

## Sample Problems

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1. **Write** a C program to reverse a number using a *while* loop.
2. **Write** a C program to display fibonacci series using *for* loop.
3. Suppose, there are two companies each having  $n$  number of employees. **Write** a C program to input the salaries of two companies in two different arrays and find out which company has higher average salary.

Sample Input	Sample Output
Enter number of employees: 5 Enter salaries of company 1: 100 550 200 250 500 Enter salaries of company 2: 450 500 750 600 350	Company 2 has higher average salary

4. **Write** a C program to compute the sum of the following series, where  $n$  is an user input and is an even integer. Use *for* statement for looping.

$$sum = 2^2 + 4^2 + 6^2 + \dots + n^2$$

5. The height travelled by a falling body is given by

$$h = ut - \frac{1}{2}gt^2$$

where  $u$  is the initial velocity (m/s),  $g = 9.8m/s^2$  is the acceleration due to gravity, and  $t$  is the time.  $u$  and  $t$  are user inputs. **Write** a C program to calculate the height  $h$  travelled in time  $t$ .

6. **Write** a C program to determine whether an integer (user input) is divisible by 6 but not divisible by 4. Use *if* statement for decision making.

7. Factorial of an integer  $m$  is defined as

$$m! = 1 \times 2 \times 3 \times \dots \times m$$

**Write** a C program for calculating  $m!$ , where the  $m$  is an integer and is the user input. Use *for* statement for looping.

**8. Write** a C program to take the length and width of a rectangle as inputs and find the area of the rectangle rounded up to two decimal places.

Sample Input:

Enter length: 10.0

Enter width: 5.0

Sample Output:

Area of the rectangle: 50.00 units

**9. Write** a C program that prints only the even numbers between 1 and 50. Use *for* loop and also use *continue* statement to avoid printing odd numbers.

**10. Write** a C program that prints the following English alphabet sequence. Use only one *for* statement for looping.

AABBCCDDEEFFGGHHIIJJKKLLMMNNOOPPQQRRSSTTUUVVWWXXYYZZ

**11. Write** a C program that can take integer inputs until a negative number is inserted. Then your program should display the largest number among all input numbers. The sample input and output for the program are as follows:

Sample Input	Sample Output
1	90
8	
32	
90	
17	
-1	

**12. Write** a C program that can take an integer number as input and display all factors of that number. For example: factors of 20 are: 1, 2, 4, 5, 10, 20

**13. Write** a C program that can take radius  $r$  of a sphere(an integer number) as input and it then calculates and displays the volume ( $\frac{3}{4}\pi r^3$ ) of the sphere as output.

**14. Solve** the problem of calculating area ( $\pi r^2$ ) and circumference ( $2\pi r$ ) of a circle by writing a C program which can input an integer number indicating radius of that circle.

**15. Write** a C program that takes an integer number as user input that indicates the annual salary of a person. The program should find and display the monthly salary of that person.

**16. Determine** the output of the following C program. **Justify** your answer with step by step analysis.

```
#include <stdio.h>
int main() {
    int i, j, k;
    for(j=0; j<5; j++) {
        for(k=0; k<2; k++) {
            printf("%c", 'A'+j);
        }
        printf("\n");
    }
    return 0;
}
```

**17. Write** a C program for reversing an array elements.

Sample Input	Sample Output
Enter no of elements: 5 Arrays: 2 4 5 6 7	After reversing array becomes: 7 6 5 4 2

**18. Write** a C program which can input a word and convert each letter to immediate next letter of the alphabet set, except the first letter. For example, if input word is “teeth” then the answer should be “tffui”.

**19. Write** a C program which can input a word and find how many vowels are there.

**20. Write** a C program which can input a string and then prints this string in reverse order. You can't use any built-in string function in your program. The sample input output for the program is as follows:

Sample Input	Sample Output
I am fine	enif ma I
Today is Sunday	yadnuS si yadoT