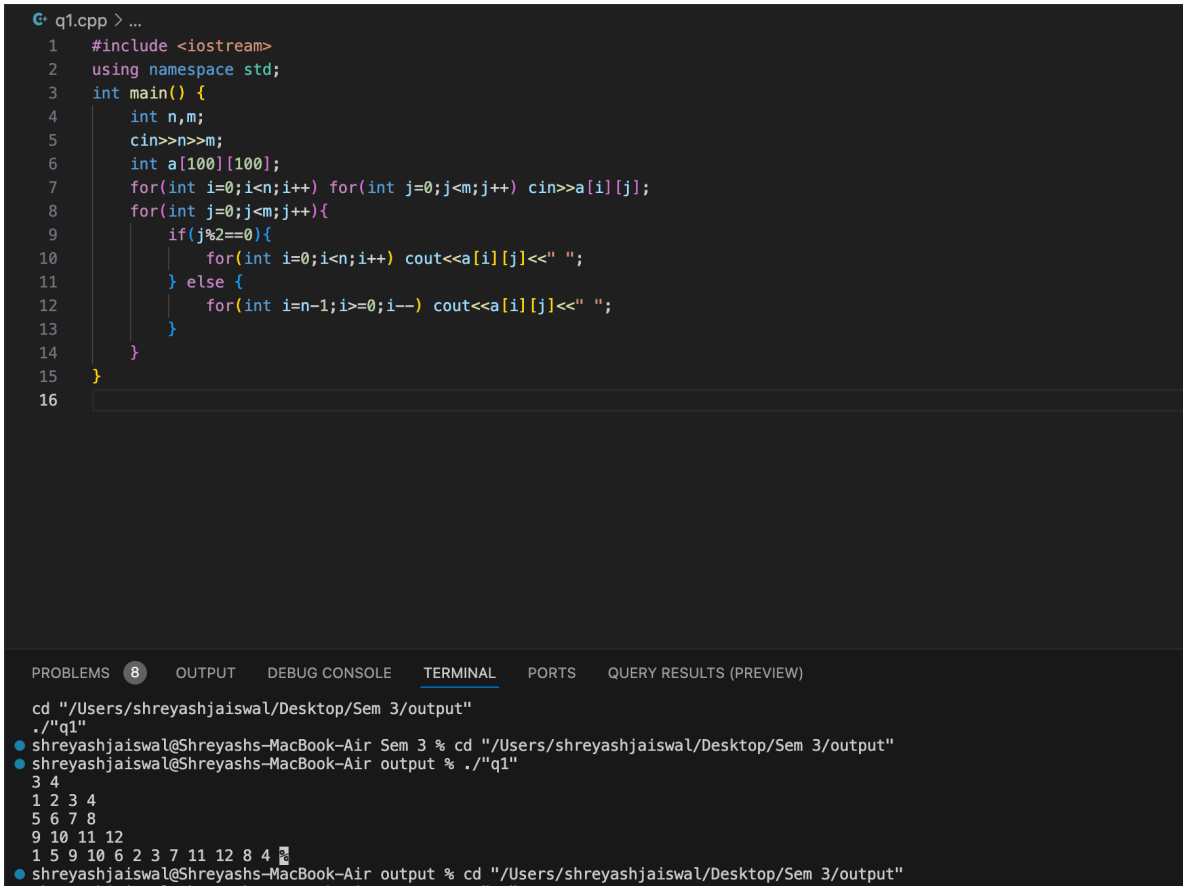
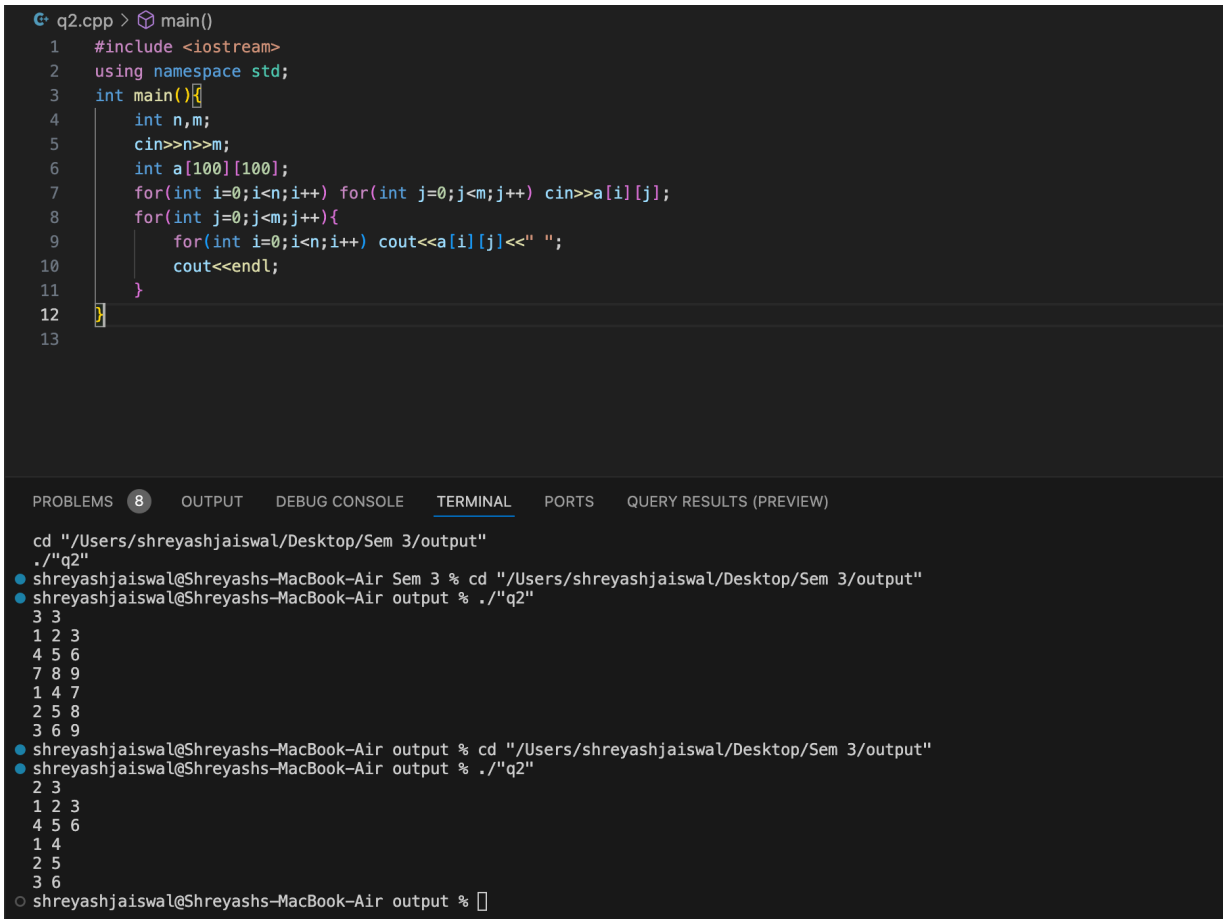
Wave Form Traversal

```
#include <iostream>
using namespace std;
int main() {
    int n,m;
    cin>>n>>m;
    int a[100][100];
    for(int i=0;i<n;i++) for(int j=0;j<m;j++) cin>>a[i][j];
    for(int j=0;j<m;j++){
        if(j%2==0){
            for(int i=0;i<n;i++) cout<<a[i][j]<<" ";
        } else {
            for(int i=n-1;i>=0;i--) cout<<a[i][j]<<" ";
        }
    }
}
```



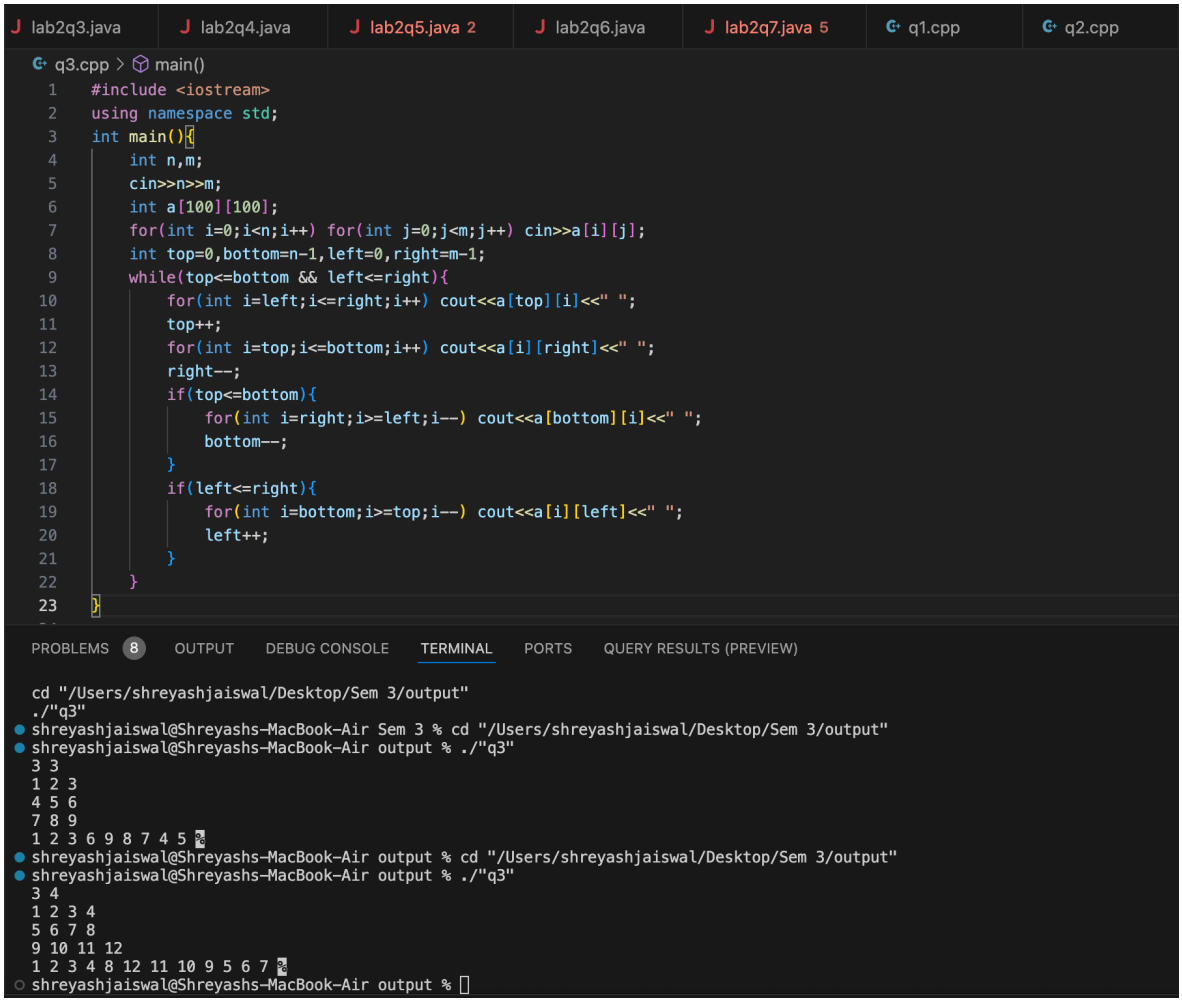
Transpose of a Matrix

```
#include <iostream>
using namespace std;
int main(){
    int n,m;
    cin>>n>>m;
    int a[100][100];
    for(int i=0;i<n;i++) for(int j=0;j<m;j++) cin>>a[i][j];
    for(int j=0;j<m;j++){
        for(int i=0;i<n;i++) cout<<a[i][j]<<" ";
        cout<<endl;
    }
}
```



Spiral Traversal of a Matrix

```
#include <iostream>
using namespace std;
int main(){
    int n,m;
    cin>>n>>m;
    int a[100][100];
    for(int i=0;i<n;i++) for(int j=0;j<m;j++) cin>>a[i][j];
    int top=0,bottom=n-1,left=0,right=m-1;
    while(top<=bottom && left<=right){
        for(int i=left;i<=right;i++) cout<<a[top][i]<<" ";
        top++;
        for(int i=top;i<=bottom;i++) cout<<a[i][right]<<" ";
        right--;
        if(top<=bottom){
            for(int i=right;i>=left;i--) cout<<a[bottom][i]<<" ";
            bottom--;
        }
        if(left<=right){
            for(int i=bottom;i>=top;i--) cout<<a[i][left]<<" ";
            left++;
        }
    }
}
```



Rotate Matrix by 90 Degrees Clockwise

```
#include <iostream>
using namespace std;
int main(){
    int n;
    cin>>n;
    int a[100][100];
    for(int i=0;i<n;i++) for(int j=0;j<n;j++) cin>>a[i][j];
    for(int i=0;i<n;i++){
        for(int j=i;j<n;j++){
            int temp=a[i][j];
            a[i][j]=a[j][i];
            a[j][i]=temp;
        }
    }
    for(int i=0;i<n;i++){
        for(int j=0;j<n/2;j++){
            int temp=a[i][j];
            a[i][j]=a[i][n-1-j];
            a[i][n-1-j]=temp;
        }
    }
    for(int i=0;i<n;i++){
        for(int j=0;j<n;j++) cout<<a[i][j]<<" ";
        cout<<endl;
    }
}
```