Practical 1: Write Python programs to understand control structures

1. Input number through the user and find out whether the number is zero, positive or negative.
2. Initialize variable with strings. Take a string input from the user and output true if it exists in the array, otherwise output false.
3. Initialize a variable with a string and print each character until the letter 'o' is encountered, using a `break` statement
4. Repeat above program to use continue and pass statement for letter ‘o’.
5. Write a program that adds the numbers stored in an array up to a user-defined count.

Practical 2: Write Python programs to understand list and tuples

1. Write a Python program to create a list and a tuple, and demonstrate the difference between them.
2. Write a Python program to remove duplicates from a list
3. Write a Python program that takes two lists and returns True if they have at least one common element.
4. Write a Python program to get the frequency of the elements in a list.
5. Write a Python program to find common items from two lists.
6. Write a Python program to convert a list to a tuple
7. Write a Python program to remove empty tuple(s) from a given tuple.
8. Write a Python program to determine if a list contains a specific sub list.

Practical 3: Use conditional statements and loops in Python programs.

1. Take integer input from the user until user press 'q' to quit (prompt the user to press 'q' after each input). Then, print the average and product of all the entered numbers.
2. Write a program that removes all occurrence of a given letter from string.
3. Reverse following list using for loop

   List1=[10,20,30,40,50]

4. A company decided to give bonus of 5% to employee if his/her year of service is more than 5 years. Ask user for their salary and year of service and print the net bonus amount.
5. Write a program to print the star pattern using nested for loop.

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6. Write a python program to get Fibonacci series between 0 to 50
7. Write a python program that accepts a string and calculates the number of digits and letters

Practical 4: Import module and use it in Python programs

1. Plot Linear, Scatter and Bar chat of the same data using subplot
2. Draw scatter plot of exponential increasing, exponential decrease and linear with legend and different marker, colour and plot location
3. Draw sine wave using dashed line, range of y axis should be limited in range (-1,1).
4. Draw two histogram with random numbers and plot it in the same figure.
5. Draw 3-D Canvas with twisting Curve

Practical 5: Write python programs to create functions and use functions in the program

1. Write a function that returns absolute value.
2. Write a function to append [11,22,33] to the existing list.
3. Write a function to print default argument when it is not passed to function.
4. Write a function to return the sum of two numbers. Defined sum as global and local variable and see the difference
5. write a python program to reverse the string using function and while loop

6. Write a python function that accepts a string and calculate the number of uppercase letters and lowercase letters
7. Write a python function that checks whether a passed string is palindrome or not.
8. Write a Python program to call function inside function.

Practical 6: Write python program to plot data using PyPlot

Draw Pie chart, line chart, sin wave, square wave, triangular wave & cos wave using Mathplot.

Practical 7:

Write a program in micropython to turn LED on and off.

Practical 8:

Write program in MicroPython to send digital data on GPIO pins of NodeMCU and glow LED connected with NodeMCU or any other MicroPython supported board.

Practical 9:

Connect Digital/Analog I/O module with NodeMCU and write program to display temperature in MicroPython.

Practical 10:

Connect NodeMCU with with WiFi Access Point and transmit data from NodeMCU to Cloud. Connect Digital/Analog I/O module with NodeMCU and send temperature and light data on cloud (Thingspeak,Firebase or any other cloud service)