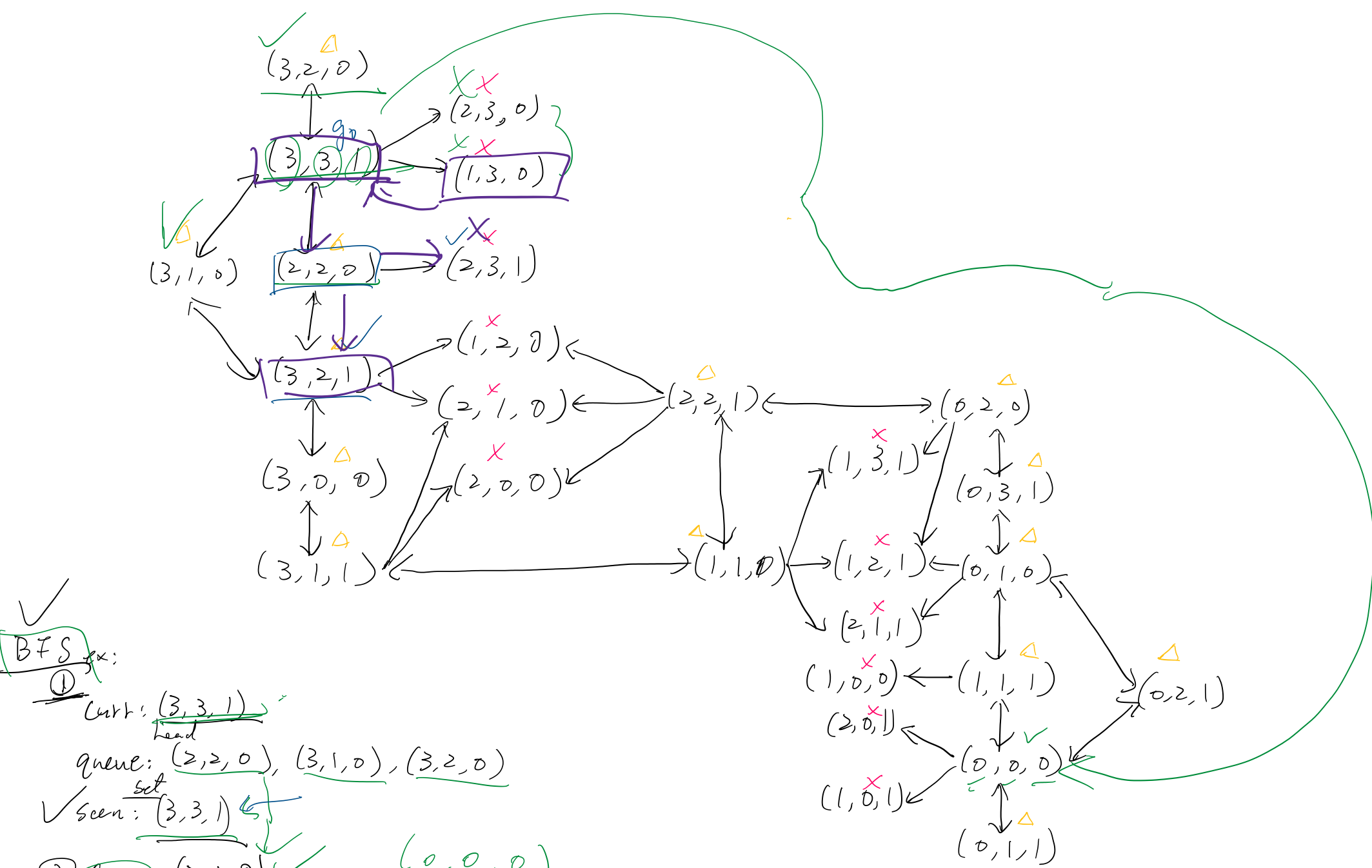


Part1

Tuesday, 12 January 2021 6:03 pm

Act1  
1. Simulating the problem and draw diagrams  
→ let a state be represented by # of missionaries and cannibals on the original side of the river and 0, 1 or 2 to indicate whether or not the boat is on that side.  
→ For example, (1, 2, 0) indicate 1 missionary, 2 cannibals on the original side and the boat is not on the original side

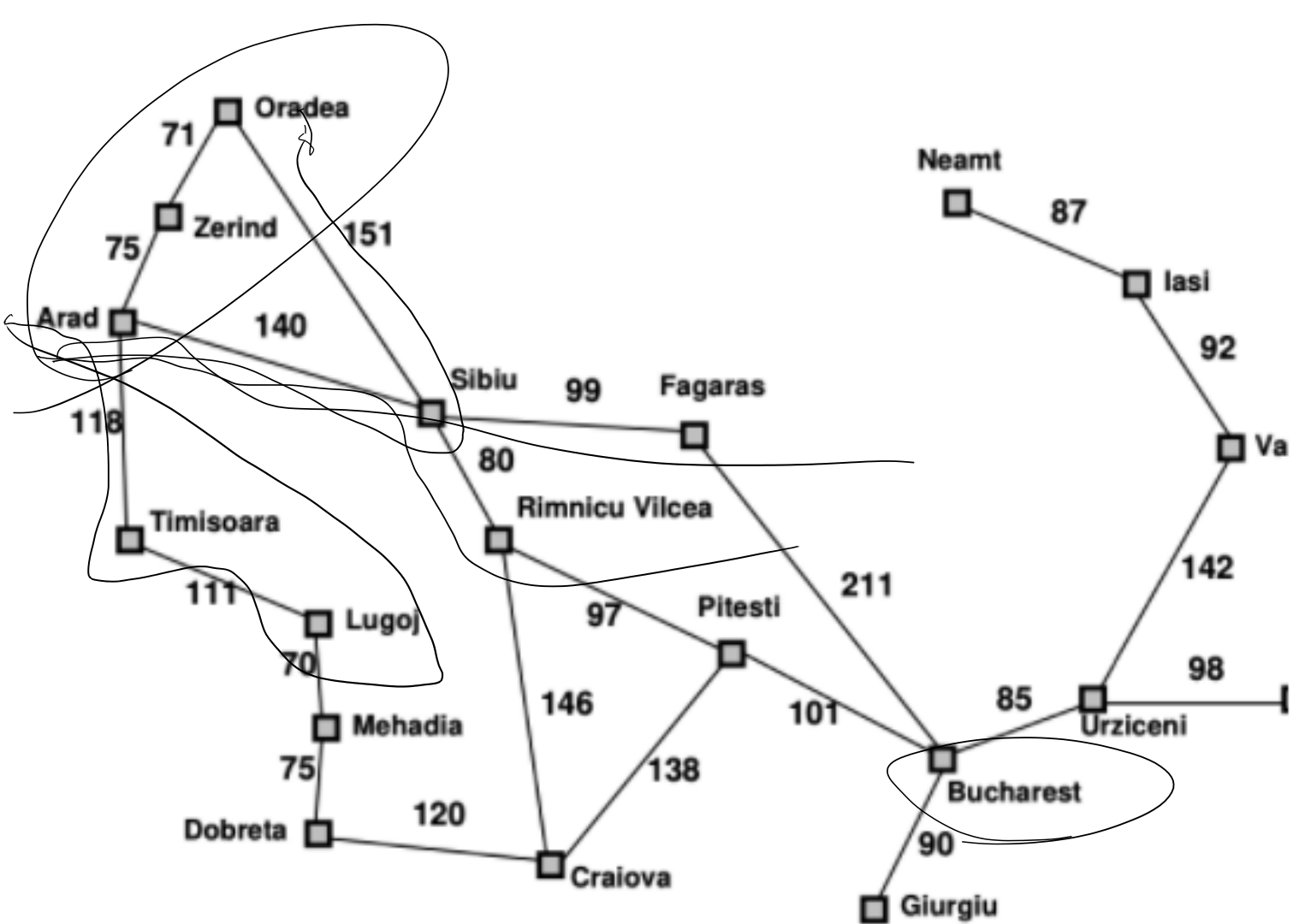


BFS ex:  
① curr: (3, 3, 1)  
head  
queue: (2, 2, 0), (3, 1, 0), (3, 2, 0)  
seen: (3, 3, 1)  
② curr: (2, 2, 0)  
queue: (3, 1, 0), (3, 2, 0), (3, 2, 1)  
seen: (3, 3, 1), (2, 2, 0)  
etc.

DFS:  
ex.  
① curr: (3, 3, 1)  
path: (3, 3, 1) → (3, 2, 0) → (2, 3, 0) → (1, 3, 0) → (2, 2, 0) → (3, 2, 1) → (2, 3, 1) → ...

Why people have a hard time:  
• counterintuitive to move from (1, 1, 0) to (2, 2, 1) because it violates the heuristic of maximizing # of people on the other side.

Act3  
Arad & Bucharest



(1) DFS:  
Arad → Sibiu → Fagaras → Bucharest

(2) BFS:  
curr: Arad → Sibiu → Timisoara → Zerind → Bucharest  
queue: Sibiu, Timisoara, Zerind, Lugoj, Fagaras, Oradea, Rimnicu Vilcea  
seen: Arad, Sibiu, Timisoara, Zerind, Lugoj

(4) Iterative Deepening:  
Depth 0: Arad  
Depth 1:  
① Arad → Sibiu  
② Arad → Timisoara  
③ Arad → Zerind  
Depth 2:  
Arad → Sibiu → Fagaras  
Arad → Sibiu → Oradea  
Arad → Sibiu → Rimnicu Vilcea  
Arad → Timisoara → Lugoj  
Arad → Zerind → Oradea

(3) Uniform cost:  
(heap) Arad (0) → Zerind (75) → Timisoara (118) → Sibiu (140) → Oradea (146) → Bucharest  
seen: Arad, Sibiu, Timisoara, Zerind