



**KEEP
CALM
AND
LOVE
MATRIX**

2D std::vectors [declaration]

```
std::size_t rows;  
std::size_t cols;  
  
std::cin >> rows >> cols;  
  
std::vector<std::vector<int> > v(rows, std::vector<int>(cols));  
//      note the space   ^^^ (C++03)
```

Accessing elements

```
// matrix declared as vector of vectors
```

```
for(std::size_t i = 0; i < matrix.size(); ++i)
{
    for(std::size_t j = 0; j < matrix.at(i).size(); ++j)
    {
        matrix.at(i).at(j) = i * j;
    }
}
```

```
// C++11 only
```

```
for(const auto& row: matrix)
{
    for(const auto& elem: row)
    {
        std::cout << elem << ' ';
    }

    std::cout << std::endl;
}
```

std::vector iterators

```
std::vector<int> v(10, 4);

*v.begin() = 42;
*v.rbegin() = 24;

// note the '*' at the beginning

for(const auto& elem)
{
    std::cout << elem << ' ';
}

std::cout << std::endl;
```

std::vector iterators [2]

```
std::vector<std::vector<int>> matrix(10, std::vector<int>(5, 42));  
//          no space ^^ C++11 only  
  
for(auto& elem: *matrix.begin())  
{  
    elem = 24;  
}  
  
for(auto& row: matrix)  
{  
    *row.begin() = 24;  
}  
  
*matrix.begin()->begin() = 84;
```

Problems

- [Timus #1119](#) (Метро)
- [Acmp #29](#) (Компьютерная игра)
- [Acmp #510](#) (Шоколадка)