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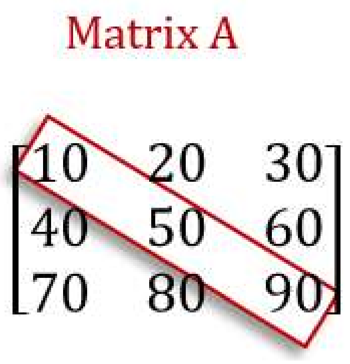
C Program to find Sum of Diagonal Elements of a Matrix

How to write a C Program to find Sum of Diagonal Elements of a Matrix?. Or, How to write a C program to find Sum of Diagonal Elements of a Multi-Dimensional Array with example.



C Program to find Sum of Diagonal Elements of a Matrix

This program allows the user to enter the number of rows and columns of a Matrix. Next, we are going to calculate the sum of diagonal elements in this matrix using For Loop.

```
/* C Program to find Sum of Diagonal Elements of a Matrix */
```

Related Topics

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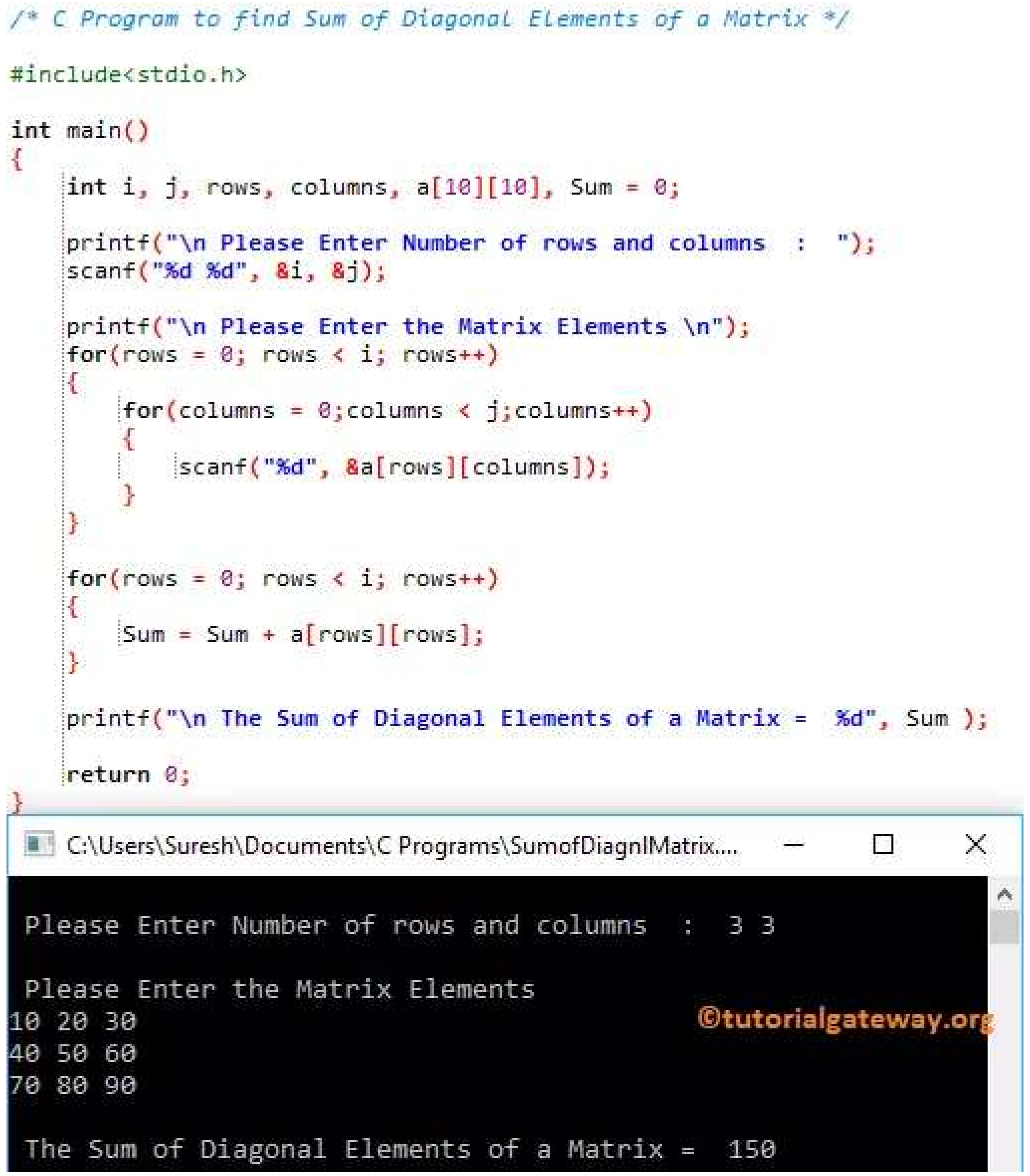
C Armstrong Number
C Convert Celsius to Fahrenheit
C Convert Decimal to Binary
C Convert Decimal to Octal
C Convert CM to Meter and KM
C Convert KM to M, CM & MM
C Convert Fahrenheit to Celsius
C Compound Interest
C Count Digits in a Number
C Count Notes in an Amount
C Cube of a Number
C Calculate Electricity Bill
C Factors of a Number

```
#include<stdio.h>

int main()
{
    int i, j, rows, columns, a[10][10], Sum = 0;

    printf("\n Please Enter Number of rows and columns  :  ");
    scanf("%d %d", &i, &j);

    printf("\n Please Enter the Matrix Elements \n");
    for(rows = 0; rows < i; rows++)
    {
        for(columns = 0;columns < j;columns++)
    {
        scanf("%d", &a[rows][columns]);
    }
    }

    for(rows = 0; rows < i; rows++)
    {
        Sum = Sum + a[rows][rows];
    }

    printf("\n The Sum of Diagonal Elements of a Matrix =  %d", Sum );

    return 0;
}
```

C Factorial of a Number
C GCD of Two Numbers
C Generic Root of a Number
C Gross Salary of an Employee
C Largest of Two Numbers
C Largest of Three numbers
C Last Digit Of a Number
C LCM of Two Numbers
C Leap Year
C Multiplication Table
C Natural Numbers from 1 to N
C Natural Numbers in reverse
C NCR Factorial of a Number
C Number is Divisible by 5 and 11
C Palindrome Number
C Palindrome String
C Perfect Number
C Profit or Loss
C Print 1 to 100
C Prime Number
C Print Prime Numbers 1 to 100
C Prime Factors of a Number
C Prime, Armstrong or Perfect
C Positive or Negative
C Print Odd Numbers 1 to N
C Print Even Numbers 1 to N
C Print Integer, Char & Float
C Power of a Number
C Product of Digits in a Number
C Roots of a Quadratic Equation



```
/* C Program to find Sum of Diagonal Elements of a Matrix */

#include<stdio.h>

int main()
{
	int i, j, rows, columns, a[10][10], Sum = 0;

	printf("\n Please Enter Number of rows and columns  :  ");
	scanf("%d %d", &i, &j);

	printf("\n Please Enter the Matrix Elements \n");
	for(rows = 0; rows < i; rows++)
	{
		for(columns = 0;columns < j;columns++)
		{
			scanf("%d", &a[rows][columns]);
		}
	}

	for(rows = 0; rows < i; rows++)
	{
		Sum = Sum + a[rows][rows];
	}

	printf("\n The Sum of Diagonal Elements of a Matrix =  %d", Sum );

	return 0;
}
```

```
 Please Enter Number of rows and columns  :  3 3

 Please Enter the Matrix Elements
10 20 30
40 50 60
70 80 90

 The Sum of Diagonal Elements of a Matrix =  150
```

In this C Program to find Sum of Diagonal Elements of a Matrix example, We declared single Two dimensional arrays Multiplication of size of 10 * 10. The below statements ask the User to enter the Matrix size (Number of rows and columns. For instance 2 Rows, 3 Columns = a[2][3])

```
printf("\n Please Enter Number of rows and columns  :  ");
scanf("%d %d", &i, &j);
```

Next, we used C Programming for loop to iterate every cell present in a[3][3] matrix. Conditions inside the for loops ((rows < i) and (columns < j)) will ensure the program compiler, not to exceed the Matrix limit. Otherwise, the matrix will overflow. The scanf statement inside the for loop will store the user entered values in every individual array element such as a[0][0], a[0][1], ...

```
for(rows = 0; rows < i; rows++).
{
  for(columns = 0; columns < j; columns++)
```

C Reverse a Number
C Simple Calculator
C Simple Interest
C Square of a Number
C Square Root of a Number
C Standard Deviation
C Strong Number
C Student Grade
C Sum of Odd Numbers
C Sum of Even Nums
C Sum of Even and Odd
C Swap First & Last digit
C Sum of First & Last digit
C Sum of Digits of a Number
C Sum of N Numbers
C Sum & Average of n Number
C Swap 2 Numbers
C Total, Avg & % of 5 Subjects
C Quick Sort
C Selection Sort
C Insertion Sort
C Bubble Sort
C Fibonacci Series
C Nth Fibonacci number
C Sum of AP Series
C Sum of GP Series
C Sum of $1^3+2^3+3^3+....+n^3$
C Sum of $1^2+2^2+3^2+....+n^2$
C ASCII value of String chars
C Print Characters in a String

```
    {
      scanf("%d", &a[rows][columns]);
    }
  }
```

In the next line, We have one more for loop to find Sum of Diagonal Elements of a Matrix

```
for(rows = 0; rows < i; rows++)
{
           Sum = Sum + a[rows][rows];
}
```

User inserted values for C Program to find Sum of Diagonal Elements of a Multi-Dimensional Array example are: a[3][3] = {{10, 20, 30}, { 40, 50, 60}, {70, 80, 90}}
Row First Iteration: for(rows = 0; rows < 3; 0++)
The condition (0 < 3) is True.
Sum = Sum + a[rows][rows]
Sum = Sum + a[0][0] => 0 + 10 = 10

Row Second Iteration: for(rows = 1; rows < 3; 1++)
The condition (1 < 3) is True.
Sum = Sum + a[1][1]
Sum = 10 + 50 = 60

Row Second Iteration: for(rows = 2; rows < 3; 2++)
The condition (2 < 3) is True.
Sum = Sum + a[2][2]
Sum = 60 + 90 = 150

Next, rows value will increment. After the increment, the condition inside the for loop (rows < 3) will fail. So it will exit from the loop. At last, we used the printf statement to print the total Sum as output.

C Compare Two Strings
C Concatenate Two Strings
C Copy String
C String length program
C Convert String to Lower
C First Occur of string char
C First Occur of String Word
C Count Occur of string Char
C Count Alphs, Digits & Sp Chars
C Count Vowels & Consonants
C string remove all Occ of char
C remove 1st Occ of string char
C remove last Occ char in string
C replace All Occ of char in string
C Replace last Occ of String Char
C Replace 1st occ char in string
C Reverse words Order in string
C Reverse a String
C Toggle Case of all char in string
C Array Arithmetic Operations
C Matrix Arithmetic Operations
C Count Frequency of array item
C Count Duplicate Array items
C Count +ve & -Ve Array items
C Count Even & Odd Array items
C Copy an Array to another
C Delete Duplicate Array items
C Delete an Element in an Array
C insert an Element in an Array
C 2nd largest Array Number

C Find Largest Array Number
C Find Smallest Array Number
C Largest & Smallest Array item
C Merge Two Arrays
C Print Unique Array Elements
C Print Arrayy Elements
C Print Negative Array Numbers
C Print Positive Array Numbers
C Put +ve & -Ve in 2 Arrays
C Put Even & Odd in 2 Arrays
C Program to Reverse an Array
C Search an Element in an Array
C Sum of array even, odd nums
C Sort Array in Ascending Order
C Sort Array in Descending
C Swap 2 Arrays without Temp
C Sum of all Array Elements
C Sum of each Matrix column
C sum of each row in a Matrix
C Sum of Matrix row & column
C Add Two Matrices
C Sparse Matrix
C Symmetric Matrix
C Identity Matrix
C Interchange Matrix Diagonals
C Check two Matrices Equal
C Lower Triangle of a Matrix
C Upper Triangle of a Matrix
C Sum of Lower Triangle Matrix
C Sum of Upper Triangle Matrix

C Subtract Two Matrices

C Transpose of a Matrix