**Eight Puzzle – Run Time Analysis**

**Priority Queue as a Heap**

Priority Queue is a: **Heap:**

**Enqueue is O(logn)**

**Dequeue is O(logn)**

Machine specifications:

**YOUR ANSWER HERE:**

**Lenovo Laptop**

**2.6 GHz i5 CPU**

**16 GB Memory**

**64bit Windows OS**

Longest Reported Run Time: **4 Milliseconds**

Longest Number of Moves: \_\_\_\_\_\_\_\_\_**5\_\_**

Total Run Time for  
all possible States: **40 Milliseconds**

**Program output:**

Generating All Possible States...

Done!

123

045

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 1, Time Needed: 1 MilliSeconds

States solved: 1, Total Running Time: 1 MilliSeconds

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 1, Time Needed: 0 MilliSeconds

States solved: 2, Total Running Time: 1 MilliSeconds

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123

456

708

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 2, Time Needed: 6 MilliSeconds

States solved: 3, Total Running Time: 7 MilliSeconds

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102

345

678

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 1 MilliSeconds

States solved: 4, Total Running Time: 8 MilliSeconds

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 0, Time Needed: 0 MilliSeconds

States solved: 5, Total Running Time: 8 MilliSeconds

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132

540

678

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123

450

678

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 4, Time Needed: 2 MilliSeconds

States solved: 6, Total Running Time: 10 MilliSeconds

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123

458

670

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 2, Time Needed: 1 MilliSeconds

States solved: 7, Total Running Time: 11 MilliSeconds

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142

305

678

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 2 MilliSeconds

States solved: 8, Total Running Time: 13 MilliSeconds

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102

345

678

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123

450

678

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 4, Time Needed: 1 MilliSeconds

States solved: 9, Total Running Time: 14 MilliSeconds

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120

345

678

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123

645

078

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123

045

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 1 MilliSeconds

States solved: 10, Total Running Time: 15 MilliSeconds

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123

045

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 1, Time Needed: 0 MilliSeconds

States solved: 11, Total Running Time: 15 MilliSeconds

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 0, Time Needed: 0 MilliSeconds

States solved: 12, Total Running Time: 15 MilliSeconds

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 1, Time Needed: 1 MilliSeconds

States solved: 13, Total Running Time: 16 MilliSeconds

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123

456

078

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 2, Time Needed: 3 MilliSeconds

States solved: 14, Total Running Time: 19 MilliSeconds

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123

456

708

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 1 MilliSeconds

States solved: 15, Total Running Time: 20 MilliSeconds

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123

456

780

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123

450

678

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 4, Time Needed: 1 MilliSeconds

States solved: 16, Total Running Time: 21 MilliSeconds

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231

456

780

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123

645

078

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123

045

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 0 MilliSeconds

States solved: 17, Total Running Time: 21 MilliSeconds

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234

516

780

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023

145

678

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123

045

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 1 MilliSeconds

States solved: 18, Total Running Time: 22 MilliSeconds

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234

567

180

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023

145

678

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123

045

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 4 MilliSeconds

States solved: 19, Total Running Time: 26 MilliSeconds

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324

567

801

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123

458

670

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 4 MilliSeconds

States solved: 20, Total Running Time: 30 MilliSeconds

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345

267

801

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123

458

670

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 4, Time Needed: 0 MilliSeconds

States solved: 21, Total Running Time: 30 MilliSeconds

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345

672

801

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123

458

670

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123

450

678

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 5, Time Needed: 1 MilliSeconds

States solved: 22, Total Running Time: 31 MilliSeconds

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345

678

012

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120

453

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 2 MilliSeconds

States solved: 23, Total Running Time: 33 MilliSeconds

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453

678

012

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120

453

678

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 4, Time Needed: 1 MilliSeconds

States solved: 24, Total Running Time: 34 MilliSeconds

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456

738

012

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120

453

678

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123

450

678

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123

450

678

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 5, Time Needed: 1 MilliSeconds

States solved: 25, Total Running Time: 35 MilliSeconds

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456

780

132

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123

450

678

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123

450

678

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123

450

678

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123

450

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 5, Time Needed: 1 MilliSeconds

States solved: 26, Total Running Time: 36 MilliSeconds

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546

780

123

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123

458

670

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123

450

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 3, Time Needed: 1 MilliSeconds

States solved: 27, Total Running Time: 37 MilliSeconds

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567

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123

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123

458

670

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123

450

678

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123

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123

405

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PREVIOUS SOLUTION DATA

Number of moves: 4, Time Needed: 1 MilliSeconds

States solved: 28, Total Running Time: 38 MilliSeconds

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567

801

423

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123

458

670

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123

450

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123

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123

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123

405

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PREVIOUS SOLUTION DATA

Number of moves: 5, Time Needed: 1 MilliSeconds

States solved: 29, Total Running Time: 39 MilliSeconds

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567

801

234

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123

645

078

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123

645

078

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123

045

678

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 4, Time Needed: 1 MilliSeconds

States solved: 30, Total Running Time: 40 MilliSeconds

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675

801

234

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023

145

678

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023

145

678

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123

045

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123

405

678

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PREVIOUS SOLUTION DATA

Number of moves: 4, Time Needed: 0 MilliSeconds

States solved: 31, Total Running Time: 40 MilliSeconds

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