**initial state Goal state:**

|  |  |  |
| --- | --- | --- |
| 2 | 8 | 3 |
| 1 | 6 | 4 |
| 7 |  | 5 |

|  |  |  |
| --- | --- | --- |
| 1 | 2 | 3 |
|  | 8 | 4 |
| 7 | 6 | 5 |

Step 1: **Move blank Up (State A):** Swap the blank with the tile 6 at (2,2). The state becomes

|  |  |  |
| --- | --- | --- |
| 2 | 8 | 3 |
| 1 |  | 4 |
| 7 | 6 | 5 |

**g(n) = 1**

**h(n) = 3**

**f(n) = 1 + 3 = 4**

|  |  |  |
| --- | --- | --- |
| 2 |  | 3 |
| 1 | 8 | 4 |
| 7 | 6 | 5 |

**Step 2: A-up: Move the blank up (swap with tile 8 at (1,2))**

**g(n) = 2**

**h(n) = 2**

**f(n) = 2 + 2 = 4**

**Step 3: A-up-left: Move blank left (swap with tile 2 at (1,1)):**

|  |  |  |
| --- | --- | --- |
|  | 2 | 3 |
| 1 | 8 | 4 |
| 7 | 6 | 5 |

**g(n) = 3**

**h(n) = 1**

**f(n) = 3 + 1 = 4**

**Step 4: A-up-left-down: Move blank down (swap with tile 1 at (2,1)) gives**

|  |  |  |
| --- | --- | --- |
| 1 | 2 | 3 |
|  | 8 | 4 |
| 7 | 6 | 5 |

**g(n) = 4**

**h(n) = 0**

**f(n) = 4 + 0 = 4**