. Write a function to read the ip address of your system.