4 QUEEN PROBLEM

|  |  |  |  |
| --- | --- | --- | --- |
| (1,1) | (1,2) | (1,3) | (1,4) |
| (2,1) | (2,2) | (2,3) | (2,4) |
| (3,1) | (3,2) | (3,3) | (3,4) |
| (4,1) | (4,2) | (4,3) | (4,4) |

METHOD 1

Steps

1. Place Q1 in (1,1)
2. Place Q2 in (2,3)
3. Now there is no appropriate place for Q3 in the matrix because in third row there no place to satisfy the question requirement

Therefore the method 1 fail

|  |  |  |  |
| --- | --- | --- | --- |
| (1,1)  Q1 | (1,2) | (1,3) | (1,4) |
| (2,1) | (2,2) | (2,3)  Q2 | (2,4) |
| (3,1) | (3,2) | (3,3) | (3,4) |
| (4,1) | (4,2) | (4,3) | (4,4) |

METHOD 2

Steps

1. Place Q1 in (1,2)
2. Place Q2 in (2,4)
3. Place Q3 in (3,1)
4. Now place Q4 in (4,3)
5. Hence any queen does not violate any rule
6. Therefore the method 2 is succesful

|  |  |  |  |
| --- | --- | --- | --- |
| (1,1) | (1,2)  Q1 | (1,3) | (1,4) |
| (2,1) | (2,2) | (2,3) | (2,4)  Q2 |
| (3,1)  Q3 | (3,2) | (3,3) | (3,4) |
| (4,1) | (4,2) | (4,3)  Q4 | (4,4) |

METHOD 3

Steps

1. Place Q1 in (1,3)
2. Place Q2 in (2,1)
3. Place Q3 in (3,4)
4. Place Q4 in (4,2)
5. Hence all queens are placed according to question
6. Therefore the Method 3 is uccessful

|  |  |  |  |
| --- | --- | --- | --- |
| (1,1) | (1,2) | (1,3)  Q1 | (1,4) |
| (2,1)  Q2 | (2,2) | (2,3) | (2,4) |
| (3,1) | (3,2) | (3,3) | (3,4)  Q3 |
| (4,1) | (4,2)  Q4 | (4,3) | (4,4) |

METHOD 4

Steps

1. Place Q1 in (1,4)
2. Place Q2 in (2,2)
3. Now we have no appropriate position left for Q3

Therefore this method fails

|  |  |  |  |
| --- | --- | --- | --- |
| (1,1) | (1,2) | (1,3) | (1,4)  Q1 |
| (2,1) | (2,2)  Q2 | (2,3) | (2,4) |
| (3,1) | (3,2) | (3,3) | (3,4) |
| (4,1) | (4,2) | (4,3) | (4,4) |

METHOD 5

Steps

1. Place Q1 in (1,4)
2. Place Q2 in (2,1)
3. Place Q3 in (3,3)
4. Now there is no appropriate position left for Q4

Therefore this method fail

|  |  |  |  |
| --- | --- | --- | --- |
| (1,1) | (1,2) | (1,3) | (1,4)  Q1 |
| (2,1)  Q2 | (2,2) | (2,3) | (2,4) |
| (3,1) | (3,2) | (3,3)  Q3 | (3,4) |
| (4,1) | (4,2) | (4,3) | (4,4) |