Pre Terminal Assignment for Class 12 Computer Science Students

1. Python Datatypes:

   A. Write a program that takes user input and determines whether it is of type integer, float, or string.
   B. Create a program that converts a string input to a list of characters.
   C. Develop a program that calculates the area of a circle given its radius using appropriate data types.

2. Python operators:

   A. Write a program that calculates the area of a triangle given the base and height using appropriate operators.
   B. Create a program that checks whether a given number is even or odd using modulo operator.
   C. Develop a program that calculates the compound interest given principal, rate, and time using arithmetic operators.

3. Python expressions:

   A. Write a program that evaluates the expression: $3x^2 + 5x - 10$ for a given value of x.
   B. Create a program that computes the average of three numbers using an expression.
   C. Develop a program that converts temperature from Celsius to Fahrenheit using an expression.

4. Python Flow of control:

   A. Write a program that determines whether a given year is a leap year or not using conditional statements.
   B. Create a program that checks whether a given number is positive, negative, or zero using if-elif-else statements.
   C. Develop a program that finds the maximum of three numbers using nested if statements.

5. Python Iterative statement (for, while, range):

   A. Write a program that prints the first 10 natural numbers using a while loop.
   B. Create a program that prints the multiplication table of a given number using a for loop.
   C. Develop a program that calculates the factorial of a given number using a for loop.

6. Python strings with inbuilt functions:

   A. Write a program that counts the number of occurrences of a specific character in a given string using the count() function.
   B. Create a program that checks whether a given string is a palindrome or not using the join() and reversed() functions.
   C. Develop a program that converts a string to uppercase using the upper() function.

7. Python Lists with inbuilt functions:

   A. Write a program that finds the sum of all elements in a list using the sum() function.
   B. Create a program that sorts a list of numbers in ascending order using the sort() function.
   C. Develop a program that removes duplicates from a list using the set() function.

8. Python Tuples with inbuilt functions:

   A. Write a program that finds the index of a specific element in a tuple using the index() function.
   B. Create a program that counts the number of occurrences of a specific element in a tuple using the count() function.
   C. Develop a program that converts a tuple to a list using the list() function.

9. Python Dictionary with inbuilt functions:

   A. Write a program that checks whether a key exists in a dictionary using the in keyword.
   B. Create a program that prints all keys and values of a dictionary using the items() function.
   C. Develop a program that removes a key-value pair from a dictionary using the pop() function.

10. Python in-built modules (math, random, statistics):

    A. Write a program that calculates the square root of a number using the math module.
    B. Create a program that generates a random number between a given range using the random module.
    C. Develop a program that calculates the mean and median of a list of numbers using the statistics module.