PRACTICAL : PYTHON TRAINING
(B. TECH – SEMESTER I)

1. Write a program to perform arithmetic operations (and Average) between two variables.
    a. Through the user input
    b. Explicitly put the value
2. Write a program that can print the following:
    a. Area of Triangle, Circle, Rectangle, Square, Rhombus, Parallelogram etc.
    b. Diagonal of Square, Rectangle, Rhombus etc.
3. Write a program to find MAX and MIN (**also** find 2nd MAX and 2nd MIN) between two numbers and then perform Swap operation between min and max.
4. Write a program to perform Simple and Compound Interest and all the values of the variables are taken by user.
5. Write a program to check whether a given number is: ---- (the below instructions)
    a. An Armstrong or not
    b. A Palindrome or not.
    c. A Prime or not.
    d. Twin prime or not.
    e. Even or Odd.
    f. Find and print the above options (from 'a' – 'e') for a given range n.
6. Write a program to print the factorial of a number and also print the factorial for a given range 1 to 10.
7. Write a program to print the Fibonacci sequences for a given range 1 to 21(like: 1, 1, 2, 3, 5, 8, 13, 21).
8. Write a program that can convert temperature from Celsius to Fahrenheit and vice-versa. [c =$\frac{(f-32)*5}{9}$]
9. Write a program that can convert km to mt. [1 kilometre = 1k meter]
10. Write a program to convert inches to feet. [Inch = Foot/12]
11. Write a program to convert inches to meters. [Inch = 0.0254 Meter]
12. Write a program that can print two imaginary numbers and perform all arithmetic operations between them.
13. Write a program that can take a float type number and convert it to double data type.
14. Write a program that can print first n natural numbers within a given range.
15. Write a program to add first n natural numbers within a given range.
16. Write a program to check whether a given string is vowel or consonant.
17. Write a program that will print the following: ---
    a. Square root(s) of a quadratic equation.
    b. Matrix addition and multiplication.
18. Write a program to print the following series: ---
    a. $x+x^2+x^3+x^4+ \dots +x^n$
    b. $x+x^2-x^3+x^4- \dots - x^{n-1}+x^n$
    c. $1+ x+x^2+x^3+x^4+ \dots +x^n$
    d. $\frac{1}{1!}+\frac{1}{2!}+\frac{1}{3!}+\frac{1}{4!}+ \dots +\frac{1}{n!}$
    e. $\frac{1}{x!}+\frac{1}{x_!^2}+\frac{1}{x_!^3}+\frac{1}{x_!^4}+ \dots +\frac{1}{x_!^n}$
    f. $\frac{1}{x!}+\frac{1}{x_!^2}-\frac{1}{x_!^3}+\frac{1}{x_!^4}- \dots +\frac{1}{x_!^n}$
    g. $e^x = 1+x+\frac{x^2}{2!}+\frac{x^3}{3!}+ \dots +\frac{x^n}{n!}$
19. Write a program to find the length of a given string: "Hello World!"
20. Write a program to swap the first and last item in a list.
21. Write a program to check the frequency of a number in a list and also remove duplicate item(s) from the list.

22. Write a program to perform Linear and Binary Search in a list.
23. Write a program to perform the sort operations as below: --
    a. Bubble Sort, Insertion Sort, Selection Sort.
    b. Quick Sort, Merge Sort and Heap Sort
    c. Radix Sort, Bucket Sort.
24. Write a program that can reverse a string and a list.
25. Write a program that can convert a list to dictionaries.
26. Write a program to find the size of a set.
27. Write a program to find largest and smallest numbers in a set.
28. Write a program that can convert a set into tuple and vice-versa.
29. Write a program that can convert a set into dictionary and vice-versa.
30. Write a program to find the operations like Union, Intersection, set difference between two sets.
31. Write a program to delete items from the set.
32. Write a program to check whether a set is a subset or superset of the another set or not.
33. Write a program that can use frozen set and find the length of that set.
34. Write a program that can use "lambda operators", "map ()", "filter ()" and "reduce ()" etc.
35. Write a program that can use different insert () and del () functions in the source code.
36. Write a program to print factorial of a number using recursive function.
37. Write a program in file to use the following operations from file management: --
    a. Create (), Open () with read, write, append read & write data mode and close ().
    b. Split (), readlines () method and overwrite it.
38. Write a program in file to check whether the file is empty or not and also search a record exists in that file or not.
39. Write a program that can copy the content from one file to another file.
40. Write a program to count the total number of uppercase and lowercase letters in a file.
41. Write a program to delay a print line from a file using sleep () function.
42. Write a program to count the odd and even numbers in a file.
43. Write a program to count the number of line in an existing file.
44. Write a program to create and remove a file.
45. Write a program to move a file from a dictionary to another using os.listdir () and shutil.move () and then rename the file name using os.rename ().
46. Write a program to move all file from a dictionary.
47. Write a program that can import the following libraries (as per requirements): --
    a. Numpy, Pandas (use 2-D ds as DataFrame),
    b. Sckit-learn, Tensorflow, Keras,
    c. Seaborn, Mathplotlib, Pytorch etc.
48. Write a program that can perform transform and reverse transformation over a 2-d list and then use scaling operations over the existing dataset.
49. Write a program that can split () the dataset into two subsets.
50. Write a program to print a string like "LINUX" and count the length of the string and when print the output like "INUX".

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