

**COMP 3710 - 3**

**Applied Artificial Intelligence (3,1,0)**

**Fall 2017**

**Seminar/Lab 3**

**Local search, and CSPs**

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1. **Local search for 5-queens problem**

* Initial board

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Image result for queen  symbol |  |  |  |  |
|  |  | Image result for queen  symbol |  |  |
|  | Image result for queen  symbol |  |  |  |
|  |  |  | Image result for queen  symbol |  |
|  |  |  |  | Image result for queen  symbol |
| A | B | C | D | E |
| 2 | 1 | 1 | 2 | 2 | = 8 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  | Image result for queen  symbol |  |  |
| Image result for queen  symbol | Image result for queen  symbol |  |  |  |
|  |  |  | Image result for queen  symbol |  |
|  |  |  |  | Image result for queen  symbol |
| A | B | C | D | E |
| 2 | 1 | 1 | 2 | 2 | =8 |
| 2 | 2 | 1 | 1 | 1 | =7 |
| 1 | 2 | 1 | 1 | 1 | = 6 |
| 2 | 2 | 2 | 1 | 1 | =8 |
| 1 | 1 | 1 | 1 | 2 | =6 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Image result for queen  symbol |  |  |  |
|  |  | Image result for queen  symbol |  |  |
| Image result for queen  symbol |  |  |  |  |
|  |  |  | Image result for queen  symbol |  |
|  |  |  |  | Image result for queen  symbol |
| A | B | C | D | E |
| 0 | 1 | 1 | 1 | 1 | = 4 |
| 1 | 3 | 1 | 2 | 2 | = 9 |
| 1 | 2 | 1 | 1 | 1 | = 6 |
| 1 | 2 | 0 | 2 | 1 | = 5 |
| 0 | 1 | 1 | 1 | 2 | = 6 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Image result for queen  symbol |  |  |  |
|  |  |  |  |  |
| Image result for queen  symbol |  |  |  |  |
|  |  | Image result for queen  symbol | Image result for queen  symbol |  |
|  |  |  |  | Image result for queen  symbol |
| A | B | C | D | E |
| 1 | 1 | 1 | 1 | 1 | = 5 |
| 0 | 1 | 1 | 1 | 1 | = 4 |
| 1 | 0 | 2 | 2 | 2 | = 7 |
| 0 | 0 | 1 | 2 | 1 | = 4 |
| 0 | 0 | 1 | 2 | 2 | = 6 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Image result for queen  symbol |  |  |  |
|  |  |  | Image result for queen  symbol |  |
| Image result for queen  symbol |  |  |  |  |
|  |  | Image result for queen  symbol |  |  |
|  |  |  |  | Image result for queen  symbol |
| A | B | C | D | E |
| 0 | 1 | 0 | 1 | 0 | = 2 |
| 0 | 0 | 0 | 0 | 0 | = 0 (Find Goad) |
| 0 | 1 | 1 | 1 | 0 | = 3 |
| 0 | 0 | 1 | 2 | 1 | = 4 |
| 0 | 0 | 1 | 2 | 1 | =4 |

1. **CSP**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
| Image result for queen  symbol |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| A | B | C | D | E |
| 0 | 2 | 2 | 4 | 4 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
| Image result for queen  symbol |  |  |  |  |
|  |  |  |  |  |
|  | Image result for queen  symbol |  |  |  |
| A | B | C | D | E |
|  |  | 1 | 3 | 2 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  | Image result for queen  symbol |  |  |
| Image result for queen  symbol |  |  |  |  |
|  |  |  |  |  |
|  | Image result for queen  symbol |  |  |  |
| A | B | C | D | E |
|  |  |  | 1 | 2 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  | Image result for queen  symbol |  |  |
| Image result for queen  symbol |  |  |  |  |
|  |  |  | Image result for queen  symbol |  |
|  | Image result for queen  symbol |  |  |  |
| A | B | C | D | E |
|  |  |  |  | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | Image result for queen  symbol |
|  |  | Image result for queen  symbol |  |  |
| Image result for queen  symbol |  |  |  |  |
|  |  |  | Image result for queen  symbol |  |
|  | Image result for queen  symbol |  |  |  |
| A | B | C | D | E |
|  |  |  |  | 0 (Find Goal) |

CSP A B C D