Output

1. 2nd order:

```
Enter the order of the matrix, n: 2
Enter a[0][0], a[0][1]: 1 2
Enter a[1][0], a[1][1]: 6 5
The entered matrix is:
|       1.00    2.00    |
|       6.00    5.00    |

The inverse of entered matrix is:
|       -0.71   0.29    |
|       0.86    -0.14   |
```

2. 3rd order:

```
Enter the order of the matrix, n: 3
Enter a[0][0], a[0][1], a[0][2]: 11 21 54
Enter a[1][0], a[1][1], a[1][2]: 12 32 64
Enter a[2][0], a[2][1], a[2][2]: 4 3 5
The entered matrix is:
|       11.00   21.00   54.00   |
|       12.00   32.00   64.00   |
|       4.00    3.00    5.00    |

The inverse of entered matrix is:
|       0.03    -0.05   0.32    |
|       -0.16   0.13    0.05    |
|       0.08    -0.04   -0.08   |
```

3. Error case:

```
PS D:\College Stuff\4th sem\Numerical Methods\Lab\Lab 5 - Inverse c
Enter the order of the matrix, n: 3
Enter a[0][0], a[0][1], a[0][2]: 1 2 3
Enter a[1][0], a[1][1], a[1][2]: 4 5 6
Enter a[2][0], a[2][1], a[2][2]: 7 8 9
The entered matrix is:
|       1.00    2.00    3.00    |
|       4.00    5.00    6.00    |
|       7.00    8.00    9.00    |

ERROR!
|       1.00    0.00    -1.00   |       -1.67   0.67    0.00    |
|       0.00    -3.00   -6.00   |       -4.00   1.00    0.00    |
|       0.00    0.00    0.00    |       1.00    -2.00   1.00    |

The pivot element is 0 so we can't proceed further!
```

Discussion and Conclusion

Hence Gauss Jordan method was applied to find the inverse of the given square matrix of order n. The algorithm was devised by extending the idea of solving a system of nonlinear equations using the Gauss Jordan method (as done in the previous lab).

The code was written in C++ and compiled using g++.