

Topics: Branching - if-else statements, switch statements, conditional operators.

1. Given a roll number print which section the student belongs to. Also print in which sessional section the student belongs to. (Use branching statements, as needed.)
2. Write a C program print the total number of days in a month using switch case.
3. Write a C program to check whether an alphabet is vowel or consonant using switch case.
4. Write a C program that takes a real number and prints the ceiling of that number.
5. Write a C program that takes a real number and rounds the number and prints the rounded value.
6. Write a C program that takes a real number and prints the ceiling of that number up to n digits.
7. You are given a Hexadecimal number of 4 digits. You need to convert it to a decimal number.
8. You are given Cartesian coordinates of 3 points in 2-dimensional space. Your program should find out if we can draw a circle where one of the points is the center and the others are on the circle.
9. You are given the date of births of 2 persons in dd/mm/yyyy format. You need to print out who is older. [Do not worry about leap years. Assume 365 days in a year and 28 days in February month. For all other months, use the right number of days in that month in your calculation]
10. What do you think the result of the following code snippet would be? Think about your answer first. Now, run the code. Can you explain the behavior?

```
#include <stdio.h>

int main(){
    unsigned int i=10;

    if(i>-1){
        printf("Yes");
    }
    else printf("No");
}
```

11. Sort 3 unique numbers in ascending order (smallest to largest).
12. Find the maximum and minimum of 4 numbers. The numbers may not be unique.
13. Write a program to determine the grade based on an input number. The grades chart is given below:

Marks Obtained	Grade
80 or above	A+
75 - 79	A
70 - 74	A-
65 - 69	B+

60 - 64	B
0 - 59	D

14. A line can be represented by the equation $ax + by + c = 0$. Given the parameters (a,b,c) of 2 lines as input, print out their intersection point. If the lines are parallel then print "Parallel lines" instead. Be careful to consider all possible cases. Be careful in division operations to avoid division by 0 (which will cause your program to halt).
15. In the Gregorian calendar, years that are multiples of 4 are leap years. However, exceptions to this rule occur in the century year. A century is a multiple of 100. Such a year is deemed as leap year only if it is a multiple of 400. Write a program that takes a year as input and outputs "Leap year" if the year is a leap year. Try to solve this problem using
 - a. Ternary operator only (nesting allowed, logical connectors not allowed)
 - b. Switch only (nesting allowed, logical connectors not allowed)
 - c. if-else only (nesting, if-else if chain allowed, logical connectors not allowed)
 - d. Logical connectors and branching tool of your choice
16. In this problem, you are given the price of some commodity. For the first 100 units, the rate is 0.5 Taka / unit. For the next 100 units, it is 0.8 taka / unit. Then onward, the price is 1.2 taka/unit. Your input is an integer representing the number of units bought by the customer. You must output a floating point number, upto 2 decimal digits, representing the total price. [For example, for 100, 200 and 300 units, the total price would respectively be 50.00, 130.00 and 250.00]
17. Your input is 3 integers. Assuming these as lengths of 3 lines, you have to answer – can these 3 lines form a triangle? (Recall that, the sum of length of any 2 arms of a triangle must be greater than the length of the remaining arm). If indeed a triangle can be drawn, you have to further tell – would it be any of the following?
 - a. Equilateral triangle
 - b. Bilateral triangle
 - c. Right angle triangle