



# CCS1063 | CSE1062 Fundamentals of Programming

## - Lab Sheet 06 -

1. Write a C program to add two numbers according to the user input. You should declare a separate function called "addition ()" to add two given user inputs.
2. Write a function (without parameters) that increments the count by 1 and set it back to 0 when it reaches multiples of 9.
3. Write functions to compute the surface area and volume of a cube for a given length of a side.
4. Write a simple T20 cricket prediction program as follows. When you are given the current run rate(runs per over) and the number of overs played, predict the projected score for the current run rate and higher run rates for the whole inning.(e.g. Current RR: 6.4 per over, Higher RR: 7 per over, 8 per over, 9 per over).
5. Write a C program to implement a game application that plays the children's game of rock, paper, and scissors. The user enters a letter, indicating a choice. Write a method to pick a value in the range of 1 through 3, with 1 corresponding to rock, 2 corresponding to paper, and 3 corresponding to scissors. The computer's choice is compared to the user's choice according to the rules: rock breaks scissors, scissors cut paper, and paper covers rock. Choices that match are ties. Display whether the user won, lost or the match was tied. The application should end when the user enters an invalid choice.
6. Write a C function to compute the greatest common divisor (GCD) of two given numbers.
7. Write a function in C to sum the powers  $2^n$  of all integers  $n$  between two given numbers  $a$  and  $b$ . E.g: If  $a = 5$  and  $b = 8$  Then  $\text{sum} = 52 + 62 + 72 + 82$
8. Write a recursive C function to get the following output regarding factorial.

```
Factorial of 1: 1
Factorial of 2: 2
Factorial of 3: 6
Factorial of 4: 24
Factorial of 5: 120
Factorial of 6: 720
Factorial of 7: 5040
Factorial of 8: 40320
Factorial of 9: 362880
Factorial of 10: 3628800
```



9. Write a function to calculate  $nCr$  when  $n$  and  $r$  are given using the following binomial coefficient rules.

$${}^nC_r = {}^{n-1}C_r + {}^{n-1}C_{r-1}$$

$${}^nC_0 = 1$$

$${}^nC_n = 1$$

10. Write a C program to calculate and print the first  $n$  numbers of the Fibonacci sequence using recursion. The Fibonacci sequence is a series of numbers where each number is the sum of the two preceding ones, usually starting with 0 and 1. Implement a recursive function Fibonacci to find the  $n$ th Fibonacci number and display the sequence of numbers up to the  $n$ th term.

Example Output:

```
Enter the number of Fibonacci numbers to generate: 7
Fibonacci sequence of 7 numbers: 0 1 1 2 3 5 8
```

Note: Make sure to handle input validation, ensuring that the user enters a positive integer greater than 0. If the input is invalid, display an appropriate error message.