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How do I create a 2D vector array using std::vector<>?

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11 Answers



Sravya Vissamsetty, Being really gud at C++ is lyk being really gud at using rocks to sharpen sticks

Written Jul 19, 2016

You can create a 2D array by doing `int a[5][7]`, but `vector<int> a(5,7)` won't create a 2D vector - it will create a 5-element vector full of 7s. Instead, you need to create a vector of vectors. Here are some ways to do it.

```
1 #include <iostream>
2 #include <vector>
3 using namespace std;
4 int main()
5 {
6     // An empty vector of vectors. The space
7     // between the 2 '>' signs is necessary
8     vector<vector<int> > v2d;
9     // If you intend creating many vectors
10    // of vectors, the following's tidier typedef
11    vector<vector<int> > IntMatrix;
12    IntMatrix m;
13    // Now we'll try to create a 3 by 5 "matrix".
14    // First, create a vector with 5 elements vector<int> v2(5, 99);
15    // Now create a vector of 3 elements.
16    // Each element is a copy of v2
17    vector<vector<int> > v2d2(3,v2);
18    // Print out the elements
19    for(int i=0;i<v2d2.size(); i++)
20    { for (int j=0;j<v2d2[i].size(); j++)
21      cout << v2d2[i][j] << " ";
22      cout << endl;
23    }
24 }
```

For more knowledge on vectors, visit [C++ vector memory and 2D vectors](#)

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Paul Olaru, Learning C programming at UPB Romania

Written Nov 11, 2014

You want a vector of vectors of some type T? Try creating the larger vector to be a `std::vector<std::vector<T>>` where T might be any non-void type, be it value or reference.

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Endilie Yacop Sucipto, I am a software and hardware enthusiast

Written Feb 6

```
1 std::vector<std::vector<int> > matrix(row, std::vector<int>(col));
```

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Tirupathi Rao Baggu, 2+ years experience in C/C++ in Linux env

Written May 20, 2016

```
#include<iostream>

#include<vector>

#include<iomanip>

using namespace std;

int main()
{
    vector<vector<int>> items;

    int k=0;

    for (int i =0;i<5;i++)
    {
        items.push_back(vector<int>());

        for (int j=0;j<5;j++)
        items[i].push_back(k++);
    }
}
```

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Ajit Kumar, love to learn new algorithms

Written Feb 2, 2016

```
vector<vector<int>> myvec(rowsize,vector<int>(colsize));
```

if you want to initializ it then use :

```
vector<vector<int>> myvec(rowsize,vector<int>(colsize,0));
```

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Kaustubh Yadav, Computer Science Undergraduate

Written Dec 13, 2015

To create a 2-d vector do this:

```
std::vector<vector<int>> matrix;
```

The above snippet will just declare a 2-d vector;

Now to initialise it and declare a capacity,

```
matrix = <vector<vector<int>>(CAPACITY, std::vector<int>
(NUMBER_TO_INITIALISE_THE_VECTOR_WITH));
```

Now, if you want to do this in a single line:

```
std::vector<vector<int>>matrix(CAPACITY, std::vector<int>
(NUMBER_TO_INITIALISE_THE_VECTOR_WITH));
```

This is the easiest way i know!

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Dinesh Khandelwal, loves C++

Updated Aug 30, 2016

 $M * N$ matrix (assuming *int* type elements) initialized with all values as *K*

```
1 std::vector<std::vector<int>> matrix(M, std::vector<int>(N, K));
```

Otherwise,

```
1 std::vector<int> va(5, 1);    // vector a {1, 1, 1, 1, 1}
2 std::vector<int> vb(5, 2);    // vector b {2, 2, 2, 2, 2}
3 std::vector<int> vc(5, 3);    // vector c {3, 3, 3, 3, 3}
4
5 std::vector<std::vector<int>> vv {va, vb, vc};    // vector of vectors
```

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Manish Bisht, My Corner of Internet : <https://manishbisht.me>

Written Mar 3, 2016

You can create a 2D array by doing `int a[5][7]`, but `vector<int> a(5,7)` won't create a 2D vector - it will create a 5-element vector full of 7s. Instead, you need to create a vector of vectors. Here is one way to implement it.

```

1  #include <iostream>
2  #include <vector>
3  using namespace std;
4
5
6  int main()
7  {
8      // An empty vector of vectors. The space
9      // between the 2 '>' signs is necessary
10     vector<vector<int> > v2d;
11
12
13     // If you intend creating many vectors
14
15     // of vectors, the following's tidier
16
17     typedef vector<vector<int> > IntMatrix;
18
19     IntMatrix m;
20
21
22
23     // Now we'll try to create a 3 by 5 "matrix".
24
25     // First, create a vector with 5 elements
26
27     vector<int> v2(5, 99);
28
29
30
31     // Now create a vector of 3 elements.
32
33     // Each element is a copy of v2
34
35     vector<vector<int> > v2d2(3,v2);
36
37
38
39     // Print out the elements
40
41     for(int i=0;i<v2d2.size(); i++) {
42
43         for (int j=0;j<v2d2[i].size(); j++)
44
45             cout << v2d2[i][j] << " ";
46
47         cout << endl;
48
49     }
50
51 }
52

```

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Saurabh Singh, supporting applications now but still love to code ;)

Written Aug 26, 2016

Please find the attached code for M*N matrix where you can ask for users input :)

```

1  #include<iostream>
2
3  #include<vector>
4
5  #include<iomanip>
6
7  using namespace std;
8
9  int main()
10
11 {
12

```

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```

16
17 int k;
18
19 // i value stands for no of rows here(manipulate i as you like)
20
21 for (int i =0;i<3;i++)
22 {
23
24
25 //adding rows of vectors here
26
27 items.push_back(vector<int>());
28
29 //inputting each value into a particular of column size 4
30
31 for (int j=0;j<4;j++){
32     cin >> k;
33
34     items[i].push_back(k);}
35
36 }
37
38 //printing out the elements
39 for(int i=0;i<3;i++){
40     for(int j=0;j<4;j++){
41         cout<< items[i][j]<<"\t\t";
42
43     }cout<<endl;
44     }
45 return 0;
46
47 }

```

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Giorgi Janjgava, works at Web Development

Written Aug 27, 2016

```

#include <iostream>
#include <vector>

```

using namespace std ;

```

int main()
{

```

// m row n column ;

int m , n ;

cin >> m >> n ;

/*

typedef vector<int> vi ;

vector<vi> v(m , vi(n));

*/

vector<vector<int>> v(m , vector<int>(n));

}

3.2k Views



Prathamesh Aware, CS/IT engineer

Written Jul 24, 2016

Here's an example code:

```

1 #include <bits/stdc++.h>
2 using namespace std;
3 int main() {
4     int rows = 2;
5     int cols = 2;
6     int val = 1;
7     vector< vector<int> > v(rows, vector<int> (cols, val));
8     /*creates 2d vector "v[rows][cols]"
9     and initializes all elements to "val == 1" (default value is 0)*/
10    v[0][0] = 5;

```

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```
14 return 0;
15 }
```

Hope this helps you out!

2.3k Views

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Written Jul 21, 2015

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Dylan MacIntyre, Quora's Edgy Gaylord
Written Jan 31 · Upvoted by James Beland, CTO at Draconian Solutions, been building computers all my life.

Me: **Checks over my shoulder before clicking on something** Computer: What are you- NO STOP YOU ARE NOT AN ADULT! ~ Computer: Please plug me in. Me: Nah, it's too far away. Computer: Fine then, I'll just keep giving you that Low Batterv alert every 10 seconds. ~ Me:

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