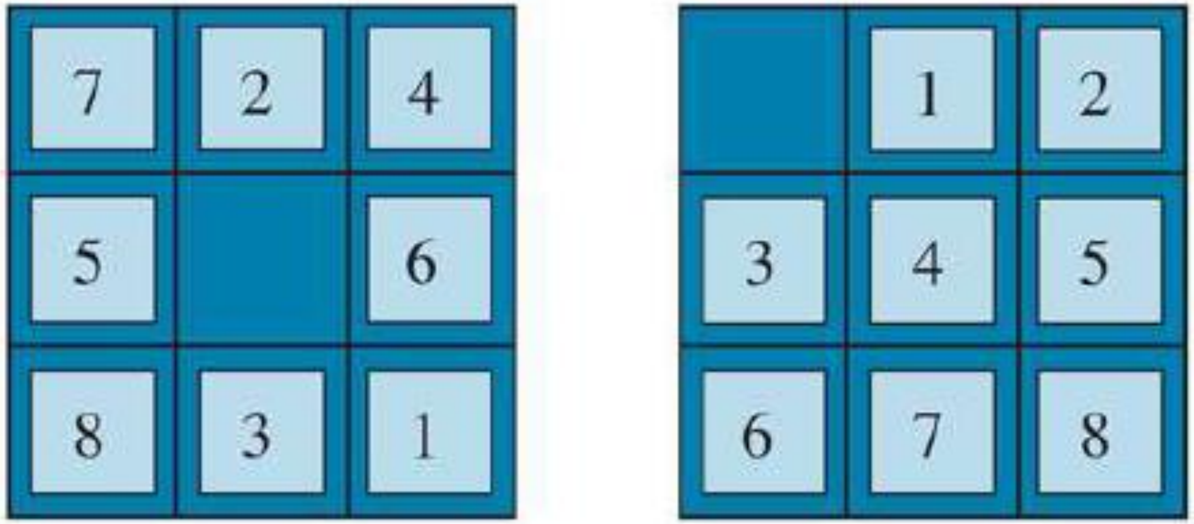
Your Task: 8-Puzzle

- From a **random start state**
- Check for solvability
- Generate **goal state**
- Using at least **2 different heuristic functions**
- Provide estimate of **algorithms complexity**
- Implementation in Python
- Measure memory effort (number of nodes expanded) and run time for each of 100 random states and each heuristics
- Provide mean and standard deviation of memory usage and execution time for each heuristics



7	2	4
5		6
8	3	1

Start State

	1	2
3	4	5
6	7	8

Goal State

8-Puzzle Exercise Components

1. Check for **Solvability**
2. Implement **two Heuristics**: Hamming (misplaced tiles) and Manhattan
3. **Compare** two Heuristics (using 100 random searches each):
   - Memory Usage (number of expanded nodes in the search tree)
   - Computation Time
4. Comment Code, provide for each submodule at least:
   - What are Inputs and Outputs
   - What is the Function of the submodule
5. **Don’t just copy/paste code from Internet**
   - Provide you own structure
   - Comment the code (see above)
   - Measure space (memory) and time complexity of each heuristics

8-Puzzle Task Documentation

Content

1. Short task description
2. Software architecture diagram
3. Short descriptions of modules and interfaces
4. Explain design decisions
5. Discussion and conclusions
    - Describe you experience
    - Provide a table with complexity comparisons of different heuristics
    - Possible improvements in future

Remember: Professional software developer work for others and an amateur for herself/himself.