Practice Assignment (Python Programing)

Section A: Python Basics and Loops

1. Write a python program to check whether a number is divisible by 7 or not.
2. Write a python program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:

   Percentage >= 90% : Grade A

   Percentage >= 80% : Grade B

   Percentage >= 70% : Grade C

   Percentage >= 60% : Grade D

   Percentage >= 40% : Grade E

   Percentage < 40% : Grade F

   NB:- Marks ranges from 0 – 100. Need to check for the invalid inputs.
3. Write a python program to find sum of all even numbers between 1 to n.
4. Write a python program to print multiplication table of a given number.

   NB: If the given number is 5 then the output should be in the following format

   1 x 5 = 5
   2 x 5 = 10
   ……..
   ……..
   10 x 5 = 50
5. Write a python program to check whether a number is Armstrong number or not.

   eg:- 153 is an Armstrong number. Because, $1^3 + 5^3 + 3^3 = 153$
6. Write a python program to print Fibonacci series up to n terms.
7. Write a python program to solve Quadratic Equation

Section B: Python Function

Write a Python program to create a function:

8. To check whether a number is palindrome or not and returns True or False respectively.

9. That accept an integer number, find if it is Disarium number or not (Hint: A number is said to be a Disarium number when the sum of its digit raised to the power of their respective position is equal to the number itself. Eg: 175 is a Disarium number, $1^1 + 7^2 + 5^3 = 175$)

10. That accepts a string, check for Palindrome and returns True or False respectively.

11. To check whether a number is Prime number or not.

Write a Python program to create a recursive function:

12. To calculate the factorial of a number (a non-negative integer). Pass the integer as an argument and return the factorial.

13. That accepts a number and find the harmonic sum of that number. (Hint: the harmonic sum of n is equal to the sum of reciprocals of positive integers up to n). For example, if n =3, HS = 1+1/2+1/3

14. That accepts a number and find the sum of geometric series of that number. (Hint: Geometric series of 4 = 1+1/2+1/4+1/8)

Section C: Python Object Oriented Programming

15. Write a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle.

16. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.

17. Create a class vehicle with attributes name, type, colour, price and a method describing the details. Create two new vehicles called car1 and car2. Set car1 to be a red convertible car worth $60,000.00 with a name of Ferrari, and car2 to be a blue van named Jump worth $10,000.00. Your program must display the details of both cars.

18. Create a class Employee with details name, designation, department and display the details. After that, do the following:
    a. Create a new attribute date of joining.
    b. Check for department attribute.
    c. Retrieve the employee name
    d. Delete the attribute designation

19. Create a class Person with name and age as attributes. Age is a private, attribute of Person which should not be permitted to access outside class.

20. Write a program to implement single inheritance.
    a. Create the parent class Circle. Initialise the constructor with the radius of the circle.
    b. Define the method get_radius() and calc_area() to know the radius and area of the circle.
    c. Create the child class named Cylinder. Initialise the value of the height within the constructor and call the constructor of the parent class to initialise the radius of the cylinder.
    d. Finally, defi ne the method Calc_area() in the class Cylinder to calculate the area of the cylinder.
       Note: Area of Cylinder = 2 * pi * radius * height