作业11

写出回溯法求解四皇后问题的过程，找出所有可能的解

**解：**

|  |  |  |  |
| --- | --- | --- | --- |
| **Q** |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Q** |  |  |  |
| **×** | **×** | **Q** |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Q** |  |  |  |
| **×** | **×** | **Q** |  |
| **×** | **×** | **×** | **×** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Q** |  |  |  |
| **×** | **×** | **×** | **Q** |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Q** |  |  |  |
| **×** | **×** | **×** | **Q** |
| **×** | **Q** |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Q** |  |  |  |
| **×** | **×** | **×** | **Q** |
| **×** | **Q** |  |  |
| **×** | **×** | **×** | **×** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Q** |  |  |  |
| **×** | **×** | **×** | **Q** |
| **×** | **×** | **×** | **×** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Q** |  |  |  |
| **×** | **×** | **×** | **×** |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **Q** |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **Q** |  |  |
| **×** | **×** | **×** | **Q** |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **Q** |  |  |
| **×** | **×** | **×** | **Q** |
| **Q** |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **Q** |  |  |
| **×** | **×** | **×** | **Q** |
| **Q** |  |  |  |
| **×** | **×** | **Q** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **Q** |  |  |
| **×** | **×** | **×** | **Q** |
| **Q** |  |  |  |
| **×** | **×** | **×** | **×** |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **Q** |  |  |
| **×** | **×** | **×** | **Q** |
| **×** | **×** | **×** | **×** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **Q** |  |  |
| **×** | **×** | **×** | **×** |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **Q** |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **Q** |  |
| **Q** |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **Q** |  |
| **Q** |  |  |  |
| **×** | **×** | **×** | **Q** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **Q** |  |
| **Q** |  |  |  |
| **×** | **×** | **×** | **Q** |
| **×** | **Q** |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **Q** |  |
| **Q** |  |  |  |
| **×** | **×** | **×** | **Q** |
| **×** | **×** | **×** | **×** |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **Q** |  |
| **Q** |  |  |  |
| **×** | **×** | **×** | **×** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **Q** |  |
| **×** | **×** | **×** | **×** |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **×** | **Q** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **×** | **Q** |
| **Q** |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **×** | **Q** |
| **Q** |  |  |  |
| **×** | **×** | **Q** |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **×** | **Q** |
| **Q** |  |  |  |
| **×** | **×** | **Q** |  |
| **×** | **×** | **×** | **×** |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **×** | **Q** |
| **Q** |  |  |  |
| **×** | **×** | **×** | **×** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **×** | **Q** |
| **×** | **Q** |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **×** | **Q** |
| **×** | **Q** |  |  |
| **×** | **×** | **×** | **×** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **×** | **×** | **×** | **Q** |
| **×** | **×** | **×** | **×** |
|  |  |  |  |
|  |  |  |  |

**综上可得，4皇后问题有两个解，各皇后所在列分别为：**

**（1）2-4-1-3 （2）3-1-4-2**