# IT Workshop (Python) Lab

**Subject Code: 18CS5SP08L**                                    **Total Hours:**
**Credits: 03**                                                      **L-T-P: 0-1-4**

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**Course Objectives:**

- Understanding the basic python programming language concepts
- Acquire the knowledge of basic and extended data types, looping concepts, and functions, in python programming
- Understanding the customization and visualization techniques in python programming.
- Apply Python scripts to different WebDriver methods and identify attributes of elements.
- Implement unit testing framework through Pytest.

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1. Write programs to implement the following operations:

   **a.** To elaborate variables and their data types such as int, float, boolean, string, list, set, dictionary and tuples; swap two numbers

   **b.** To perform mathematical operations such as addition, subtraction, multiplication, division, modulo, and power; also explore the operator precedence.


2. Write programs to implement conditional operations on following:

   **a.** Python program to find the sum and average of natural numbers up to n where n is provided by user.

   **b.** Python program to find factorial, and Fibonacci of a number, received by user, with iterative as well as recursive process.


3. Write python programs

   **a.** To print all prime numbers between N and M.

   **b.** To find largest among three numbers, input by user.

   **c.** To find GCD for two numbers, input by user

4. Write python program to elaborate string operations such as

        **a.** Implement a python script to check the element is in the list or not by using linear search & Binary search.

        **b.** Implement a python script to arrange the elements in sorted order using Bubble, Selection, Insertion and Merge sorting techniques.

5. Write Python program

    **a.** Implement python script to show the usage of various operators available in python language.

    **b.** Write a program to calculate overtime pay of 10 employees. Overtime is paid at the rate of Rs.12.00 per hour for every hour worked above 40 hours. Assume that employee do not work for fractional part of an hour.

6. Write Python program using NumPy and pandas

    **a.** Write a Pandas program to create and display a DataFrame from a specified dictionary data which has the index labels.

    **b.** To create a 4X2 integer array and prints its attributes.

    **c.** For the given numpy array return array of odd rows and even columns.

    **d.** To add the two NumPy arrays and modify a result array by calculating the square root of    each element.

7. Write python program to show following plots using Matplotlib library.[ General case study]

    **a.** To read total profit of all months and show it using a line plot where x axis should be month number and y axis should be named as total profit.

    **b.** To get total profit of all months and show line plot with the following style properties

    Line Style dotted and Line-color should be red

    Show legend at the lower right location.

    X label name = Month Number
    Y label name = Sold units number
    Add a circle marker.
    Line marker color as read
    Line width should be 3

8. Write python programs for following graphical objects

    **a.** Draw the target symbol (a set of concentric squares, alternating red and white) in a graphics window, that is, 200 pixels wide by 200 pixels high. (Hint: Draw the target square first in red, followed by next smaller square in white, then draw the next smaller square in red).

    **b.** Create a 5x5 rectangle whose top left corner is at (row*5, col*5). If the sum of the rows and columns' number is even, set the fill color of the rectangle to white, otherwise set it to the black. Then draw the rectangle.

9. Write a python program to invoke Chrome browser/Firefox/internet explorer and load the Website to automate, apply different WebDriver methods to get Title, get url, quit(), forward(), backward(), close the session and navigate to some other website.

10. Write a python scripts to identify attributes of elements.

    **a.** Finding elements with Xpath and Css using Chropath Plugin.

    **b.** Extracting Text from webpage with validation Assertions.

    **c.** Identifying links with Text and building Smart CSS around it.

11. Write a python program to read/write data from excel to selenium python framework.

    **a.** Operations to read and write the data from Excel into Python tests

    **b.** Build a Utility to retrieve values from Sheet based on conditions rec111017

    **c.** Loading the Excel Data from file to Dictionary for further processing

    **d.** Integrate Excel utility into Selenium Python Framework

12. Implement Pytest- unit Testing Framework of python

    **a.** Implement the Pytests from Terminal with different command flags.

    **b.** How to run selected Pytests from set of Tests.

    **c.** Implement the Data driven Fixtures to load data into tests.

    **d.** Generate the HTML reports for Pytest Testcases.

**Course Outcomes:**

- Understand the basics of Python Programming.

- Apply various data structures for solving real world problems.

- Create basic data structure of given problem in python programming

- Analyze the data transformation from one format to another format.

- Apply Python scripts to different WebDriver methods and identify attributes of elements.

Implement unit testing framework through Pytest.