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**SIMPLE PROGRAMS USING LOOPS:**

Program:1

#include <stdio.h>

int main() {

int n, i, sum = 0;

printf("Enter a positive integer: ");

scanf("%d", &n);

i = 1;

while (i <= n) {

sum += i;

++i;

}

printf("Sum = %d", sum);

return 0;

}

OUTPUT:

Enter a positive integer: 100

Sum = 5050

Program:2

#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: 10

Fibonacci Series: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34,

Program:3

#include <stdio.h>

int main() {

int num, originalNum, remainder, result = 0;

printf("Enter a three-digit integer: ");

scanf("%d", &num);

originalNum = num;

while (originalNum != 0) {

remainder = originalNum % 10;

result += remainder \* remainder \* remainder;

originalNum /= 10;

}

if (result == num)

printf("%d is an Armstrong number.", num);

else

printf("%d is not an Armstrong number.", num);

return 0;

}

OUTPUT

Enter a three-digit integer: 371

371 is an Armstrong number.

PROGRAM USING STRINGS:

Program:4

#include<stdio.h>  
#include <string.h>

int main()  
{  
   char s[100];

   printf("Enter a string to reverse\n");   
   gets(s);

   strrev(s);

   printf("Reverse of the string: %s\n", s);

   return 0;  
}

output:

enter a string to reverse:

durai.

Reverse of the string:

iarud.

Program:5

#include <iostream>

#include<string.h>

using namespace std; {

   int main(){

      char string1[]={"naman"};

      int i, length;

      int flag = 0;

      length = strlen(string1);

      for(i=0;i < length ;i++){

         if(string1[i] != string1[length-i-1]) {

            flag = 1;

            break;

         }

      }

      if (flag==1){

         printf(" string is not a palindrome");

      } else {

         printf(" string is a palindrome");

      }

      return 0;

   }

}

Output

string is a palindrome

program:6

#include<stdio.h>

#include<conio.h>

void main()

{

char s[30];

int i,flag=0,n=0;

clrscr();

printf("enter the string:");

scanf("%s",s);

for(i=0;s[i]!='\0';i++)

{

if(s[i]=='0'||s[i]=='1'||s[i]=='2'||s[i]=='3'||s[i]=='5'||s[i]=='6'||s[i]=='7'||s[i]=='8'||s[i]=='9')

{

flag=flag+1;

}

}

if(flag==0)

printf("given string not contains numbers");

else

printf("given string contains numbers");

getch();

}

Output:

Enter the string:dur66.

Given string contains number.

PROGRAM USING ARRAY:

Program:7

#include <stdio.h>

int main() {

int n, i;

float num[100], sum = 0.0, avg;

printf("Enter the numbers of elements: ");

scanf("%d", &n);

while (n > 100 || n < 1) {

printf("Error! number should in range of (1 to 100).\n");

printf("Enter the number again: ");

scanf("%d", &n);

}

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

printf("%d. Enter number: ", i + 1);

scanf("%f", &num[i]);

sum += num[i];

}

avg = sum / n;

printf("Average = %.2f", avg);

return 0;

}

OUTPUT:

Enter the numbers of elements: 6

1. Enter number: 45.3

2. Enter number: 67.5

3. Enter number: -45.6

4. Enter number: 20.34

5. Enter number: 33

6. Enter number: 45.6

Average = 27.69

Program:8

#include<stdio.h>

int main()

{

int a[20], min, max;

int n, i, temp1 = 0, temp2 = 0, pos1 = 0, pos2 = 0;

printf("Enter the num of elements : ");

scanf("%d", &n);

printf("Enter the elements :\n");

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

{

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

if (i == 0)

{

min = max = a[i];

}

if (a[i]<min)

min = a[i];

else if (a[i]>max)

max = a[i];

}

printf("\nBiggest element is %d and Smallest elementis %d\n ", max, min);

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

{

if (min == a[i])

{

pos1 = i;

break;

}

}

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

{

if (max == a[i])

{

pos2 = i;

break;

}

}

temp1 = a[pos1];

temp2 = a[pos2];

a[pos1] = temp2;

a[pos2] = temp1;

printf("\nArray after interchange of smallest and largest : \n");

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

{

printf("\nElement : %d", a[i]);

}

return 0;

}

**Output :**  
Enter the num of elements : 5  
Enter the elements :  
10  
20  
30  
40  
50  
Biggest element is 50 and Smallest elementis 10  
  
Array after interchange of smallest and largest :  
  
Element : 50  
Element : 20  
Element : 30  
Element : 40  
Element : 10

PROGRAM USING 2D ARRAY:

Program:9

#include <stdio.h>

void main()

{

int arr1[50][50],brr1[50][50],crr1[50][50],i,j,k,r1,c1,r2,c2,sum=0;

printf("\n\nMultiplication of two Matrices :\n");

printf("----------------------------------\n");

printf("\nInput the rows and columns of first matrix : ");

scanf("%d %d",&r1,&c1);

printf("\nInput the rows and columns of second matrix : ");

scanf("%d %d",&r2,&c2);

if(c1!=r2){

printf("Mutiplication of Matrix is not possible.");

printf("\nColumn of first matrix and row of second matrix must be same.");

}

else

{

printf("Input elements in the first matrix :\n");

for(i=0;i<r1;i++)

{

for(j=0;j<c1;j++)

{

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

scanf("%d",&arr1[i][j]);

}

}

printf("Input elements in the second matrix :\n");

for(i=0;i<r2;i++)

{

for(j=0;j<c2;j++)

{

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

scanf("%d",&brr1[i][j]);

}

}

printf("\nThe First matrix is :\n");

for(i=0;i<r1;i++)

{

printf("\n");

for(j=0;j<c1;j++)

printf("%d\t",arr1[i][j]);

}

OUTPUT

Multiplication of two Matrices :

----------------------------------

Input the rows and columns of first matrix : 2

2

Input the rows and columns of second matrix : 2

2

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Input elements in the second matrix :

element - [0],[0] : 5

element - [0],[1] : 6

element - [1],[0] : 7

element - [1],[1] : 8

The First matrix is :

1 2

3 4

The Second matrix is :

5 6

7 8

The multiplication of two matrices is :

19 22

43 50

Program:10

#include <stdio.h>

int main() {

int a[10][10], transpose[10][10], r, c, i, j;

printf("Enter rows and columns: ");

scanf("%d %d", &r, &c);

// Assigning elements to the matrix

printf("\nEnter matrix elements:\n");

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

for (j = 0; j < c; ++j) {

printf("Enter element a%d%d: ", i + 1, j + 1);

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

}

// Displaying the matrix a[][]

printf("\nEntered matrix: \n");

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

for (j = 0; j < c; ++j) {

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

if (j == c - 1)

printf("\n");

}

// Finding the transpose of matrix a

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

for (j = 0; j < c; ++j) {

transpose[j][i] = a[i][j];

}

// Displaying the transpose of matrix a

printf("\nTranspose of the matrix:\n");

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

for (j = 0; j < r; ++j) {

printf("%d ", transpose[i][j]);

if (j == r - 1)

printf("\n");

}

return 0;

}

**Output**

Enter rows and columns: 2

3

Enter matrix elements:

Enter element a11: 1

Enter element a12: 4

Enter element a13: 0

Enter element a21: -5

Enter element a22: 2

Enter element a23: 7

Entered matrix:

1 4 0

-5 2 7

Transpose of the matrix:

1 -5

4 2

0 7

printf("\nThe Second matrix is :\n");

for(i=0;i<r2;i++)

{

printf("\n");

for(j=0;j<c2;j++)

printf("%d\t",brr1[i][j]);

}

//multiplication of matrix

for(i=0;i<r1;i++)

for(j=0;j<c2;j++)

crr1[i][j]=0;

for(i=0;i<r1;i++) //row of first matrix

{

for(j=0;j<c2;j++) //column of second matrix

{

sum=0;

for(k=0;k<c1;k++)

sum=sum+arr1[i][k]\*brr1[k][j];

crr1[i][j]=sum;

}

}

printf("\nThe multiplication of two matrices is : \n");

for(i=0;i<r1;i++)

{

printf("\n");

for(j=0;j<c2;j++)

{

printf("%d\t",crr1[i][j]);

}

}

}

printf("\n\n");

}