

# Practice Problem

Prerequisite Assignment for DSA

1. Write a program to calculate average of three integers.  
Numbers are given by the user.
2. Write a program to calculate circumference of a circle.
3. Write a program to calculate simple interest.
4. Write a program to calculate volume of a cuboid.
5. Write a program to ask user about the cost price and selling price banana per dozen. Calculate the profit or loss earned upon selling 25 bananas.
6. Write a program to input a character from the user and print its ASCII code.
7. Write a program to input an ASCII code from the user and print its corresponding character.
8. Write a program to input three characters from the user and display characters with their corresponding ASCII codes.
9. WAP to take date as an input in below given format and convert the date format and display the result as given below.  
User Input date format – “DD/MM/YYYY” (27/11/2022)  
Output format – “Day – DD , Month – MM , Year – YYYY”  
(Day – 27, Month – 07, Year – 2022)
10. WAP to take time as an input in below given format and convert the time format and display the result as given below.  
User Input date format – “HH:MM”

## Conditional Statements:

11. Write a program to input three characters from the user and **display characters with their corresponding ASCII codes.**

12. Create a program that takes a person's age as input and classifies them into different age groups (**e.g., child, teenager, adult, senior**).
13. Develop a program that takes a student's score (0-100) as input and prints the corresponding grade (**e.g., A, B, C, D, F**) **based on a grading scale**.
14. Write a program that reads two integers from the user and determines **if the first integer is divisible by the second integer**.
15. Create a program that takes the lengths of three sides of a triangle as input and determines **whether the triangle is equilateral, isosceles, or scalene**.
16. Develop a program that **converts a temperature from Fahrenheit to Celsius or vice versa based on user input**. The user should specify the type of conversion.
17. Write a program that takes a start year and an end year from the user and **prints all the leap years** in that range.
18. Write a program that takes three numbers as input and finds the middle (second largest) number.
19. Develop a program that takes a month (as an integer from 1 to 12) and a year as input, then prints the number of days in that month, considering leap years.
20. Develop a program that **takes four numbers as input and prints the largest among them**.
21. Create a program that takes a number (1-7) as input and **prints the corresponding day of the week**.

## **Loops:**

22. Write a program to **calculate sum of first N natural numbers**
23. Write a program to **calculate sum of first N even natural numbers**
24. Write a program to **calculate sum of first N odd natural numbers**
25. Write a program to **calculate sum of squares of first N natural numbers**
26. Write a program to **calculate sum of cubes of first N natural numbers**
27. Write a program to **calculate factorial of a number**
28. Write a program to **count digits in a given number**
29. Write a program to **check whether a given number is a Prime number or not**
30. Write a program to **calculate LCM of two numbers**
31. Write a program to **reverse a given number**
32. Write a program to **find the Nth term of the Fibonacci series.**
33. Write a program to **print first N terms of Fibonacci series.**
34. Write a program to **check whether a given number is there in the Fibonacci series or not.**
35. Write a program to **calculate HCF of two numbers.**
36. Write a program to **check whether two given numbers are co-prime numbers or not.**
37. Write a program to **print all Prime numbers under 100.**
38. Write a program to **print all Prime numbers between two given numbers.**

39. Write a program to find next Prime number of a given number.

40. Write a program to check whether a given number is an Armstrong number or not.

41. Write a program to print all Armstrong numbers under 1000

Draw this following pattern in C++

42.

```
* * * * *
* * * * *
* * * * *
* * * * *
```

43.

```
* * * * *
*           *
*           *
*           *
* * * * *
```

44.

```
1 1 1 1 1 1
2 2 2 2 2 2
3 3 3 3 3 3
4 4 4 4 4 4
```

45.

```
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
```

46.

```
  *      * * * *
*      *
*      *
* * * * *
      *      *
      *      *
* * * * *
```

47.

```
*
* *
* * *
* * * *
* * * * *
```

48.

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

49.

```
A
A B
A B C
A B C D
A B C D E
```

50.

```

      *
      * *
      * * *
      * * * *
      * * * * *
```

51.

```
* * * * *
* * * *
* * *
* *
*
```

52.

```
* * * * *
* * * *
* * *
* *
*
```

53.

```

      *
      * *
      * * *
      * * * *
      * * * * *
```

54.

```

  1
 1 2
1 2 3
1 2 3 4
1 2 3 4 5

```

55.

```

*
* *
* * *
* * * *
* * * * *
* * * * *
* * * *
* * *
* *
*

```