Operators and control statements in C

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

```
#include<stdio.h>
void main()
{
    int n1,n2;
    printf("Enter the two integers:\n");
    scanf("%d %d",&n1,&n2);
    if (n1^n2)
        printf("Not equal\n");
    else
        printf("Equal\n");
}
```

O/P:

      Enter the two integers:

      5 5

      Equal

      Enter the two integers:

      8 1

      Not equal

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

```c
#include<stdio.h>
void main()
{
    int n1,n2;
    printf("Enter the two integers:\n");
    scanf("%d %d",&n1,&n2);
    if (n1>n2)
        printf("First number is greater\n");
    else if(n1<n2)
        printf("Second number is greater\n");
    else
        printf("Both numbers are equal\n");
}
```

O/P:

Enter the two integers:

2 2

Both numbers are equal

Enter the two integers:

2 5

Second number is greater

Enter the two integers:

8 4

First number is greater

3. Write a program, use relational operators to check if a given number is positive (greater than 0).

```c
#include<stdio.h>
void main()
{
    int n;
    printf("Enter the number:\n");
    scanf("%d",&n);
    if (n>0)
        printf("Positive number\n");
    else
        printf("Enter a positive number\n");
}
```

O/P:

Enter the number:

8

Positive number

Enter the number:

-5

Enter a positive number

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).

```c
#include<stdio.h>
void main()
{
```

```c
    float l,b;
    printf("Enter the length and breadth:\n");
    scanf("%f %f",&l,&b);
    if(l>0 && b>0)
        printf("Valid rectangle\n");
    else
    {
        printf("Not valid rectangle\n");
        if(l<=0)
            printf("Length must be greater than 0\n");
        else if(b<=0)
            printf("Breadth must be greater than 0\n");
    }
}
```

O/P:

```
        Enter the length and breadth:
        5.2 2.5
        Valid rectangle


        Enter the length and breadth:
        6.4 -3.3
        Not valid rectangle
        Breadth must be greater than 0


        Enter the length and breadth:
        -8.6 4.3
```

Not valid rectangle

Length must be greater than 0

5. Write a program, given a student's marks in a subject, determine if the student has passed (marks >= 40).

```c
#include<stdio.h>
void main()
{
    float m;
    printf("Enter the marks:\n");
    scanf("%f",&m);
    if(m>=40 && m<=100)
        printf("Pass\n");
    else
        printf("Fail\n");
}
```

O/P:

Enter the marks:

60

Pass

Enter the marks:

38.5

Fail

6. Write a program, use relational operators to check if a given number lies between 10 and 50 (inclusive).

```c
#include<stdio.h>
void main()
{
    int n;
    printf("Enter the number:\n");
    scanf("%d",&n);
    if(n>=10 && n<=50)
        printf("Lies between the given range\n");
    else
        printf("Enter a number within the given range\n");
}
```

O/P:

Enter the number:

60

Enter a number within the given range

Enter the number:

30

Lies between the given range

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

```c
#include<stdio.h>
void main()
{
```

```c
    char ch;
    printf("Enter the character:\n");
    scanf("%c",&ch);
    if(ch>=97 && ch<=122)
    //if(ch>='a' && ch<='z')
        printf("Lower-case letter\n");
    else
        printf("Not a lower-case letter\n");
}
```

O/P:

        Enter the character:

        n

        Lower-case letter

        Enter the character:

        D

        Not a lower-case letter

8. Write a program to compare the ages of two people and determine who is older or if both are of the same age.

```c
#include<stdio.h>
void main()
{
    int a1,a2;
    printf("Enter the ages of the two people:\n");
    scanf("%d %d",&a1,&a2);
```

```
    if(a1>a2)
        printf("First person is older than the second person\n");
    else if(a1<a2)
        printf("Second person is older than the first person\n");
    else
        printf("Both persons are of the same age\n");
}
```

O/P:

Enter the ages of the two people:

50 40

First person is older than the second person

Enter the ages of the two people:

55 70

Second person is older than the first person

Enter the ages of the two people:

30 30

Both persons are of the 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>
void main()
{
    int w;
```

```c
printf("Enter the weight:\n");
scanf("%d",&w);
if(w>50)
    printf("Weight exceeded\n");
else
    printf("Weight is within the range\n");
}
```

O/P:

        Enter the weight:

        60

        Weight exceeded

        Enter the weight:

        45

        Weight is within the range

10. Write a program to compare the areas of two rectangles given their lengths and breadths and determine which rectangle has a larger area.

```c
#include<stdio.h>
void main()
{
    float l1,b1,l2,b2,a1,a2;
    printf("Enter the length and breadth of the first rectangle:\n");
    scanf("%f %f",&l1,&b1);
    printf("Enter the length and breadth of the second rectangle:\n");
    scanf("%f %f",&l2,&b2);
```

```c
    a1=l1*b1;
    a2=l2*b2;
    if(a1>a2)
        printf("First rectangle has a larger area\n");
    else if(a1<a2)
        printf("Second rectangle has a larger area\n");
    else
        printf("Both rectangles have the same area\n");
}
```

O/P:

Enter the length and breadth of the first rectangle:

5 6

Enter the length and breadth of the second rectangle:

6 4

First rectangle has a larger area

Enter the length and breadth of the first rectangle:

3 2

Enter the length and breadth of the second rectangle:

4 5

Second rectangle has a larger area

Enter the length and breadth of the first rectangle:

5 5

Enter the length and breadth of the second rectangle:

5 5

Both rectangles have the same area

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

```c
#include<stdio.h>
void main()
{
    int m,n,r;
    printf("Enter the two numbers:\n");
    scanf("%d %d",&m,&n);
    r=m&n;
    printf("The result is %d\n",r);
}
```

O/P:

Enter the two numbers:

4 5

The result is 4

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

```c
#include<stdio.h>
void main()
{
```

```c
    int m,n,r;
    printf("Enter the two numbers:\n");
    scanf("%d %d",&m,&n);
    r=m|n;
    printf("The result is %d\n",r);
}
```

O/P:

Enter the two numbers:

5 3

The result is 7

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

```c
#include<stdio.h>
void main()
{
    int m,n,r;
    printf("Enter the two numbers:\n");
    scanf("%d %d",&m,&n);
    r=m^n;
    printf("The result is %d\n",r);
}
```

O/P:

Enter the two numbers:

5 2

The result is 7

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

```c
#include<stdio.h>
void main()
{
    int n,r;
    printf("Enter the number:\n");
    scanf("%d",&n);
    r=~n;
    printf("The result is %d\n",r);
}
```

O/P:

Enter the number:

10

The result is -11

5. Write a program,given an integer n and a position p, write a program to toggle the bit at position p using the XOR operator.

```c
/*#include<stdio.h>
void main()
{
    int n,p,r;
    printf("Enter the number and position:\n");
```

```c
    scanf("%d %d",&n,&p);
    r=n^(1<<p);
    printf("The result is %d\n",r);
}*/
#include<stdio.h>
void main()
{
    int n,p,r,m,i;
    printf("Enter the number and position:\n");
    scanf("%d %d",&n,&p);
    m=1;
    if(p>0)
    {
        for(i=1;i<=p;i++)
            m=m*2;
    }
    r=n^m;
    printf("The result is %d\n",r);
}
```

O/P:

    Enter the number and position:

    10 1

    The result is 8

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


```c
/*#include<stdio.h>
```

```c
void main()
{
    int n,p,r;
    printf("Enter the number and position:\n");
    scanf("%d %d",&n,&p);
    r=n|(1<<p);
    printf("The result is %d\n",r);
}*/
#include<stdio.h>
void main()
{
    int n,p,r,m,i;
    printf("Enter the number and position:\n");
    scanf("%d %d",&n,&p);
    m=1;
    if(p>0)
    {
        for(i=1;i<=p;i++)
            m=m*2;
    }
    r=n|m;
    printf("The result is %d\n",r);
}
```

O/P:

Enter the number and position:

10 2

The result is 14

7. 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.


```c
/*#include<stdio.h>
void main()
{
    int n,p,r;
    printf("Enter the number and position:\n");
    scanf("%d %d",&n,&p);
    r=n & ~(1<<p);
    printf("The result is %d\n",r);
}*/
#include<stdio.h>
void main()
{
    int n,p,r,m,i;
    printf("Enter the number and position:\n");
    scanf("%d %d",&n,&p);
    m=1;
    if(p>0)
    {
        for(i=1;i<=p;i++)
            m=m*2;
    }
    m=~m;
    r=n&m;
```

```
    printf("The result is %d\n",r);
}
```

O/P:

Enter the number and position:

10 3

The result is 2

1. 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>
void main()
{
    int n;
    printf("Enter the number: ");
    scanf("%d",&n);
    if((n%5==0) && (n>50) && (n&1))
        printf("Number satisfies the conditions\n");
    else
        printf("Number does not satisfy all the conditions\n");
}
```

O/P:

Enter the number:

85

Number satisfies the conditions

Enter the number:

60

Number does not satisfy all the conditions

2. 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).

```c
#include <stdio.h>
void main()
{
    int n,p,m,i;
    printf("Enter the number and position:\n");
    scanf("%d %d",&n,&p);
    m=1;
    if(p>0)
    {
        for(i=1;i<=p;i++)
            m=m*2;
    }
    n=n^m;
    if(n>0 && (n%2==0))
        printf("Updated number is positive and divisible by 2\n");
    else
        printf("Updated number is not positive and not divisible by 2\n");
}
```

O/P:

Enter the number and position:

10 2

Updated number is positive and divisible by 2

Enter the number and position:

10 0

Updated number is positive and divisible by 2

3. 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.

```c
#include<stdio.h>
void main()
{
    int age,id_num;
    printf("Enter your age and ID number:\n");
    scanf("%d %d",&age,&id_num);
    if(age>=18 && (id_num&1))
        printf("Eligible to vote\n");
    else
        printf("Not eligible to vote\n");
}
```

O/P:

Enter your age and ID number:

16 5

Not eligible to vote

Enter your age and ID number:

22 9

Not eligible to vote

4. 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).


```c
#include<stdio.h>
void main()
{
    int n,sp,cp,m,i,h,l;
    printf("Enter the number set_position clear_position:\n");
    scanf("%d %d %d",&n,&sp,&cp);
    printf("Enter the low and high range:\n");
    scanf("%d %d",&l,&h);
    m=1;
    if(sp>0 && cp>0)
    {
        for(i=1;i<=sp && i<=cp;i++)
            m=m*2;
    }
    n=n|m;
```

```c
    m=~m;
    n=n&m;
    if((n%2==1) && (n>=l && n<=h))
        printf("Number is odd and within the range\n");
    else
        printf("Number is neither odd nor present in the range\n");
}
```

O/P:

Enter the number set_position clear_position:

10 0 1

Enter the low and high range:

10 20

Number is neither odd nor present in the range

Enter the number set_position clear_position:

5 3 3

Enter the low and high range:

6 15

Number is odd and within the range

5. 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).

```c
#include <stdio.h>
void main()
{
```

```c
    int m,n,s,p;
    printf("Enter the two integers:\n");
    scanf("%d %d",&m,&n);
    s=m+n;
    p=m*n;
    if(s>100 && p%4==0)
        printf("Satisfies the given conditions\n");
    else
        printf("Does not satisfy the conditions\n");
    if(m&4)
        printf("Second bit is set\n");
    else
        printf("Second bit is not set\n");
}
```

O/P:

    Enter the two integers:

    50 60

    Satisfies the given conditions

    Second bit is not set

    Enter the two integers:

    20 25

    Does not satisfy the conditions

    Second bit is set

If statements

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

```c
#include <stdio.h>
void main()
{
    int n;
    printf("Enter the number:\n");
    scanf("%d",&n);
    if(n>0)
        printf("Positive number\n");
printf("Enter a positive number\n");
}
```

O/P:

        Enter the number:

        5

        Positive number

        Enter the number:

        -8

        Enter a positive number

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

```c
#include <stdio.h>
void main()
{
    int n;
```

```c
printf("Enter the number:\n");
scanf("%d",&n);
if(n%3==0)
    printf("Divisible by 3\n");
printf("Not divisible by 3\n");
}
```

O/P:

Enter the number:

18

Divisible by 3

Enter the number:

16

Not divisible by 3

If-else statements

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

```c
#include <stdio.h>
void main()
{
    int n;
    printf("Enter the number:\n");
    scanf("%d",&n);
```

```c
    if(n&1)
        printf("Odd\n");
    else
        printf("Even\n");
}
```

O/P:

Enter the number:

5

Odd

Enter the number:

4

Even

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."

```c
#include <stdio.h>
void main()
{
    int m;
    printf("Enter the marks:\n");
    scanf("%d",&m);
    if(m>=40 && m<=100)
        printf("Pass\n");
    else
        printf("Fail\n");
```

```
}
```

O/P:

Enter the marks:

55

Pass

Enter the marks:

38

Fail

Nested if-else statements

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.

```c
#include<stdio.h>
void main()
{
    float s1,s2,s3;
    printf("Enter the lengths of the three sides of the triangle:\n");
    scanf("%f %f %f",&s1,&s2,&s3);
    if(s1+s2>s3)
    {
        if(s2+s3>s1)
        {
            if(s1+s3>s2)
```

```c
        {
            printf("The triangle is valid\n");
            if(s1==s2 && s2 == s3)
                printf("The triangle is an equilateral triangle\n");
            else
                printf("The triangle is not an equilateral triangle\n");
        }
        else
            printf("The triangle is not valid\n");
    }
    else
        printf("The triangle is not valid\n");
}
```

O/P:

Enter the lengths of the three sides of the triangle:

3 4 5

The triangle is valid

The triangle is not an equilateral triangle

Enter the lengths of the three sides of the triangle:

5 5 5

The triangle is valid

The triangle is 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.

```c
#include<stdio.h>
void main()
{
    int m,p,t;
    printf("Enter marks in Mathematics and Physics:\n");
    scanf("%d %d",&m,&p);
    t=m+p;
    if(m>=50)
    {
        if(p>=50)
        {
            if(t>=120)
                printf("Student is eligible for admission\n");
            else
                printf("Student is not eligible, total maarks is less\n");
        }
        else
            printf("Student is not eligible, marks in physics is less\n");
    }
        else
        printf("Student is not eligible, marks in mathematics is less\n");
}
```

O/P:

     Enter marks in Mathematics and Physics:

     55 85

     Student is eligible for admission

     Enter marks in Mathematics and Physics:

     45 85

     Student is not eligible, marks in mathematics is less

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 Y

```c
#include<stdio.h>
void main()
{
   float p;
   printf("Enter the percentage:\n");
   scanf("%f",&p);
   if(p>=90)
      printf("Grade A\n");
   else if(p>=75)
```

```
        printf("Grade B\n");
    else if(p>=50)
        printf("Grade C\n");
    else
        printf("Fail\n");
}
```

O/P:

        Enter the percentage:

        88.5

        Grade B

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

```
#include<stdio.h>
void main()
{
    int n;
    printf("Enter an integer:\n");
    scanf("%d",&n);
    if(n>0)
        printf("Positive\n");
    else if(n<0)
        printf("Negative\n");
    else if(n==0)
        printf("Zero\n");
}
```

O/P:

Enter an integer:

5

Positive

Enter an integer:

5

Negative

Enter an integer:

0

Zero

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

Units <= 100: ₹5 per unit

Units > 100 and <= 200: ₹7 per unit

Units > 200: ₹10 per unit

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

```c
#include <stdio.h>
void main()
{
    int u;
    float eb;
    printf("Enter the number of units:\n");
    scanf("%d",&u);
```

```c
    if(u<=100)
        eb=u*5;
    else if(u>100 && u<=200)
        eb=100*5+(u-100)*7;
    else
        eb=100*5+100*7+(u-200)*10;
    printf("Electricity bill= %f\n",eb);
}
```

O/P:

Enter the number of units:

5

Electricity bill= 25.000000

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.

```c
#include<stdio.h>
void main()
{
    int d;
    printf("Enter a number of the day:\n");
    scanf("%d",&d);
    if(d==1)
        printf("Monday\n");
    else if(d==2)
        printf("Tuesday\n");
    else if(d==3)
```

```c
        printf("Wednesday\n");
    else if(d==4)
        printf("Thursday\n");
    else if(d==5)
        printf("Friday\n");
    else if(d==6)
        printf("Saturday\n");
    else if(d==7)
        printf("Sunday\n");
    else
        printf("Invalid number of the day\n");
}
```

O/P:

    Enter a number of the day:

    5

    Friday

Switch case

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.).

```c
#include<stdio.h>
void main()
{
    int d;
```

```c
printf("Enter a number of the day:\n");
scanf("%d",&d);
switch(d)
{
    case 1:printf("Monday\n");
        break;
    case 2:printf("Tuesday\n");
        break;
    case 3:printf("Wednesday\n");
        break;
    case 4:printf("Thursday\n");
        break;
    case 5:printf("Friday\n");
        break;
    case 6:printf("Saturday\n");
        break;
    case 7:printf("Sunday\n");
        break;
    default:printf("Invalid number of the day\n");
        break;
}
}
```

O/P:

Enter the number of the day:

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.

```c
#include<stdio.h>
void main()
{
    int n1,n2,n3;
    char op;
    printf("Enter the numbers n1 and n2:\n");
    scanf("%d %d",&n1,&n2);
    printf("Enter the option:\n");
    scanf(" %c",&op);
    switch(op)
    {
        case '+':n3=n1+n2;
                printf("n3=%d\n",n3);
                break;
        case '-':n3=n1-n2;
                printf("n3=%d\n",n3);
                break;
        case '*':n3=n1*n2;
                printf("n3=%d\n",n3);
                break;
        case '/':n3=n1/n2;
                printf("n3=%d\n",n3);
                break;
```

```c
        default:printf("Invalid option\n");
            break;
    }
}
```

O/P:

Enter the numbers n1 and n2:

5 4

Enter the option:

-

1

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.

```c
#include<stdio.h>
void main()
{
    char ch;
    printf("Enter the character:\n");
    scanf("%c",&ch);
    switch(ch)
    {
        case 'a':printf("Vowel\n");
            break;
        case 'e':printf("Vowel\n");
            break;
        case 'i':printf("Vowel\n");
            break;
```

```c
        case 'o':printf("Vowel\n");
            break;
        case 'u':printf("Vowel\n");
            break;
        case 'A':printf("Vowel\n");
            break;
        case 'E':printf("Vowel\n");
            break;
        case 'I':printf("Vowel\n");
            break;
        case 'O':printf("Vowel\n");
            break;
        case 'U':printf("Vowel\n");
            break;
        default:printf("Consonant\n");
            break;
    }
}
```

O/P:

Enter the character:

e

Vowel

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.

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

```c
void main()
{
    int n;
    printf("Enter the number:\n");
    scanf("%d",&n);
    switch(n)
    {
        case 0:printf("Zero\n");
            break;
        case 1:printf("One\n");
            break;
        case 2:printf("Two\n");
            break;
        case 3:printf("Three\n");
            break;
        case 4:printf("Four\n");
            break;
        case 5:printf("Five\n");
            break;
        case 6:printf("Six\n");
            break;
        case 7:printf("Seven\n");
            break;
        case 8:printf("Eight\n");
            break;
        case 9:printf("Nine\n");
            break;
```

```
            default:printf("Enter a number between 0 and 9\n");
                  break;
      }
}
```

O/P:

Enter the number:

8

Eight

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>
void main()
{
   int n;
   printf("Enter the number:\n");
   scanf("%d",&n);
   switch(n)
   {
      case 1:printf("January\n");
            break;
      case 2:printf("February\n");
            break;
      case 3:printf("March\n");
            break;
```

```c
        case 4:printf("April\n");
            break;
        case 5:printf("May\n");
            break;
        case 6:printf("June\n");
            break;
        case 7:printf("July\n");
            break;
        case 8:printf("August\n");
            break;
        case 9:printf("September\n");
            break;
        case 10:printf("October\n");
             break;
        case 11:printf("November\n");
             break;
        case 12:printf("December\n");
             break;
        default:printf("Enter a valid number\n");
             break;
    }
}
```

O/P:

```
    Enter the number:
    11
    November
```

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.).

```c
#include<stdio.h>
void main()
{
    char ch;
    printf("Enter the character:\n");
    scanf("%c",&ch);
    switch(ch)
    {
        case 'A':printf("Excellent\n");
              break;
        case 'B':printf("Good\n");
              break;
        case 'C':printf("Above average\n");
              break;
        case 'D':printf("Average\n");
              break;
        case 'F':printf("Below average\n");
              break;
        default:printf("Not a valid grade\n");
              break;
    }
}
```

O/P:

Enter the character:

B

Good

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.

```c
#include<stdio.h>
void main()
{
    int n1,n2,n3;
    char op;
    printf("Enter the numbers n1 and n2:\n");
    scanf("%d %d",&n1,&n2);
    printf("Enter the op\n+ add\n- sub\n* mul\n/ div\n");
    scanf(" %c",&op);
    switch(op)
    {
        case '+':n3=n1+n2;
                printf("n3=%d\n",n3);
                break;
        case '-':n3=n1-n2;
                printf("n3=%d\n",n3);
                break;
        case '*':n3=n1*n2;
                printf("n3=%d\n",n3);
                break;
```

```c
            case '/':n3=n1/n2;
                    printf("n3=%d\n",n3);
                    break;
        default:printf("Invalid option\n");
                break;
    }
}
```

O/P:

Enter the numbers n1 and n2:

4 2

Enter the op

+ add

- sub

* mul

/ div

*

8

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).

```c
#include<stdio.h>
void main()
{
    char ch;
    printf("Enter the character:\n");
```

```c
    scanf("%c",&ch);
    switch(ch)
    {
      case 'R':printf("Stop\n");
            break;
      case 'Y':printf("Get ready\n");
            break;
      case 'G':printf("Go\n");
            break;
      default:printf("Invalid\n");
            break;
    }
}
```

O/P:

Enter the character:

G

Go

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).

```c
#include<stdio.h>
void main()
{
    int year,y;
    printf("Enter the year:\n");
```

```c
    scanf("%d",&year);
    y=((year%4==0) && (year%100!=0) || (year%400==0));
    switch(y)
    {
        case 1:printf("Leap year\n");
                break;
        default:printf("Not a leap year\n");
                break;
    }
}
```

O/P:

    Enter the year

    2024

    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.

```c
#include<stdio.h>
#include<math.h>
#define PI 3.141

void main()
{
    int op;
    float a;
```

```c
printf("Enter the option:\n1. Circle\n2. Rectangle\n3. Triangle\n");
scanf("%d",&op);
switch(op)
{
    case 1:
    {
        float r;
        printf("Enter the radius of the circle:\n");
        scanf("%f",&r);
        a=PI*r*r;
        printf("Area of circle= %f\n",a);
        break;
    }
    case 2:
    {
        float l,w;
        printf("Enter the length and breadth of the rectangle:\n");
        scanf("%f %f",&l,&w);
        a=l*w;
        printf("Area of rectangle= %f\n",a);
        break;
    }
    case 3:
    {
        float b,h;
        printf("Enter the base and height of the triangle:\n");
        scanf("%f %f",&b,&h);
```

```c
            a=0.5*b*h;

            printf("Area of the triangle= %f\n",a);

            break;

      }

    default:printf("Invalid option\n");

            break;

  }

}
```

O/P:

Enter the option:

1. Circle

2. Rectangle

3. Triangle

2

Enter the length and breadth of the rectangle:

4.3 2.2

Area of rectangle=9.460000