Relational Operators

Program 1

```
#include<stdio.h>
int main()
{
int num1=30;
int num2=40;
printf("Value of %d > %d is %d\n",num1,num2,num1>num2);
printf("Value of %d >= %d is %d\n",num1,num2,num1>=num2);
printf("Value of %d <= %d is %d\n",num1,num2,num1<=num2);
printf("Value of %d < %d is %d\n",num1,num2,num1<num2);
printf("Value of %d == %d is %d\n",num1,num2,num1==num2);
printf("Value of %d != %d is %d",num1,num2,num1!=num2);
return 0;
}
```

Output

```
Value of 30 > 40 is 0
Value of 30 >= 40 is 0
Value of 30 <= 40 is 1
Value of 30 < 40 is 1
Value of 30 == 40 is 0
Value of 30 != 40 is 1
```

Program 2

```
#include<stdio.h>
int main()
{
int a=10,b=4;
if (a>b)
printf("a is greater than b\n");
else
printf("a is less than or equal to b\n");
if(a>=b)
printf("a is greater than or equal to b\n");
else
printf("a is lesser than b\n");
if(a<b)
printf("a is less than b\n");
else
printf("a is greater than or equal to b\n");
if(a<=b)
printf("a is lesser than or equal to b\n");
else
printf("a is greater than b\n");
if(a==b)
printf("a is equal to b\n");
else
printf("a and b are not equal\n");
if (a != b)
printf("a is not equal to b\n");
else
printf("a is equal b\n");
return 0;
}
```

Output

```
a is greater than b
a is greater than or equal to b
a is greater than or equal to b
a is greater than b
a and b are not equal
a is not equal to b
```

Logical Operators

program 1

```
#include <stdio.h>
int main()
{
int a=5,b=5,c=10,result;
result = (a == b) && (c > b);
printf("(a == b) && (c > b) equals to %d \n", result);
result = (a == b) && (c < b);
printf("(a == b) && (c < b) equals to %d \n", result);
result = (a == b) || (c < b);
printf("(a == b) || (c < b) equals to %d \n", result);
result = (a != b) || (c < b);
printf("(a != b) || (c < b) equals to %d \n", result);
result = !(a != b);
printf("!(a == b) equals to %d \n", result);
result = !(a == b);
printf("!(a == b) equals to %d \n", result);
return 0;
}
```

Output

```
(a == b) && (c > b) equals to 1
(a == b) && (c < b) equals to 0
(a == b) || (c < b) equals to 1
(a != b) || (c < b) equals to 0
!(a == b) equals to 1
!(a == b) equals to 0
```

program 2

```
#include <stdio.h>
int main()
{
   int a=10,b=4,c=10,d=20;
   if(a>b && c==d)
   printf("a is greater than b AND c is equal to d\n");
   else
   printf("AND condition not satisfied\n");
   if(a>b||c==d)
   printf("a is greater than b OR c is equal to d\n");
   else
   printf("Neither a is greater than b nor c is equal to d\n");
   if(!a)
   printf("a is zero\n");
   else
   printf("a is not zero");
   return 0;
}
```

Output

```
AND condition not satisfied
a is greater than b OR c is equal to d
a is not zero
```

Condition Operators

Program 1

```
#include <stdio.h>
 int main()
{
   int x=1,y;
   y=(x==1?2:0);
   printf("x value is %d\n",x);
   printf("y value is %d",y);
}
```

Output

x value is 1
y value is 2

Program 2

```
#include <stdio.h>
int main(){
   char February;
   int days;
   printf("If this year is leap year, enter 1. If not enter any integer: ");
   scanf("%c",&February);
   // If test condition (February == 'l') is true, days equal to 29.
   // If test condition (February =='l') is false, days equal to 28.
   days = (February == '1') ? 29 : 28;
   printf("Number of days in February = %d",days);
   return 0;
}
```

Output

```
If this year is leap year, enter 1. If not enter any integer: 1
Number of days in February = 29

If this year is leap year, enter 1. If not enter any integer: 2
Number of days in February = 28
```

Program 3

```
#include<stdio.h>
int main()
{
int a,b,result,choice;
printf("Enter  first number:");
scanf("%d",&a);
printf("Enter second number:");
scanf("%d",&b);
printf("Enter 1 for addition or 2 for multiplication:");
scanf("%d",&choice);
result=(choice==1)?a+b:(choice==2)?a*b:printf("Invalid Input");
if(choice==1||choice==2)
printf("The result is %d\n\n",result);
return 0;
}
```

Output

```
Enter  first number:2
Enter second number:3
Enter 1 for addition or 2 for multiplication:1
The result is 5

Enter  first number:2
Enter second number:3
Enter 1 for addition or 2 for multiplication:2
The result is 6
```

Program 4: Write a C program to find maximum between two numbers using conditional operator.

```
#include<stdio.h>
int main()
{
int n1,n2,big;
printf("Enter Two Numbers:");
scanf("%d%d",&n1,&n2);
big=((n1>n2)?n1:n2);
printf("The Greater Number is %d",big);
return 0;
}
```

Output

```
Enter Two Numbers:3
6
The Greater Number is 6
```

Program 5: Write a C program to find maximum between three numbers using conditional operator.

```
#include<stdio.h>
void main()
{
int a,b,c,big ;
printf("Enter three numbers:");
scanf("%d%d%d",&a,&b,&c) ;
big=a>b?(a>c?a:c):(b>c?b:c);
printf("The biggest number is : %d",big) ;
}
```

Output

```
Enter three numbers:5
7
4
The biggest number is : 7
```

Program 6: Write a C program to check whether a number is even or odd using conditional operator.

```
#include <stdio.h>
int main()
{
   int number;
   printf("Enter an integer: ");
   scanf("%d", &number);
   (number % 2 == 0) ? printf("%d is even.", number) : printf("%d is odd.", number);
    return 0;
}
```

Output:

```
Enter an integer: 3
3 is odd.

Enter an integer: 4
4 is even.
```

Program 7: Write a C program to check whether year is leap year or not using conditional operator.

```
#include <stdio.h>
int main()
{
   int year;
   printf("Enter any year: ");
   scanf("%d", &year);
   (year%4==0 && year%100!=0)?printf("LEAP YEAR") :(year%400 ==0 )?printf("LEAP
YEAR") : printf("COMMON YEAR");
   return 0;
}
```

Output

```
Enter any year: 2007
COMMON YEAR

Enter any year: 2000
LEAP YEAR
```

Program 8: Write a C program to check whether character is an alphabet or not using conditional operator.

```
#include <stdio.h>
int main()
{
char ch;
printf("Enter any character:");
scanf("%c", &ch);
(ch>='a' && ch<='z') || (ch>='A' && ch<='Z') ? printf("It is ALPHABET") : printf("It is NOT ALPHABET");
return 0;
}
```

Output

```
Enter any character:a
It is ALPHABET


Enter any character:3
It is NOT ALPHABET
```

1. Fibonacci Series up to n number of terms

```
#include <stdio.h>

int main()

{

   int i, n, t1 = 0, t2 = 1, nextTerm;

   printf("Enter the number of terms: ");

   scanf("%d", &n);

   printf("Fibonacci Series: ");

   for (i = 1; i <= n; ++i)

   {

      printf("%d, ", t1);

      nextTerm = t1 + t2;

      t1 = t2;

      t2 = nextTerm;

   }

   return 0;

}
```

Output:

```
Enter the number of terms: 8
Fibonacci Series: 0 1 1 2 3 5 8 13
```

2.Print all numbers between 1 to 100 which divided by a specified number and the remainder will be 3

```
#include <stdio.h>

int main() {

        int x, i;

        printf("Input an integer: ");

        scanf("%d", &x);

        for(i = 1; i <= 500; i++)

        {

if((i%x) == 3) {

                        printf("%d\n", i);

                }

        }

        return 0;

}
```

Output:

```
Input an integer: 48
3

51

99

147

195

243
```

291

339

387

435

483

3.Display stars in specific order.

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


  printf("Enter the number of rows in pyramid of stars you wish to see\n");
  scanf("%d", &n);
  s = n;
  for (row = 1; row <= n; row++)
  {
    for (c = 1; c < s; c++)
      printf(" ");
    s--;
    for (c = 1; c <= 2*row - 1; c++)
      printf("*");
    printf("\n");
  }
  return 0;
}
```

Output:

Enter the number of rows in pyramid of stars you wish to see 5

*

***

*****

****

4.Detect a number entered is palindrome or not.

```
#include <stdio.h>
int main()
{
   int n, reversedInteger = 0, remainder, originalInteger;
   printf("Enter an integer: ");
   scanf("%d", &n); originalInteger = n;
   while( n!=0 )
   {
      remainder = n%10;
      reversedInteger = reversedInteger*10 + remainder;
      n /= 10;
   }
   if (originalInteger == reversedInteger)
      printf("%d is a palindrome.", originalInteger);
   else
      printf("%d is not a palindrome.", originalInteger);
   return 0;
}
```

Output:

```
Enter an integer: 1022
1022 is not a palindrome.
```

5.Detect Armstrong numbers up to 1000.

```
#include <stdio.h>

#include <stdio.h>

 Int main()

{

   int number, temp, digit1, digit2, digit3;

   printf("Print all Armstrong numbers between 1 and 1000:\n");

   number = 001;

   while (number <= 900)

   {

      digit1 = number - ((number / 10) * 10);

      digit2 = (number / 10) - ((number / 100) * 10);

      digit3 = (number / 100) - ((number / 1000) * 10);

      temp = (digit1 * digit1 * digit1) + (digit2 * digit2 * digit2) + (digit3 * digit3 *
digit3);

      if (temp == number)

      {

         printf("\n Armstrong no is:%d", temp);

      }

      number++;

   }

return 0;

}
```

Output:

Armstrong no is:1
Armstrong no is:153
Armstrong no is:370
Armstrong no is:371
Armstrong no is:407

6.Reverse the entered number.

```
#include <stdio.h>
int main()
{
   int n, reversedNumber = 0, remainder;
   printf("Enter an integer: ");
   scanf("%d", &n);
   while(n != 0)
   {
      remainder = n%10;
      reversedNumber = reversedNumber*10 + remainder;
      n /= 10;
   }
   printf("Reversed Number = %d", reversedNumber);
   return 0;
}
```

Output:

```
Enter an integer: 2589
Reversed Number = 9852
```

6.Multiplication Table Up to 10

```
#include <stdio.h>
int main()
{
   int n, i;
   printf("Enter an integer: ");
   scanf("%d",&n);
   for(i=1; i<=10; ++i)
   {
      printf("%d * %d = %d \n", n, i, n*i);
   }
   return 0;
}
```

Output:

Enter an integer: 5

5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25

5 * 6 = 30

5 * 7 = 35

5 * 8 = 40

5 * 9 = 45

5 * 10 = 50

7.Prime numbers between 1 to 100 in C Programming Language

```
#include <stdio.h>
int main()
{
  int i, Number, count;
  printf(" Prime Number from 1 to 100 are: \n");
  for(Number = 1; Number <= 100; Number++)
  {
    count = 0;
    for (i = 2; i <= Number/2; i++)
    {
          if(Number%i == 0)
          {
            count++;
            break;
          }
    }
    if(count == 0 && Number != 1 )
    {
          printf(" %d ", Number);
    }
  }
  return 0;
```

}

Output:

Prime Number from 1 to 100 are:
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 8
9 97

8.Write a C program to print odd numbers between 1 to 100 using for loop.

```
#include <stdio.h>

int main() {
   int counter;
   printf("Odd numbers between 1 to 100\n");
   for(counter = 1; counter <= 100; counter++) {
      if(counter%2 == 1) {
        printf("%d ", counter);
      }
   }
   return 0;
}
```

Output:

```
Odd numbers between 1 to 100
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 5
7 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99
```

9.Program to print even and odd numbers from 1 to 10.

```
#include <stdio.h>
int main() {
    int n,last;
 printf("\n Enter Last Number : ");
 scanf("%d",&last);
  printf("\n Even Number List :\n ");
 n=2;
 while(n<=last)
 {
  printf(" %d",n);
  n=n+2;
 }
 printf("\n\n Odd Number List :\n ");
 n=1;
 while(n<=last)
 {
  printf(" %d",n);
  n=n+2;
 }
    return 0;
}
```

Output:

Enter Last Number : 25
Even Number List : 2 4 6 8 10 12 14 16 18 20 22 24

Odd Number List : 1 3 5 7 9 11 13 15 17 19 21 23 25

10.Write a program to demonstrate the loop using GOTO statement.

```
#include <stdio.h>
int main() {
   const int maxInput = 5;
   int i;
   double number, average, sum=0.0;
   for(i=1; i<=maxInput; ++i)
   {
      printf("%d. Enter a number: ", i);
      scanf("%lf",&number);
      if(number < 0.0)
         goto jump;
      sum += number; // sum = sum+number;
   }
   jump:
   average=sum/(i-1);
   printf("Sum = %.2f\n", sum);
   printf("Average = %.2f", average);
   return 0;
}
```

Output:

1. Enter a number: 25
2. Enter a number: 28

3. Enter a number: 46
4. Enter a number: 89
5. Enter a number: 50
Sum = 238.0

Average = 47.60

11.Program to Count Number of Digits in an Integer

```
#include <stdio.h>
int main() {
   long long n;
    int count = 0;
 printf("Enter an integer: ");
    scanf("%lld", &n);
    while(n != 0)
    {
        n /= 10;
        ++count;
    }
    printf("Number of digits: %d", count);
}
```

Output:

```
Enter an integer: 89
Number of digits: 2
```

12.Program to print half pyramid using *

```
#include <stdio.h>
int main()
{
   int i, j, rows;
   printf("Enter number of rows: ");
   scanf("%d",&rows);
   for(i=1; i<=rows; ++i)
   {
      for(j=1; j<=i; ++j)
      {
         printf("* ");
      }
      printf("\n");
   }
   return 0;
}
```

Output:

```
Enter number of rows: 5
*
* *
* * *
* * * *
```

* * * * *

13.Program to print half pyramid a using numbers

```
#include <stdio.h>
int main()
{
   int i, j, rows;
   printf("Enter number of rows: ");
   scanf("%d",&rows);
   for(i=1; i<=rows; ++i)
   {
      for(j=1; j<=i; ++j)
      {
         printf("%d ",j);
      }
      printf("\n");
   }
   return 0;
}
```

Output:

```
Enter number of rows: 5
1
1 2
1 2 3
1 2 3 4
```

1 2 3 4 5

Switch Case:

14.write a c program for choose a color.

```
#include <stdio.h>
int main()
{
 int color = 1;
printf("Please choose a color(1: red,2: green,3: blue):\n");
  scanf("%d", &color);
  switch (color) {
  case 1:
          printf("you chose red color\n");
         break;
case 2:
          printf("you chose green color\n");
         break;
case 3:
          printf("you chose blue color\n");
         break;
default:
          printf("you did not choose any color\n");
}


return 0;
```

}

Output:

Please choose a color(1: red,2: green,3: blue): 2
you chose green color

15.Write a C Program for Switch case to Find weekdays name with weekday number.

```
#include <stdio.h>
int main()
{
  int day;
printf("Enter weekday number (1-7): ");
scanf("%d",&day);
 switch(day)
 {
   case 1:
            printf("1 - Sunday");
          break;
  case 2:
          printf("2 - Monday");
         break;
case 3:
          printf("3 - Tuesday");
         break;
case 4:
          printf("4 - Wednesday");
         break;
```

```
    case 5:
            printf("5 - Thursday");
            break;
    case 6:
            printf("6 - Friday");
            break;
  case 7:
            printf("7 - Saturday");
            break;
  default:
            printf("%d : Invalid Day Option",day);
    }
    return 0;
    }
```

Output:

Enter weekday number (1-7): 2

2 - Monday

16.Write a c program continue statement inside for loop

```
#include <stdio.h>
int main()
{
   for (int j=0; j<=8; j++)
 {
if (j==4)
{
    continue;
}
printf("%d ", j);
  }
 return 0;
}
```

Output:

0 1 2 3 5 6 7 8

17.write a c program continue in do-While loop

```
#include <stdio.h>
int main()
{
 int j=0;
do
{
if (j==7)
{
j++;
continue;
 }
  printf("%d ", j);
j++;
 }while(j<10);
return 0;
 }
```

Output:

0 1 2 3 4 5 6 8 9

CONTROL STATEMENTS

EXAMPLE PROGRAM FOR IF STATEMENT IN C:

Program 1:

```
int main()
{
  int m=40,n=40;
  if (m == n)
  {
  printf("m and n are equal");
  }
}
```

Output

m and n are equal

Program 2:

```
#include <stdio.h>
int main()
{
   int x = 20;
   int y = 22;
   if (x<y)
   {
      printf("Variable x is less than y");
   }
   return 0;
}
```

Output:

Variable x is less than y

Program 3:

```
#include <stdio.h>
int main()
{
   int x, y;
   printf("enter the value of x:");
   scanf("%d", &x);
   printf("enter the value of y:");
   scanf("%d", &y);
   if (x>y)
   {
         printf("x is greater than y\n");
   }
   if (x<y)
   {
         printf("x is less than y\n");
   }
   if (x==y)
   {
         printf("x is equal to y\n");
   }
   printf("End of Program");
   return 0;
}
```

Output:

```
enter the value of x:5
enter the value of y:5
x is equal to y
End of Program

enter the value of x:7
enter the value of y:5
x is greater than y
End of Program
```

Program 4:

```
#include <stdio.h>
int main()
{
   int num1, num2;
   printf("Enter two numbers: ");
   scanf("%d%d", &num1, &num2);
   if(num1 > num2)
   {
      printf("%d is maximum", num1);
   }
   if(num2 > num1)
   {
      printf("%d is maximum", num2);
   }
   if(num1 == num2)
   {
      printf("Both are equal");
   }
   return 0;
}
```

Output:

```
Enter two numbers:6
5
6  is maximum

Enter two numbers:6
6
Both are equal
```

Program 5:

```
#include<stdio.h>
int main()
   {
    int a;
    printf("Enter a number:");
    scanf("%d",&a);
    if(a>0)
     {
      printf( "The number %d is positive.",a);
     }
Return 0;
}
```

Output:

```
Enter a number:6
The number 6 is positive.
```

EXAMPLE PROGRAM FOR IF ELSE STATEMENT IN C

Program 1:

```
#include <stdio.h>
int main()
{
  int m=40,n=20;
  if (m == n)
  {
  printf("m and n are equal");
  }
  else
  {
  printf("m and n are not equal");
  }
return  0;
}
```

Output:

m and n are not equal

program 2:
Program to check whether an integer entered by the user is odd or even

```
#include <stdio.h>
int main()
{
   int number;
   printf("Enter an integer: ");
   scanf("%d",&number);
   if( number%2 == 0 )
      printf("%d is an even  integer.",number);
   else
      printf("%d is an odd  integer.",number);
   return 0;
}
```

Output:
Enter an integer:8
8 is an even integer
Enter an integer:7
7 is an odd integer

program 3:

```
#include <stdio.h>
int main()
{
  int age;
  printf("Enter your age:");
  scanf("%d",&age);
  if(age >=18)
  {
        printf("You are eligible for voting");
  }
  else
  {
        printf("You are not eligible for voting");
  }
  return 0;
}
```

Output:

Enter your age:18
You are eligible for voting

Enter your age:17
You are not eligible for voting

program 4:

```
#include<stdio.h>
int main()
   {
    int a;
    printf("Enter a number:");
    scanf("%d",&a);
    if(a>0)
     {
      printf( "The number %d is positive.",a);
     }
    else
    {
      printf("The number %d is negative.",a);
     }
  return 0;
   }
```

Output:

```
Enter a number:6
The number 6 is positive.
Enter a number:-7
The number -7 is negative.
```

program 5:

```
#include<stdio.h>
#include<string.h>
int main()
  {
   char a[20],b[20];
   printf("Enter the first string:");
   scanf("%s",a);
   printf("Enter the second string:");
   scanf("%s",b);
   if((strcmp(a,b)==0))
     {
      printf("Strings are the same");
      }
   else
     {
     printf("Strings are different");
     }
 return 0;
 }
```

Output:

```
Enter the first string:hai
Enter the second string:hai
Strings are the same

Enter the first string:hai
Enter the second string:hello
Strings are different
```

EXAMPLE PROGRAM FOR NESTED IF STATEMENT IN C

program 1:

```
#include <stdio.h>
int main()
{
  int m=40,n=20;
  if (m>n) {
 printf("m is greater than n");
  }
  else if(m<n) {
  printf("m is less than n");
  }
  else {
  printf("m is equal to n");
  }
}
```

Output

m is greater than n

program 2:

```
#include <stdio.h>
int main()
{
  int var1, var2;
  printf("Input the value of var1:");
  scanf("%d", &var1);
  printf("Input the value of var2:");
  scanf("%d",&var2);
  if (var1 != var2)
  {
        printf("var1 is not equal to var2\n");
        //Nested if else
        if (var1 > var2)
        {
              printf("var1 is greater than var2\n");
        }
        else
        {
              printf("var2 is greater than var1\n");
        }
  }
  else
  {
        printf("var1 is equal to var2\n");
  }
  return 0;
}
```

Output:

```
Input the value of var1:12
Input the value of var2:21
var1 is not equal to var2
var2 is greater than var1
```

EXAMPLE PROGRAM FOR SWITCH-CASE STATEMENT IN C

Program 1:

program to print the day of the week.

```
#include<stdio.h>
int main()
   {
    int day;
    printf("Enter the number of the day:");
    scanf("%d",&day);
    switch(day)
      {
       case 1:
            printf("Sunday");
            break;
       case 2:
            printf("Monday");
            break;
       case 3:
            printf("Tuesday");
            break;
       case 4:
            printf("Wednesday");
            break;
       case 5:
            printf("Thursday");
            break;
       case 6:
            printf("Friday");
            break;
       case 7:
            printf("Saturday");
            break;
       default:
            printf("Invalid choice");
      }
  return 0;
   }
```

Output:

Enter the number of the day:6
Friday

Enter the number of the day:7

Invalid choice

Program 2:

```
#include<stdio.h>
int main() {
   char operator;
   double firstNumber,secondNumber;
   printf("Enter an operator (+, -, *, /): ");
   scanf("%c", &operator);
   printf("Enter two operands: ");
   scanf("%lf %lf",&firstNumber, &secondNumber);
   switch(operator)
   {
      case '+':
         printf("%.1lf + %.1lf = %.1lf",firstNumber, secondNumber,
firstNumber+secondNumber);
         break;
      case '-':
         printf("%.1lf - %.1lf = %.1lf",firstNumber, secondNumber, firstNumber-secondNumber);
         break;
      case '*':
         printf("%.1lf * %.1lf = %.1lf",firstNumber, secondNumber,
firstNumber*secondNumber);
         break;
      case '/':
         printf("%.1lf / %.1lf = %.1lf",firstNumber, secondNumber, firstNumber/firstNumber);
         break;
         default:
         printf("Error! operator is not correct");
   }
return 0;
}
```

Output:

```
Enter an operator (+, -, *, /):+
Enter two operands:3
4
3.0 + 4.0 = 7.0
```

Program 3:

```
#include <stdio.h>
int main()
{
  int x = 2;
  switch (x)
  {
     case 1: printf("Choice is 1");
           break;
     case 2: printf("Choice is 2");
            break;
     case 3: printf("Choice is 3");
           break;
     default: printf("Choice other than 1, 2 and 3");
            break;
  }
  return 0;
}
```

Output:

Choice is 2

ARRAYS

1.C program to find the sum marks of n students using arrays

```
#include <stdio.h>
int main()
{
    int i,n;
    int marks[n];
    int sum=0;
    printf("Enter number of students: ");
    scanf("%d",&n);
    for(i=0;i<n;i++){
    printf("Enter marks of student%d: ",i+1);
    scanf("%d",&marks[i]);
    sum+=marks[i];
}
    printf("Sum of marks = %d",sum);
    return 0;
    }
```

Output:

Enter number of students: 3
Enter marks of student1: 80
Enter marks of student2: 85

Enter marks of student3: 90
Sum of marks = 255

2.C program to pass a single element of an array to function

```
#include <stdio.h>
void display(int a)
{
 printf("%d",a);
}
int main()
{
 int c[]={2,3,4};
display(c[2]);
return 0;
}
```

Output:

4

3.Write Program to count total number of array elements in C

```
#include <stdio.h>
int main()
{
int arr[]={10,20,30,40,50};
int n;

n=sizeof(arr)/sizeof(int);
printf("Number of elemenets are: %d\n",n);
return 0;
}
```

Output:

Number of elemenets are: 5

4.Program to reverse array elements (by swapping first element to last, second to second last and so on) in C

```
        #include <stdio.h>
        void Array_Swap(int *array , int n)
        {
         int i=0,temp=0;
        for(i=0 ; i<n/2 ; i++)
   {
      temp = array[i];
      array[i] = array[n-i-1];
      array[n-i-1] = temp;
   }
}
int main()
{

   int array_1[30] = {0};
     int i=0 ,n=0;
    printf("\nEnter the number of elements for the array : ");
   scanf("%d",&n);
        printf("\nEnter the elements for array_1..\n");
   for(i=0 ; i<n ; i++)
   {
```

```
    printf("array_1[%d] : ",i);
    scanf("%d",&array_1[i]);
  }
  Array_Swap(array_1 , n);
      printf("\nThe array after swap is..\n");
  for(i=0 ; i<n ; i++)
  {
    printf("\narray_1[%d] : %d",i,array_1[i]);
  }

 return 0;
}
```

Output:

```
Enter the number of elements for the array : 5

Enter the elements for array_1..
array_1[0] : 2
array_1[1] : 3
array_1[2] : 5
array_1[3] : 8
array_1[4] : 6
The array after swap is..
array_1[0] : 6
```

array_1[1] : 8

array_1[2] : 5

array_1[3] : 3

array_1[4] : 2

5.Write a program in C to read n number of values in an array and display it in reverse order.

```
#include <stdio.h>

int main()

{

  int i,n,a[100];

        printf("\n\nRead n number of values in an array and display it in reverse order:\n");

        printf("Input the number of elements to store in the array :");

 scanf("%d",&n);


 printf("Input %d number of elements in the array :\n",n);

 for(i=0;i<n;i++)

   {

    printf("element - %d : ",i);

    scanf("%d",&a[i]);

    }

 printf("\nThe values store into the array are : \n");

 for(i=0;i<n;i++)

  {

    printf("% 5d",a[i]);

   }
```

```
  printf("\n\nThe values store into the array in reverse are :\n");
  for(i=n-1;i>=0;i--)
     {
          printf("% 5d",a[i]);
         }
  printf("\n\n");
   return 0;
}
```

Output:

Read n number of values in an array and display it in reverse order:

Input the number of elements to store in the array :10

Input 10 number of elements in the array :

element -0 : 1

element 1 : 2

element - 2 : 3

element -3 : 4

element -4 : 5

element -5 : 6

element 6 : 7

element 7 : 8

element 8 : 9

element 9 : 10

The values store into the array are : 1 2 3 4 5 6 7 8 9 10

The values store into the array in reverse are : 10 9 8 7 6 5 4 3 2 1

6.Write a program in C to find the sum of all elements of an array.

```
#include <stdio.h>
int main()
{
int a[100];
int i, n, sum=0;
printf("\n\nFind sum of all elements of array:\n");
 printf("Input the number of elements to be stored in the array :");
scanf("%d",&n);
printf("Input %d elements in the array :\n",n);
for(i=0;i<n;i++)
{
     printf("element - %d : ",i);
     scanf("%d",&a[i]);
   }
for(i=0; i<n; i++)
{
  sum += a[i];
}
  printf("Sum of all elements stored in the array is : %d\n\n", sum);
 return 0;
}
```

Output:

Find sum of all elements of array: 5

Input the number of elements to be stored in the array :5

Input 5 elements in the array :
element -0 : 8

element - 1 : 9

element -2 : 4

element -3 : 5

element -4 : 6

Sum of all elements stored in the array is : 32

7.Write a program in C to store elements in an array and print it.

```
#include <stdio.h>
int main()
{
 int arr[10];
 int i;
printf("\n\nRead and Print elements of an array:\n");
printf("Input 10 elements in the array :\n");
for(i=0; i<10; i++)
   {
   printf("element - %d : ",i);
        scanf("%d", &arr[i]);
}
 printf("\nElements in array are: ");
  for(i=0; i<10; i++)
 {
 printf("%d  ", arr[i]);
}
printf("\n");
return 0;
}
```

OutPut:

Read and Print elements of an array:

Input 10 elements in the array :

element -0 : 4

element -1 : 2

element 2 : 6

element - 3 : 8

element -4 : 7

element 5 : 1

element -6 : 3

element -7 : 2

element -8 : 4

element - 9 : 5

Elements in array are: 4 2 6 8 7 1 3 2 4 5

8.Write a program in C to find the sum of all elements of the array

```
#include <stdio.h>
int main()
{
  int a[100];
 int i, n, sum=0;
 printf("\n\nFind sum of all elements of array:\n");
printf("Input the number of elements to be stored in the array :");
 scanf("%d",&n);
 printf("Input %d elements in the array :\n",n);
for(i=0;i<n;i++)
{
     printf("element - %d : ",i);
     scanf("%d",&a[i]);
   }

for(i=0; i<n; i++)
{
sum += a[i];
}
printf("Sum of all elements stored in the array is : %d\n\n", sum);

return 0;
```

}

Output:

Find sum of all elements of array:

Input the number of elements to be stored in the array :5
Input 5 elements in the array :
element -0 : 5

element 1 : 4

element - 2 : 7

element -3 : 8

element -4 : 6

Sum of all elements stored in the array is : 30

9. Program to find the average of n (n < 10) numbers using arrays

```
#include <stdio.h>
int main()
{
int marks[10], i, n, sum = 0, average;
 printf("Enter n: ");
 scanf("%d", &n);
for(i=0; i<n; ++i)
{
    printf("Enter number%d: ",i+1);
  scanf("%d", &marks[i]);
sum += marks[i];
}
 average = sum/n;
 printf("Average = %d", average);
return 0;
}
```

Output:

Enter n: 5

Enter number1: 6

Enter number2: 3

Enter number3: 5

Enter number4: 4

Enter number5: 3

Average = 4

10. C program to store temperature of two cities for a week and display it.

```
#include <stdio.h>
const int CITY = 2;
const int WEEK = 7;
int main()
{
  int temperature[CITY][WEEK];
for (int i = 0; i < CITY; ++i) {
for(int j = 0; j < WEEK; ++j) {
  printf("City %d, Day %d: ", i+1, j+1);
  scanf("%d", &temperature[i][j]);
    }
}
printf("\nDisplaying values: \n\n");
 for (int i = 0; i < CITY; ++i) {
for(int j = 0; j < WEEK; ++j)
{
  printf("City %d, Day %d = %d\n", i+1, j+1, temperature[i][j]);
}
}
return 0;
}
```

Output:

City 1, Day 1: 2

City 1, Day 2: 5

City 1, Day 3: 3

City 1, Day 4: 3

City 1, Day 5: 2

City 1, Day 6: 8

City 1, Day 7: 9

City 2, Day 1: 10

City 2, Day 2: 7

City 2, Day 3: 7

City 2, Day 4: 12

City 2, Day 5: 98

City 2, Day 6: 23

City 2, Day 7: 47

City 1, Day 1 = 2

City 1, Day 2 = 5

City 1, Day 3 = 3

City 1, Day 4 = 3

City 1, Day 5 = 2

Displaying values:

City 1, Day 1 = 2

City 1, Day 2 = 5

City 1, Day 3 = 3

City 1, Day 4 = 3

City 1, Day 5 = 2

City 1, Day 6 = 8

City 1, Day 7 = 9

City 2, Day 1 = 10

City 2, Day 2 = 7

City 2, Day 3 = 7

City 2, Day 4 = 12

City 2, Day 5 = 98

City 2, Day 6 = 23

City 2, Day 7 = 47

11. C program to find the sum of two matrices of order 2*2 using multidimensional arrays.

```
#include <stdio.h>
int main()
{
  float a[2][2], b[2][2], c[2][2];
  int i, j;
 printf("Enter elements of 1st matrix\n");
for(i=0; i<2; ++i)
for(j=0; j<2; ++j)
{
printf("Enter a%d%d: ", i+1, j+1);
scanf("%f", &a[i][j]);
}
  printf("Enter elements of 2nd matrix\n");
 for(i=0; i<2; ++i)
 for(j=0; j<2; ++j)
{
printf("Enter b%d%d: ", i+1, j+1);
scanf("%f", &b[i][j]);
}
for(i=0; i<2; ++i)
for(j=0; j<2; ++j)
```

```
{
c[i][j] = a[i][j] + b[i][j];
 }
printf("\nSum Of Matrix:");
for(i=0; i<2; ++i)
for(j=0; j<2; ++j)
{
printf("%.1f\t", c[i][j]);
 if(j==1)
printf("\n");
}
return 0;
}
```

Output:

Enter elements of 1st matrix

Enter a11: 2

Enter a12: 0.5

Enter a21: 1.1

Enter a22: 2

Enter elements of 2nd matrix

Enter b11: 0.2

Enter b12:0

Enter b21: 0.23

Enter b22: 23

Sum Of Matrix:2.2 0.5

1.3 25.0

12. C Program to store values entered by the user in a three-dimensional array and display it

```
#include <stdio.h>
int main()
{
  int i, j, k, test[2][3][2];
printf("Enter 12 values: \n");

 for(i = 0; i < 2; ++i) {
  for (j = 0; j < 3; ++j) {
  for(k = 0; k < 2; ++k ) {
        scanf("%d", &test[i][j][k]);
  }
 }
}

 printf("\nDisplaying values:\n");
 for(i = 0; i < 2; ++i) {
for (j = 0; j < 3; ++j) {
 for(k = 0; k < 2; ++k ) {
   printf("test[%d][%d][%d] = %d\n", i, j, k, test[i][j][k]);
        }
```

```
        }
      }
       return 0;
      }
```

Output:

```
Enter 12 values:
7
8
9
4
5  6
1
2
3
45
67
7

Displaying values:
test[0][0][0] = 7
test[0][0][1] = 8
test[0][1][0] = 9
test[0][1][1] = 4
```

test[0][2][0] = 5

test[0][2][1] = 6

test[1][0][0] = 1

test[1][0][1] = 2

test[1][1][0] = 3

test[1][1][1] = 45

test[1][2][0] = 67

test[1][2][1] = 7

13.**Write a c program to find maximum in arr[] of size n**

```
#include <stdio.h>
int largest(int arr[], int n)
{
int i;
int max = arr[0];
for (i = 1; i < n; i++)
if (arr[i] > max)
  max = arr[i];
return max;
}
int main()
{
int arr[] = {10, 324, 45, 90, 9808};
int n = sizeof(arr)/sizeof(arr[0]);
printf("Largest in given array is %d", largest(arr, n));
return 0;
}
```

Output:

Largest in given array is 9808

14.**Write a C program to multiply two square matrices**

```
#include <stdio.h>
#define N 4
void multiply(int mat1[][N], int mat2[][N], int res[][N])
{
    int i, j, k;
    for (i = 0; i < N; i++)
    {
        for (j = 0; j < N; j++)
        {
            res[i][j] = 0;
            for (k = 0; k < N; k++)
                res[i][j] += mat1[i][k]*mat2[k][j];
        }
    }
}

int main()
{
    int mat1[N][N] = { {1, 1, 1, 1},
                       {2, 2, 2, 2},
                       {3, 3, 3, 3},
                       {4, 4, 4, 4}};
```

```
    int mat2[N][N] = { {1, 1, 1, 1},
                       {2, 2, 2, 2},
                       {3, 3, 3, 3},
                       {4, 4, 4, 4}};

    int res[N][N];
    int i, j;
    multiply(mat1, mat2, res);

    printf("Result matrix is \n");
    for (i = 0; i < N; i++)
    {
        for (j = 0; j < N; j++)
            printf("%d ", res[i][j]);
        printf("\n");
    }
 return 0;
}
```

Output:

```
Result matrix is
10 10 10 10
20 20 20 20
```

30 30 30 30

40 40 40 40

15.Write a c program getMissingNo takes array and size of array as arguments

```
#include <stdio.h>
int getMissingNo (int a[], int n)
{
  int i, total;
 total  = (n+1)*(n+2)/2;
for ( i = 0; i< n; i++)
 total -= a[i];
 return total;
}
int main()
{
 int a[] = {1,2,4,5,6};
int miss = getMissingNo(a,5);
   printf("%d", miss);
 return 0;
}
```

Output:

3