

Day-3 Programs

1. Write a program to check if two integers provided by the user are equal or not.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num1;
```

```
    printf("Enter the first number:");
```

```
    scanf("%d",&num1);
```

```
    int num2;
```

```
    printf("Enter the second number:");
```

```
    scanf("%d",&num2);
```

```
    if(num1==num2){
```

```
        printf("Both are Equal");
```

```
    }
```

```
    else
```

```
    {
```

```
        printf("Both are not Equal");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the first number:2

Enter the second number:2

Both are Equal

2. Write a program to determine which of two numbers is greater using relational operators.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num1;
```

```
    printf("Enter the first number:");
```

```
    scanf("%d",&num1);
```

```
    int num2;
```

```
    printf("Enter the second number:");
```

```
    scanf("%d",&num2);
```

```
    if(num1>num2){
```

```
        printf("Num1 is greater");
```

```
    }
```

```
    else
```

```
    {
```

```
        printf("Num2 is greater");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the first number:5

Enter the second number:6

Num2 is greater

3. Use relational operators to check if a given number is positive (greater than 0).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num;
```

```
    printf("Enter the the number:");
```

```
    scanf("%d",&num);
```

```
    if(num>0){
```

```
        printf("The number is positive");
```

```
    }
```

```
    else
```

```
    {
```

```
        printf("The number can be 0 or negative");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the number:7

The number is positive

4. Write a program to verify if the given length and breadth of a rectangle satisfy the condition of a valid rectangle (length > 0 and breadth > 0).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int length;
```

```
    printf("Enter the the length:");
```

```
    scanf("%d",&length);
```

```
    int breadth;
```

```
    printf("Enter the the breadth:");
```

```
    scanf("%d",&breadth);
```

```
    if(length>0 && breadth>0){
```

```
        printf("Valid Rectangle");
```

```
    }
```

```
    else
```

```
    {
```

```
        printf("Not Valid");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the length:0

Enter the breadth:3

Not Valid

5. Given a student's marks in a subject, determine if the student has passed (marks ≥ 40).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int marks;
```

```
    printf("Enter the the marks:");
```

```
    scanf("%d",&marks);
```

```
    if(marks $\geq$ 40 && marks $\leq$ 100){
```

```
        printf("Student Passed");
```

```
    }
```

```
    else
```

```
    {
```

```
        printf("Student Failed");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the Marks:39

Student Failed

6. Use relational operators to check if a given number lies between 10 and 50 (inclusive).

```
#include <stdio.h>
```

```
int main()
{
    int num;

    printf("Enter the the number:");
    scanf("%d",&num);

    if(num>=10 && num<=50){
        printf("Within the range");
    }
    else
    {
        printf("Not within the range");
    }

    return 0;
}
```

Output

Enter the number:23

Within the range

7. Write a program to check if a given character is a lowercase English letter (between 'a' and 'z').

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    char letter;
```

```
    printf("Enter the letter:");
```

```
    scanf("%c",&letter);
```

```
    if(letter>='a' && letter<='z'){
```

```
        printf("Within the range");
```

```
    }
```

```
    else{
```

```
        printf("Not within the range");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the letter:b

Within the range

8. Compare the ages of two people and determine who is older or if both are of the same age.

```
#include <stdio.h>

int main()
{
    int age1;
    printf("Enter the age1:");
    scanf("%d",&age1);

    int age2;
    printf("Enter the age2:");
    scanf("%d",&age2);

    if(age1>age2){
        printf("Person1 is older");
    }
    else if(age1<age2){
        printf("Person 2 is older");
    }
    else{
        printf("Both are of same age");
    }

    return 0;
}
```

Output

Enter the age1:22

Enter the age2:22

Both are of same age

9. Write a program to determine if the weight of an object exceeds the specified maximum limit (e.g., 50 kg).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int weight;
```

```
    printf("Enter the weight:");
```

```
    scanf("%d",&weight);
```

```
    if(weight>50){
```

```
        printf("The weight exceeds");
```

```
    }
```

```
    else{
```

```
        printf("The weight not exceeds");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the weight:51

The weight exceeds

10. Compare the areas of two rectangles given their lengths and breadths and determine which rectangle has a larger area.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int length1=5;
```

```
    int breadth1=2;
```

```
    int length2=10;
```

```
    int breadth2=5;
```

```
    int area1=length1*breadth1;
```

```
    int area2=length2*breadth2;
```

```
    printf("Area1=%d\n",area1);
```

```
    printf("Area2=%d\n",area2);
```

```
    if(area1>area2){
```

```
        printf("Area1 is larger");
```

```
    }
```

```
    else{
```

```
        printf("Area2 is larger");
```

```
    }
```

```
    return 0;
}
```

Output

Area1=10

Area2=50

Area2 is larger

Bitwise Operators

11. Write a program to compute the result of the bitwise AND operation between two integers provided by the user.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num1;
```

```
    printf("Enter the first number:");
```

```
    scanf("%d",&num1);
```

```
    int num2;
```

```
    printf("Enter the second number:");
```

```
    scanf("%d",&num2);
```

```
    int result=num1&num2;
```

```
    printf("Result=%d\n",result);
```

```
    return 0;
}
```

Ouput

Enter the first number:30

Enter the second number:31

Result=30

12. Write a program to compute the result of the bitwise OR operation between two integers provided by the user.

```
#include <stdio.h>
```

```
int main()
{
    int num1;
    printf("Enter the first number:");
    scanf("%d",&num1);

    int num2;
    printf("Enter the second number:");
    scanf("%d",&num2);

    int result=num1|num2;
    printf("Result=%d\n",result);
    return 0;
}
```

Output

Enter the first number:30

Enter the second number:31

Result=31

13. Write a program to compute the result of the bitwise XOR operation between two integers provided by the user.

```
#include <stdio.h>
```

```
int main()
{
    int num1;
    printf("Enter the first number:");
    scanf("%d",&num1);

    int num2;
    printf("Enter the second number:");
    scanf("%d",&num2);

    int result=num1^num2;
    printf("Result=%d\n",result);
    return 0;
}
```

Output

Enter the first number:30

Enter the second number:31

Result=1

14. Write a program to find the bitwise complement of a given integer and print the result.

```
#include <stdio.h>
```

```
int main()
{
    int num1;
    printf("Enter the first number:");
    scanf("%d",&num1);

    int result=~num1;
    printf("Result=%d\n",result);
    return 0;
}
```

Output

Enter the first number:30

Result=-31

15. Given an integer n and a position p, write a program to toggle the bit at position p using the XOR operator.

```
#include <stdio.h>
```

```
int main()
{
    int num,position;
```

```

printf("Enter the number:");
scanf("%d",&num);

printf("Enter the position:");
scanf("%d",&position);

int result=num^(1<<position);
printf("Result=%d\n",result);
return 0;
}

```

Output

Enter the number:10

Enter the position:1

Result=8

16. Write a program to set the bit at a given position p in an integer n to 1 using the OR operator.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num,position;
```

```
    printf("Enter the number:");
```

```

scanf("%d",&num);

printf("Enter the position:");
scanf("%d",&position);

int result=num|(1<<position);
printf("Result=%d\n",result);

return 0;
}

```

Output

Enter the number:10

Enter the position:2

Result=14

17. Write a program to clear (set to 0) the bit at a given position p in an integer n using the AND and NOT operators.

```
#include <stdio.h>
```

```

int main()
{
    int num,position;
    printf("Enter the number:");
    scanf("%d",&num);

```



```

printf("Enter the position:");

scanf("%d",&position);


int result=num&(~(0<<position));

printf("Result=%d\n",result);


return 0;
}

```

Output

Enter the number:11

Enter the position:1

Result=11

Combined Programs

18. Write a program to check if a given integer is both a multiple of 5 (arithmetic operator) and greater than 50 (relational operator). Additionally, verify if its binary representation has its least significant bit set (bitwise AND operation).

```
#include <stdio.h>
```

```

int main()
{
    int num;

    printf("Enter the number:");

    scanf("%d",&num);

```

```

int position;

printf("Enter the position:");

scanf("%d",&position);


if(num%5==0 && num>50){

    printf("Both conditions Satisfied\n");

}

else{

    printf("Not Satisfied\n");

}

int result=num&(1<<position);

printf("Result=%d\n",result);


return 0;

}

```

Output

Enter the number:13

Enter the position:2

Not Satisfied

Result=4

19. Given an integer n and a bit position p:

Use bit masking and bitwise XOR to toggle the bit at position p.

After toggling, check if the updated number is positive (arithmetic and relational operators) and divisible by 2 (logical operators).

```
#include <stdio.h>

int main()
{
    int num;
    printf("Enter the number:");
    scanf("%d",&num);

    int position;
    printf("Enter the position:");
    scanf("%d",&position);

    int result=num^(1<<position);
    printf("Result=%d\n",result);

    if(result>=0 && result%2==0){
        printf("Both conditions satisfied");
    }
    else{
        printf("Not Satisfied");
    }

    return 0;
}
```

Output

Enter the number:-3

Enter the position:0

Result=-4

Not Satisfied

20.A person can vote if:

Their age is greater than or equal to 18 (relational operator).

They are a registered citizen, represented by a specific bit set in their ID number (bit masking and bitwise AND).

Write a program to verify these conditions using logical operators.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int age;
```

```
    printf("Enter the age:");
```

```
    scanf("%d",&age);
```

```
    int id;
```

```
    printf("Enter the id:");
```

```
    scanf("%d",&id);
```

```
    int position;
```

```
    printf("Enter the position:");
```

```
    scanf("%d",&position);
```

```
    if(age>=18 && id!=0){
```

```
        printf("Person can vote\n");
```

```
    }
```

```

else{
    printf("Not Eligible\n");
}
int result=id&(1<<position);
printf("Result=%d\n",result);

return 0;
}

```

Output

Enter the age:54

Enter the id:60

Enter the position:2

Person can vote

Result=4

21. Write a program to:

Use bit masking and bitwise OR to set a specific bit in a number.

Use bitwise AND and NOT to clear another specific bit.

Check if the resulting number is odd (arithmetic and relational operators) and lies within a range (logical operators).

```
#include <stdio.h>
```

```

int main()
{
    int num;
    printf("Enter the num:");

```

```
scanf("%d",&num);
```

```
int position;
```

```
printf("Enter the position:");
```

```
scanf("%d",&position);
```

```
int result=num | (1<<position);
```

```
printf("Result=%d\n",result);
```

```
int position1;
```

```
printf("Enter the position1:");
```

```
scanf("%d",&position1);
```

```
int result1=result&(~(1<<position1));
```

```
printf("Result1=%d\n",result1);
```

```
if(result1%2!=0 && result1>0 && result1<500){
```

```
    printf("Condition Satisfied");
```

```
}
```

```
else{
```

```
    printf("Not Satisfied");
```

```
}
```

```
return 0;
```

```
}
```

Output

Enter the num:5

Enter the position:1

Result=7

Enter the position1:2

Result1=3

Condition Satisfied

22. Given two integers a and b, perform the following:

Compute their sum and product (arithmetic operators).

Verify if the sum is greater than 100 and the product is divisible by 4 (relational and logical operators).

Check if the binary representation of a has its second bit set (bitwise AND with a mask).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int a;
```

```
    printf("Enter a value:");
```

```
    scanf("%d",&a);
```

```
    int b;
```

```
    printf("Enter b value:");
```

```
    scanf("%d",&b);
```

```
    int position;
```

```
printf("Enter the position:");
scanf("%d",&position);

int sum=a+b;
int product=a*b;

printf("Sum=%d\n",sum);
printf("Product=%d\n",product);

if(sum>100 && product%4==0){
    printf("Both conditions satisfied\n");
}
else{
    printf("Not Satisfied\n");
}

int result=a&(1<<position);
printf("Result=%d\n",result);

return 0;
}
```

Output

Enter a value:200

Enter b value:200

Enter the position:2

Sum=400

Product=40000

Both conditions satisfied

Result=0

if statements

1. Write a program to check if a number entered by the user is positive using an if statement.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num;
```

```
    printf("Enter the number:");
```

```
    scanf("%d",&num);
```

```
    if(num>=0){
```

```
        printf("The number is positive");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the number:2

The number is positive

2. Write a program to check if a number is divisible by 3 using an if statement.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num;
```

```
    printf("Enter the number:");
```

```
    scanf("%d",&num);
```

```
    if(num%3==0){
```

```
        printf("The number is divisible by 3");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the number:9

The number is divisible by 3

if-else statement

3. Write a program to determine if a number is odd or even using an if-else statement.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num;
```

```
    printf("Enter the number:");
```

```
    scanf("%d",&num);
```

```
    if(num%2==0){
```

```
        printf("The number is even");
```

```
    }
```

```
    else{
```

```
        printf("The number is odd");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the number:5

The number is odd

4. Write a program to check if a student has passed an exam based on their marks (pass marks are 40). If the marks are below 40, display "Fail."

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int marks;
```

```
    printf("Enter the marks:");
```

```
    scanf("%d",&marks);
```

```
    if(marks>=40){
```

```
        printf("Pass");
```

```
    }
```

```
    else{
```

```
        printf("Fail");
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the marks:39

Fail

Nested-if-else statement

5. Given the lengths of three sides, write a program to determine if the triangle is valid using nested if-else. If valid, check if it is an equilateral triangle.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int s1=2;
```

```
    int s2=3;
```

```
    int s3=4;
```

```
    if(s1+s2>s3 && s2+s3>s1 && s1+s3>s2){
```

```
        printf("The triangle is valid\n");
```

```
        if(s1==s2 && s2==s3){
```

```
            printf("Equilateral Triangle\n");
```

```
        }
```

```
    else{
```

```
        printf("Not an Equilateral triangle\n");
```

```
    }
```

```
}
```

```
else{
```

```
    printf("Not valid triangle\n");
```

```
}
```

```
    return 0;
```

```
}
```

Output

The triangle is valid

Not an Equilateral triangle

6. Write a program to check if a student is eligible for admission based on the following criteria:

Marks in mathematics ≥ 50

Marks in physics ≥ 50

Total marks (math + physics) ≥ 120

Use nested if-else statements.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int mathmarks;
```

```
    printf("Enter the mathmarks:");
```

```
    scanf("%d",&mathmarks);
```

```
    int phymarks;
```

```
    printf("Enter the phymarks:");
```

```
    scanf("%d",&phymarks);
```

```
    if(mathmarks $\geq$ 50){
```

```
        if(phymarks $\geq$ 50){
```

```
            if((mathmarks+phymarks) $\geq$ 120){
```

```

        printf("Eligible for admission");
    }
    else{
        printf("Not Eligible");
    }
}
else{
    printf("Not Eligible phy marks are less");
}
else{
    printf("Not Eligible maths marks are less");
}

}

return 0;
}

```

Output

Enter mathmarks=50

Enter phymarks=50

Not Eligible

if-else-if ladder

7. Write a program to calculate and print the grade of a student based on their percentage using an if-else-if ladder:

= 90: Grade A

= 75: Grade B

= 50: Grade C

< 50: Fail

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int percentage;
```

```
    printf("Enter the percentage:");
```

```
    scanf("%d",&percentage);
```

```
    if (percentage >= 90){
```

```
        printf("Grade A");
```

```
    }
```

```
    else if (percentage >= 75 && percentage < 90){
```

```
        printf("Grade B");
```

```
    }
```

```
    else if (percentage >= 50 && percentage < 75){
```

```
        printf("Grade C");
```

```
    }
```

```
    else{
```

```
        printf("Fail");
```

```
    }
```



```
    return 0;
}
```

Output

Enter the percentage:49

Fail

8. Write a program to classify an integer as positive, negative, or zero using an if-else-if ladder.

```
#include <stdio.h>
```

```
int main()
{
    int num;
    printf("Enter the num:");
    scanf("%d",&num);

    if(num>0){
        printf("Positive Number");
    }
    else if(num<0){
        printf("Negative Number");
    }
    else{
        printf("Zero");
    }
}
```

```
    return 0;
}
```

Output

Enter the number:-1

Negative Number

9. Write a program to calculate the electricity bill based on the number of units consumed using the following criteria:

Units \leq 100: ₹5 per unit

Units $>$ 100 and \leq 200: ₹7 per unit

Units $>$ 200: ₹10 per unit

Use an if-else-if ladder to implement this.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int unit;
```

```
    printf("Enter the units:");
```

```
    scanf("%d",&unit);
```

```
    if(unit>200){
```

```
        int bill1=unit*10;
```

```
        printf("Bill=%d\n",bill1);
```

```
    }
```

```
    else if(unit>100 && unit<=200){
```

```
        int bill2=unit*7;
```

```

        printf("Bill=%d\n",bill2);
    }
    else{
        int bill3=unit*5;
        printf("Bill=%d\n",bill3);
    }
    return 0;
}

```

Output

Enter the unit:100

Bill=500

10. Write a program to print the name of the day of the week based on a number entered by the user (1 for Monday, 2 for Tuesday, ..., 7 for Sunday) using an if-else-if ladder.

```
#include <stdio.h>
```

```

int main()
{
    int num;
    printf("Enter the number:");
    scanf("%d",&num);

    if(num==7){
        printf("Sunday");
    }
    else if(num==6){

```

```
        printf("Saturday");
    }
    else if(num==5){
        printf("Friday");
    }
    else if(num==4){
        printf("Thursday");
    }
    else if(num==3){
        printf("Wednesday");
    }
    else if(num==2){
        printf("Tuesday");
    }
    else if(num==1){
        printf("Monday");
    }
    else{
        printf("Invalid Input");
    }

    return 0;
}
```

Output

Enter the number:7

Sunday

Switch Statment

1. Write a program that takes an integer (1-7) as input and uses a switch-case to print the corresponding day of the week (e.g., 1 for Monday, 2 for Tuesday, etc.).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num;
```

```
    printf("Enter the number:");
```

```
    scanf("%d",&num);
```

```
    switch(num){
```

```
        case 1:
```

```
            printf("Monday");
```

```
        break;
```

```
        case 2:
```

```
            printf("Tuesday");
```

```
        break;
```

```
        case 3:
```

```
            printf("Wednesday");
```

```
        break;
```

```
        case 4:
```

```
            printf("Thursday");
```

```
        break;
```

```
        case 5:
```

```
        printf("Friday");
    break;
case 6:
    printf("Saturday");
    break;
case 7:
    printf("Sunday");
    break;
default:
    printf("Invalid Input");
    break;
}

return 0;
}
```

Output

Enter the number:7

Sunday

2. Write a program to perform basic arithmetic operations (addition, subtraction, multiplication, division) based on the operator input (+, -, *, /) using a switch-case statement.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
char operator;  
printf("Enter the operator:");  
scanf("%c",&operator);
```

```
float num1;  
printf("Enter the number1:");  
scanf("%f",&num1);
```

```
float num2;  
printf("Enter the number2:");  
scanf("%f",&num2);
```

```
float result;
```

```
switch(operator){  
    case '+':  
        result=num1+num2;  
        printf("Sum of %f and %f is:%f\n",num1,num2,result);  
        break;  
    case '-':  
        result=num1-num2;  
        printf("Difference of %f and %f is:%f\n",num1,num2,result);  
        break;  
    case '*':  
        result=num1*num2;  
        printf("Product of %f and %f is:%f\n",num1,num2,result);  
        break;
```

```

    case '/':
        result=num1/num2;
        printf("Division of %f and %f is:%f\n",num1,num2,result);
        break;
    default:
        printf("Invalid Operator");
        break;
}

return 0;
}

```

Output

Enter the operator:+

Enter the number1:5

Enter the number2:5

Sum of 5.00 and 5.00 is 10.00

3. Write a program that takes a single character as input and uses a switch-case to determine if it is a vowel or a consonant.

```
#include <stdio.h>
```

```

int main()
{
    char val;
    printf("Enter the val:");
    scanf("%c",&val);

```



```
switch(val){
    case 'a':
    case 'e':
    case 'i':
    case 'o':
    case 'u':
    case 'A':
    case 'E':
    case 'I':
    case 'O':
    case 'U':
        printf("vowel\n");
        break;
    default:
        printf("Consonant");
        break;
}

return 0;
}
```

Output

Enter the val=b

Consonant

4. Write a program to convert a single-digit number (0-9) into its word representation (e.g., 1 to "One", 2 to "Two") using a switch-case statement.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num;
```

```
    printf("Enter the num:");
```

```
    scanf("%d",&num);
```

```
    switch(num){
```

```
        case 0:
```

```
            printf("Zero");
```

```
        break;
```

```
        case 1:
```

```
            printf("One");
```

```
        break;
```

```
        case 2:
```

```
            printf("Two");
```

```
        break;
```

```
        case 3:
```

```
            printf("Three");
```

```
        break;
```

```
        case 4:
```

```
            printf("Four");
```

```
        break;
```

```
        case 5:
```

```
        printf("Five");
    break;
case 6:
    printf("Six");
    break;
case 7:
    printf("Seven");
    break;
case 8:
    printf("Eight");
    break;
case 9:
    printf("Nine");
    break;

default:
    printf("Invalid Input");
    break;
}

return 0;
}
```

Output

Enter the num:9

Nine

5. Write a program that takes an integer (1-12) as input and uses a switch-case to print the name of the corresponding month (e.g., 1 for January, 2 for February, etc.).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int num;
```

```
    printf("Enter the num:");
```

```
    scanf("%d",&num);
```

```
    switch(num){
```

```
        case 1:
```

```
            printf("January");
```

```
        break;
```

```
        case 2:
```

```
            printf("February");
```

```
        break;
```

```
        case 3:
```

```
            printf("March");
```

```
        break;
```

```
        case 4:
```

```
            printf("April");
```

```
        break;
```

```
        case 5:
```

```
            printf("May");
```

```
        break;
```

```
case 6:
    printf("June");
break;
case 7:
    printf("July");
break;
case 8:
    printf("August");
break;
case 9:
    printf("September");
break;
case 10:
    printf("October");
break;
case 11:
    printf("November");
break;
case 12:
    printf("December");
break;
default:
    printf("Invalid Input");
break;
}

return 0;
}
```

Output

Enter the num:7

July

6. Write a program that takes a grade (A, B, C, D, F) as input and uses a switch-case to print the description of the grade (e.g., A: "Excellent", B: "Good", etc.).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    char ch;
```

```
    printf("Enter the char:");
```

```
    scanf("%c",&ch);
```

```
    switch(ch){
```

```
        case 'A':
```

```
            printf("Excellent");
```

```
        break;
```

```
        case 'B':
```

```
            printf("Very Good");
```

```
        break;
```

```
        case 'C':
```

```
            printf("Good");
```

```
        break;
```

```
        case 'D':
```

```

        printf(" Above Average");
    break;
    case 'E':
        printf("Average");
    break;
    case 'F':
        printf("Below Average");
    break;
    default:
        printf("Invalid Input");
    break;
}

return 0;
}

```

Output

Enter the char:F

Below Average

7. Write a menu-driven program that offers the user options for basic mathematical operations (addition, subtraction, etc.). Based on the user's choice, perform the corresponding operation using a switch-case.

```
#include <stdio.h>
```

```

int main()
{
    int choice;

```

```
printf("The operation are:\n");  
printf("1.Addition\n");  
printf("2.Substraction\n");  
printf("3.Multiplication\n");  
printf("4.Division\n");  
printf("Enter your choice:\n");  
scanf("%d",&choice);
```

```
float num1;  
printf("Enter the number1:");  
scanf("%f",&num1);
```

```
float num2;  
printf("Enter the number2:");  
scanf("%f",&num2);
```

```
float result;
```

```
switch(choice){  
    case 1:  
        result=num1+num2;  
        printf("Sum of %f and %f is:%f\n",num1,num2,result);  
        break;  
    case 2:  
        result=num1-num2;  
        printf("Difference of %f and %f is:%f\n",num1,num2,result);  
        break;
```



```
case 3:
    result=num1*num2;
    printf("Product of %f and %f is:%f\n",num1,num2,result);
    break;
case 4:
    result=num1/num2;
    printf("Division of %f and %f is:%f\n",num1,num2,result);
    break;
default:
    printf("Invalid Operator");
    break;
}

return 0;
}
```

Output

The Operations are:

- 1.Addition
- 2.Substarction
- 3.Multiplication
- 4.Division

Enter your choice:

1

Enter number1:5

Enter number2:4

Sum of 5.00 and 4.00 is:9.00

8. Write a program to simulate a traffic light system. Take input as R, Y, or G (Red, Yellow, Green) and use a switch-case to display the corresponding action (e.g., R for Stop, Y for Get Ready, G for Go).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    char ch;
```

```
    printf("Enter the char:");
```

```
    scanf("%c",&ch);
```

```
    switch(ch){
```

```
        case 'R':
```

```
            printf("Stop");
```

```
            break;
```

```
        case 'Y':
```

```
            printf("Get Ready");
```

```
            break;
```

```
        case 'G':
```

```
            printf("Go");
```

```
            break;
```

```
        default:
```

```
            printf("Invalid Input");
```

```
            break;
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the char:R

Stop

9. Write a program that takes the year as input and uses a switch-case to check and print whether it is a leap year or not (use logical division by 4 and additional logic in cases).

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    int year;
```

```
    printf("Enter the year:");
```

```
    scanf("%d",&year);
```

```
    switch ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
```

```
        case 1:
```

```
            printf("%d is a leap year.\n", year);
```

```
            break;
```

```
        default:
```

```
            printf("%d is not a leap year.\n", year);
```

```
    }
```

```
    return 0;
```

```
}
```

Output

Enter the year:2024

2024 is a leap year

10. Write a program to calculate the area of different shapes based on user input:

1 for Circle

2 for Rectangle

3 for Triangle

Use a switch-case to perform the respective area calculations.

```
#include <stdio.h>
```

```
int main() {
```

```
    int choice;
```

```
    double area;
```

```
    printf("Choose a shape:\n");
```

```
    printf("1. Circle\n");
```

```
    printf("2. Rectangle\n");
```

```
    printf("3. Triangle\n");
```

```
    printf("Enter your choice");
```

```
    scanf("%d", &choice);
```

```
    switch (choice) {
```

```
        case 1: {
```

```
            double radius;
```

```
            printf("Enter the radius of the circle: ");
```

```

scanf("%lf", &radius);

area = 3.14* radius * radius;

printf("The area of the circle is: %lf\n", area);

break;
}

case 2: {

    double length, width;

    printf("Enter the length and width of the rectangle: ");

    scanf("%lf %lf", &length, &width);

    area = length * width;

    printf("The area of the rectangle is: %lf\n", area);

    break;
}

case 3: {

    double base, height;

    printf("Enter the base and height of the triangle: ");

    scanf("%lf %lf", &base, &height);

    area = 0.5 * base * height;

    printf("The area of the triangle is: %lf\n", area);

    break;
}

default:

    printf("Invalid choice\n");
}

return 0;
}

```

Output

Choose a shape:

1.Circle

2.Rectangle

3.Triangle

Enter your choice 1

Enter the radius of the circle:1

The area of the circle is:3.1400