Lab 1

Python basic, Data types, Typecasting, Data type conversions, String operations, Slicing, Stride, String Methods. Python programming fundamentals-conditions & Branching

1. Write a code which inputs two integers a and b from user . Add code to print three lines where:
   - The first line contains the sum of the two numbers.
   - The second line contains the difference of the two numbers (first - second).
   - The third line contains the product of the two numbers.
2. Write a code which inputs two integers, a and b. Add logic to print two lines. The first line should contain the result of integer division(//) . The second line should contain the result of float division(/).
3. Write a code which inputs an integer, n , perform the following conditional actions:
   - If n is odd, print Weird
   - If n is even and in the inclusive range of 2 to 5 , print Not Weird
   - If n is even and in the inclusive range of 6 to 20 , print Weird
   - If n is even and greater than 20, print Not Weird
4. Write a code which inputs three numbers and display the largest / smallest number.
5. Determine whether a number is a perfect number
6. Determine whether a number is an Armstrong number
7. Input a number and check if the number is a prime or composite number.
8. Grade Calculator: Write a code that takes a percentage score from the user and prints their corresponding letter grade.
9. write a code which inputs an integer,n. For all non-negative integers i¡n, print i^2. Example: n=3 The list of non-negative integers that are less than 3 is [0,1,2]. Print the square of each number on a separate line.
   0
   1
   4
10. Guess the Number Game: Develop a game where the computer generates a random number, and the user has to guess it within a certain number of tries.

Lab 2

Control Structures in Python

1. Write a program for checking if a year is a leap year. An extra day is added to the calendar almost every four years as February 29, and the day is called a leap day. It corrects the calendar for the fact that our planet takes approximately 365.25 days to orbit the sun. A leap year contains a leap day. In the Gregorian calendar, three conditions are used to identify leap years:

   - The year can be evenly divided by 4, is a leap year, unless:
   - The year can be evenly divided by 100, it is NOT a leap year, unless:
   - The year is also evenly divisible by 400. Then it is a leap year.

   This means that in the Gregorian calendar, the years 2000 and 2400 are leap years, while 1800, 1900, 2100, 2200, 2300 and 2500 are NOT leap years.

2. Write a program to accept a coordinate point in an XY coordinate system and determine in which quadrant the coordinate point lies.

3. Write a program to determine eligibility for admission to a professional course based on the following criteria: Eligibility Criteria : Marks in Maths >=65 and Marks in Phy >= 55 and Marks in Chem>= 50 and Total in all three subject >= 190 or Total in Maths and Physics >= 140

   - using if-else
   - using and/or in one single statement

4. Write a program to calculate and print the electricity bill of a given customer. The customer ID, name, and unit consumed by the user should be captured from the keyboard to display the total amount to be paid to the customer. The charge are as follow :

   Unit Charge/unit
   upto 199 @1.20
   200 and above but less than 400 @1.50
   400 and above but less than 600 @1.80
   600 and above @2.00
   If bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/-

5. Given an integer num, return the number of steps to reduce it to zero. In one step, if the current number is even, you have to divide it by 2, otherwise, you have to subtract 1 from it.

6. Converting numbers from decimal to binary using while loop

7. Write a program to enter the numbers till the user enter zero and at the end it should display the count of positive and negative numbers entered

8. Write a program to demonstrate break, pass & continue in python

9. Write a program to take two inputs i & j for 2 loops: outer and inner respectively and break the loop if j is divisible by i

10. Write a program to accept 10 numbers from the user and display the largest & smallest number

Lab 3

Strings and Lists

1. Write a program to print your name in following format: For example, str="BHILAI"
   B
   BH
   BHI
   BHIL
   BHILA
   BHILAI
2. Python program to find the maximum frequency character in the string
3. Write a program to count vowels and consonants in a string
4. Write a program to remove duplicates in a string
5. write a Python program to count the occurrence of each character in a word
6. write a program to convert lower letter to upper and upper letter to lower in a string
7. write a Program to Find Even Numbers From a List
8. write a program for Interchanging First and Last Element of a List
9. Write a Python program to print a specified list after removing the 0th, 4th and 5th elements
10. Write a Python program to find the second smallest number in a list