Program to find the transpose of the matrix. Also check for symmetry.

```
#include<stdio.h>
void main()
{
      int a[50][50], transpose[50][50], i, j, r, c, count=0;
    printf("\nEnter the order of the matrix: \n");
    scanf("%d %d", &r, &c);

    printf("\nEnter matrix elements: \n");
    for(i=0; i<r; i++)
        for(j=0; j<c; j++)
              scanf("%d", &a[i][j]);

      for(i=0; i<r; i++)
            for(j=0; j<c; j++)
                  transpose[j][i]=a[i][j];

    printf("\nTranspose of the matrix is: ");
    for(i=0; i<c; i++)
      {
      printf("\n");
      for(j=0; j<r; j++)
            {
            printf("%d\t", transpose[i][j]);
            }
      }

      for(i=0; i<r; i++)
      {
      for(j=0; j<c; j++)
            {
                  if (a[i][j] != transpose[i][j])
                        count++;
                        break;
            }
      }

      if(r == c && count == 0)
                  printf("\n\nThe matrix is symmetric.\n");
      else
            printf("\n\nThe matrix is not symmetric.\n");
}
```

Output 1

```
Enter the order of the matrix:
2           2

Enter matrix elements:
1           2
3           4

Transpose of the matrix is:
1       3
2       4

The matrix is not symmetric.
```

Output 2

```
Enter the order of the matrix:
3           3

Enter matrix elements:
1       2       1
2       1       2
1       2       1

Transpose of the matrix is:
1       2       1
2       1       2
1       2       1
The matrix is symmetric.
```

Output 3

```
Enter the order of the matrix:
2           3

Enter matrix elements:
1       2       3
4       5       6

Transpose of the matrix is:
1       4
2       5
3       6

The matrix is not symmetric.
```