Question: You have to design a C++ template function range, which tak…
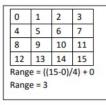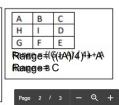
Visual Studio c++
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You have to design a C++ **template** function **range**, which takes a dynamic two-dimensional square matrix, its dimensions (rows, columns) size. It returns the range of values in matrix.

- Range = ((max − min)/4) + min.
- **Note:** No specialization is required for this function. **Do not** take **input** from **user**. **Initialize** a 2D array in **main** and call the function.
- **Template <typename T> T range (T **array, int rows, int columns)**

0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15

Range = ((15-0)/4) + 0
Range = 3

A	B	C
H	I	D
G	F	E

Range = ((I-A)/4) + A
Range = C
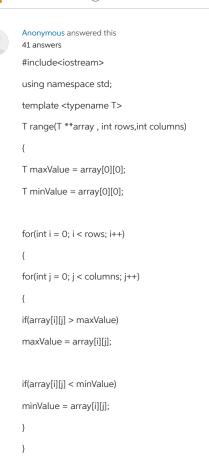
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Write another template function that will Shift the columns of matrix by 1 and print the shifted matrix. What would be the prototype of this function?

C	A	B
D	H	I
E	G	F

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Expert Answer ⓘ

Anonymous answered this
41 answers

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```
#include<iostream>

using namespace std;

template <typename T>

T range(T **array , int rows,int columns)

{

T maxValue = array[0][0];

T minValue = array[0][0];


for(int i = 0; i < rows; i++)

{

for(int j = 0; j < columns; j++)

{

if(array[i][j] > maxValue)

maxValue = array[i][j];


if(array[i][j] < minValue)

minValue = array[i][j];

}

}
```

```cpp
//cout<<"MIN :"<<minValue<<"\nMAX :"<<maxValue<<"\n";

T result = ((maxValue - minValue) / 4) + minValue;
return result;
}
int main()
{
int ** arr = new int*[4];

for(int i = 0; i< 4 ; i++)
arr[i] = new int[4];
// make int array
int c = 0;
for(int i= 0; i< 4; i++)
for(int j = 0; j<4 ;j++)
arr[i][j] = c++;
//make char array
char count = 'A';
char ** arr1 = new char*[3];
for(int i = 0; i< 3 ; i++)
arr1[i] = new char[3];

for(int i= 0; i< 3; i++)
for(int j = 0; j<3 ;j++)
arr1[i][j] = count++;


cout<<"Result of int array : "<<range(arr,4,4);
cout<<"\nResult of char array : "<<range(arr1,3,3);


}
output:
Result of int array : 3
Result of char array : C
B)
#include<iostream>
using namespace std;
template <typename T>
void shift(T ** &array , int rows,int columns)
{
T *temp = new T[rows];

for(int i = 0 ; i < rows; i++)
temp[i] = array[i][columns - 1];

for(int i = columns - 1; i > 0; i--)
{
```

```cpp
for(int j = 0; j < rows; j++)

{

array[j][i] = array[j][i-1];

}

}


for(int i = 0 ; i < rows; i++)

array[i][0] = temp[i];



}

int main()

{

int ** arr = new int*[4];


for(int i = 0; i< 4 ; i++)

arr[i] = new int[4];

// make int array

int c = 0;

for(int i= 0; i< 4; i++)

for(int j = 0; j<4 ;j++)

arr[i][j] = c++;


shift(arr,4,4);


for(int i= 0; i< 4; i++){

for(int j = 0; j<4 ;j++){

cout<<arr[i][j]<<" ";

}

cout<<"\n";

}



}
```

output :

3 0 1 2

7 4 5 6

11 8 9 10

15 12 13 14

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Q: Task 1: Write seperate C++ template functions for (i) and (ii) i) You have to design a C++ template function range, which takes a dynamic two-dimensional square matrix, its dimensions (rows, columns) size. It returns the range of values in matrix. Range = ((max - min)/4) + min. Note: No specialization is required for this function. Do not take input from user. Initialize a 2D array...

A: **See answer**   100% (2 ratings)

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