

Q7. The Spiral Library

The King built a library where books are kept in spiral shelves. Print them in **spiral order**.

Input:

```
3 3
1 2 3
4 5 6
7 8 9
```

Output: [1,2,3,6,9,8,7,4,5]

```
07.cpp 04.cpp 05.cpp 06.cpp 07.cpp 07.out
1 //spiral library
2 #include <iostream>
3 using namespace std;
4 vector<int> spiralLib(vector<vector<int>>& arr, int n,
5   int m) {
6   vector<int> output;
7   int t = 0, b = n - 1, l = 0, r = m - 1;
8
9   while (t <= b && l <= r) {
10     // Move l -> r
11     for (int i = t; i <= r; i++)
12       output.push_back(arr[t][i]);
13     t++;
14
15     // Move t -> b
16     for (int i = t; i <= b; i++)
17       output.push_back(arr[i][r]);
18     r--;
19
20     // Move r -> l
21     if (t <= b) {
22       for (int i = r; i >= t; i--)
23         output.push_back(arr[b][i]);
24       b--;
25     }
26
27     // Move b -> t
28     if (l <= r) {
29       for (int i = b; i >= t; i--)
30         output.push_back(arr[i][l]);
31       l++;
32     }
33
34   return output;
35 }
36 int main() {
37   int n, m;
38   cin >> n >> m;
39   vector<vector<int>> arr(n, vector<int>(m));
40   for (int i = 0; i < n; i++)
41     for (int j = 0; j < m; j++)
42       cin >> arr[i][j];
43
44   vector<int> res = spiralLib(arr, n, m);
45
46   cout << "[";
47   for (int i = 0; i < res.size(); i++) {
48     cout << res[i];
49     if (i != res.size() - 1) cout << ",";
50   }
51   cout << "]";
52   cout << endl;
53   return 0;
54 }
```

```
ashishakulkar@ashishakulkar-Laptop:~/Desktop$ g++ 07.cpp -o 07.out
ashishakulkar@ashishakulkar-Laptop:~/Desktop$ ./07.out 3 3
[1,2,3,6,9,8,7,4,5]
ashishakulkar@ashishakulkar-Laptop:~/Desktop$
```