## Programming Exercises

1. Write a program display "Hello World!".
2. Write a program to find sum of two numbers. Use input() function to take input from the user.
3. Write a program to calculate discount on the basis of following assumption:
   a) If purchased amount is greater than or equal to 1000, discount is 5%
4. Write a program to calculate discount on the basis of following assumption:
   a) If purchased amount is greater than or equal to 1000, discount is 5%
   b) If purchased amount is less than 1000, discount is 3%
5. Write a program to calculate discount on the basis of following assumption:
   a) If purchased amount is greater than or equal to 5000, discount is 10%
   b) If purchased amount is greater than or equal to 4000 and less than 5000, discount is 7%
   c) If purchased amount is greater than or equal to 3000 and less than 4000, discount is 5%
   d) If purchased amount is greater than or equal to 2000 and less than 3000, discount is 3%
   e) If purchased amount is less than 2000, discount is 2%
6. Write a program to calculate the simple interest on the basis of following assumption:
   a) If balance is greater than 99999, interest is 7 %
   b) If balance is greater than or equal to 50000 and less than 100000 interest is 5 %
   c) If balance is less than 50000, interest is 3%
7. Write a program to test whether a number is even or odd.
8. Admission to a professional course is subject to the following conditions:
   a) Marks in mathematics        >=60
   b) Marks in physics            >=50
   c) Marks in chemistry          >=40
   d) Total in all three subjects  >=200
   
   **Or**
   
   Total in mathematics and physics >=150
   Given the marks in three subjects, write a program to process the applications to list eligible candidates.
9. The rates of tax on gross salary are as shown below:

   | Income | Tax |
   | --- | --- |
   | Less than 10,000 | Nill |
   | Rs. 10,000 to 19,999 | 10% |
   | Rs. 20,000 to 39,999 | 15% |
   | Rs. 40,000 to above | 20% |

   Write a program to compute the net salary after deducting the tax for the given information and print the same.
10. Write a program to display "SMS, TU" 10 times.
11. Write a program to find sum and average of 10 numbers stored in a list.
12. Write a program to display prime numbers up to 100.
13. Write a program to count number of vowels in a string.
14. Write a program to find smallest and largest number among 10 numbers stored in a list.
15. Write a program to count even numbers and odd numbers stored in a list.
16. Write a program to find sum of two matrices.
17. Write a program to find product of two matrices.

18. Write a program using function with return type to find sum of two numbers.
19. Write a program using recursive function to find factorial of a number.
20. Write a program using recursive function to find n$^{th}$ Fibonacci number.
21. Write a program to read from and write to files.
22. Write a program to find sum and average of numbers stored in a file.
23. Write a program that reads data from a text file, counts number of vowels in it, and writes number of vowels in a separate text file.
24. Write a program that reads a CSV file with eight fields (SID, Name, and Marks in five subjects) and displays name and total marks obtained by each student.
25. Create a class **Circle** containing **radius** as instance variable and two functions **area()** and **circumference()** to find area and circumference of circles respectively. Create at least two objects of the *Circle* class to test the program.
26. Create a class **Rectangle** containing **length** and **breadth** as instance variables and two functions **area()** and **perimeter()** to find area and perimeter of rectangles respectively. Create at least two objects of the *Rectangle* class to test the program.
27. Create a class **Distance** containing **feet** and **inches** as instance variables and two functions **add()** and **compare()** for adding and comparing two distance objects. Create two objects to add and compare the objects.
28. Create a class Student with name, roll number, and marks in five subjects. Add two functions to calculate total and percentage of marks obtained. Use this class to find percentage and division of five students.