5 years Integrated M.Sc. (IT) / B.Sc. (IT) – Semester 5
Practical List
IT5013 - Introduction to Data Processing with Python

Practical No. 1	**Enrollment No.**	
Practical Problem	1. Write a Python program to display "This is my first Python Program". 2. Write a Python program to add two numbers and display its sum. 3. Write a Python program to calculate area of a circle. 4. Write a Python program to perform addition, subtraction, division and multiplication of two numbers. 5. Write Python program to evaluate each of the following equations. i. $x + yz$ ii. $xy + ab^2$ iii. $a^2 + 2ab + b^2$ iv. $a^2 - 2ab + b^2$ v. $(a - b)(a + b)$ vi. $a^3 + b^3 + 3ab(a + b)$ vii. $a^3 - b^3 - 3ab(a - b)$ viii. $(a - b)(a^2 + ab + b^2)$ ix. $(a + b)(a^2 - ab + b^2)$ x. $3xy^3 + 9x^2 y^3 + 5y^3x$ 6. Write a Python program to calculate simple and compound interest. 7. Write a Python program to find average of any two numbers. 8. Write a Python program to swap values of two variables with and without using third variable. 9. Write a Python program to display the size of every data type. 10. Write a Python program to convert Kilogram into Gram. 11. Write a Python program to find remainder of division operation where the dividend and divisor are both natural number. 12. Write a Python program to find volume of sphere. Formula V=(4πr^3)/3 where π=3.14 and r is radius of sphere. 13. Write a Python program to check whether the number is odd or even. 14. Write a Python program to find profit or loss based on cost price and sell price of an item. Also print profit or loss percentage. (Profit and loss must be positive number only) 15. Write a Python program to accept two Integers and check if they are equal. 16. Write a Python program to check whether the number is positive, negative or	

zero.

17. Write a Python program to check whether the number is divisible by 5 or not.
18. Write a Python program to find whether the given year is a leap year or not. (A year is leap if it is divisible by 4 and divisible by 100 or 400.)
19. Write a Python program to input three numbers and display the maximum number.
20. Write a Python program to check whether a number is Prime or not. (a whole number greater than 1 that cannot be exactly divided by any whole number other than itself and 1 (e.g. 2, 3, 5, 7, 11).)
21. Write a Python program to find the largest and smallest among three entered numbers and also display whether the identified largest/smallest number is even or odd.
22. Write a program to input marks of 5 subjects of a student and display the total marks scored, percentage scored and the class of result.

    Result criteria:

    Percentage >= 70% : Distinction

    Percentage >= 60% and < 70% : First Class

    Percentage >= 50% and < 60% : Second Class

    Percentage >= 40% and < 50% : Pass Class

    Percentage < 40% : Fail
23. Mr. Roy is living in Canada where temperature is mapped in Fahrenheit. According to weather report current temperature in Canada is 130 °F. Roy's mother is living in different region of Canada where temperature is mapped in Celsius. Convert current temperature of Canada into Celsius. C = (F - 32) * 5 / 9
24. Write a Python program that takes any character as an input and check whether it is alphabet, digit or special character.
25. Write a python program to check whether the number is odd or even.
26. Write a python program to print your name ten times using loop.
27. Write a python program to find the sum of the first N natural numbers. [Hint: 1+2+3+4+….+N]
28. Write a python program to find N! (5 factorial=1*2*3*4*5)
29. Write a python program to find reverse of number.

30. Write a python program to print sum of digit in a number. N = 1234 then 1 + 2 + 3 + 4 = 10.
31. To find total number of odd digit, even digit, sum of odd digit and sum of even digit from the given number.
32. Write a python program to print following patterns:

`` * *** ***** ******* ********* ```	``` ********* ******* ***** *** * ```	``` 12345 4321 123 21 1 ```
`` ********** **** **** *** *** ** ** * * ** ** *** *** **** **** ********** ```	``` * *** ***** ******* ********* ******* ***** *** * ```	``` 11111 0000 111 00 1 ```
`` * * * * * * * * * * * * * * ```	``` 5 54 543 5432 54321 ```	``` 1 10 101 1010 10101 ```
`` 55555 45555 34555 23455 12345 ```	``` A AB ABC ABCD ABCDE ```	``` EEEEE DDDD CCC BB A ```

33. Write a python program to print sum of digit in a number. N = 1234 then 1 + 2 + 3 + 4 = 10.
34. Write a python program to print sum of even numbers up to given N number.
    Ex. N = 10 then 2 + 4 + 6 + 8 + 10 = 30
35. Write a python program to print sum of odd numbers up to given N number.
    Ex. N = 10 then 1 + 3 + 5 + 7 + 9 = 25.

Practical No. 2	**Enrollment No.**	
Practical Problem	1. Write a Python program to calculate the length of a string. 2. Write a Python program to print a string made of the first two and the last two characters from a given a string. If the string length is less than 2, then print "Empty String" Sample String : 'Python' Expected Result : 'Pyon' Sample String : 'PY' Expected Result : 'PYPY' Sample String : ' P' Expected Result : "Empty String" 3. Write a Python program to print a string from a given string where all occurrences of first character will changed to '@', except the first character itself. Sample String : 'restart' Expected Result : 'resta@t' 4. Write a Python program to print a single string from two given strings, separated by a space and swap the first two characters of each string. Sample String : 'abc', 'xyz' Expected Result : 'xyc abz'. 5. Write a Python program to add 'ing' at the end of a given string (length should be at least 3). If the given string already ends with 'ing' then add 'ly' at the end of string. If the string length of the given string is less than 3, leave it unchanged and print string as it is. Sample String : 'abc' Expected Result : 'abcing' Sample String : 'string' Expected Result : 'stringly'. 6. Write a Python program to remove the n^{th} index character from a nonempty string. 7. Write a Python program to change a given string to a new string where the firs	

	characters have been exchanged. Sample String : 'abcd' Expected Result : 'dbca' Sample String : '12345' Expected Result : ' 52341'. 8. Write a Python program to remove the characters which have odd index values of a given string. Write a Python program that takes string from the user and displays that string in upper and lower cases.

Practical No. 3	**Enrollment No.**	
Practical Problem	1. Write a Python program to sum all the items in a list. 2. Write a Python program to get the largest number from a list. 3. Write a Python program to count the number of strings in list where the string length is 2 or more and the first and last character are same. Sample List: ['abc', 'xyz', 'aba', '1221'] Output: 2 4. Write a Python program to remove duplicates from a list. 5. Write a Python program to find the list of words that are longer than n from a given list of words. N=3, Word List =The quick brown fox jumps over the lazy dog Output: ['quick', 'brown', 'jumps', 'over', 'lazy'] Write a Python program to print the numbers from the list after removing even numbers from it.	

Practical No. 4	**Enrollment No.**	
Practical Problem	1. Write a python script that loads the "Marks.csv" file and do the following: I. Add the "**Total**" column, which stores the total of all the subject marks. II. Add columns **FOP_GRADES, DBMS_GRADES, CFO_GRADES, MATHS_GRADES,** and **PC_GRADES**. These columns store the grades scored by the student based on subject marks. Grades calculated based on the given criteria:	

a. If the subject marks less than 40, then the grade is FF.
b. If the subject marks between 40 to 50, then the grade is CC.
c. If the subject marks between 50 to 60, then the grade is BC.
d. If the subject marks between 60 to 70, then the grade is AB.
e. If the subject marks greater than 70, then the grade is AA.

III. Add the "**Percentage**" column, which stores the percentage.

IV. Add the "**Result Class**" column, which stores the result of the student. The result will be considered based on the given criteria:
a. If the student scores less than 40 marks in any subject or the percentage is less than 40, store the result "FAIL".
b. If the percentage is between 40 to 50, then store result "PASS".
c. If the percentage is between 50 to 60, then store result "SECOND".
d. If the percentage is between 60 to 70, then store result "FIRST".
e. If the percentage is greater than 70, then store result "DISTINCTION".

V. Print the name of the student who secured the 1st Rank based on percentage.

VI. Print the name of the student who secured the minimum percentage.

VII. Store the updated csv file as result.csv.

2. Write a python script that load the "Production.csv" file and do the following:

I. Read the data from said csv file print the data.

II. Print max, min value of 'Production' column.

III. Print the "Mine Name/s" whose production is 0.

IV. Print the second highest production.

V. Print the third minimum labor hours.

VI. Print the report for column Labor Hours, report contains count, mean, standard deviation, min, max, 25th percentile, 50th percentile, and 75th percentile.

VII. Insert a column at the last position in the csv sheet and fill it with NaN values.

VIII. Calculate and print the sum and average of the production and labor hours column.

IX. Store the updated csv file as result.csv.