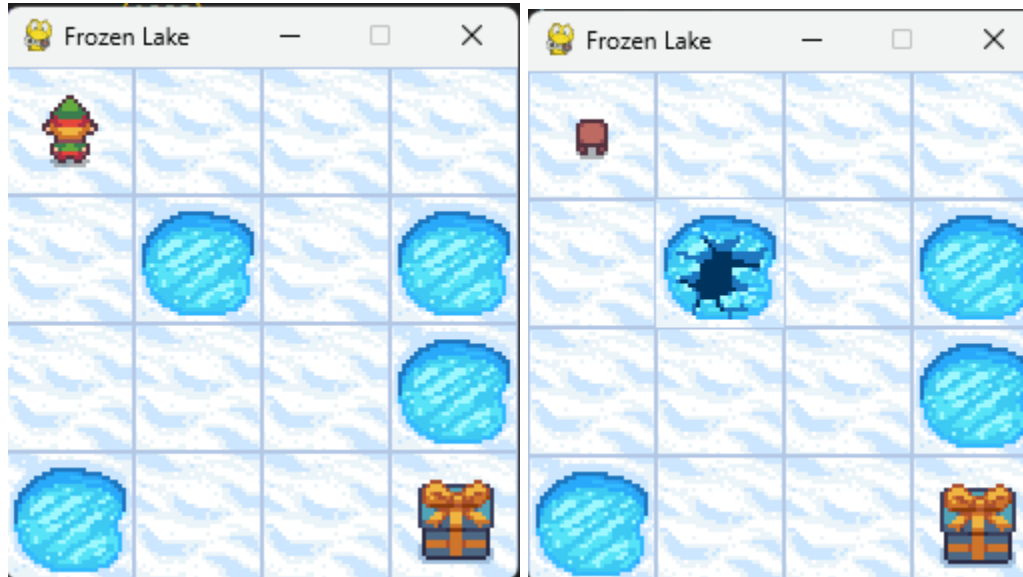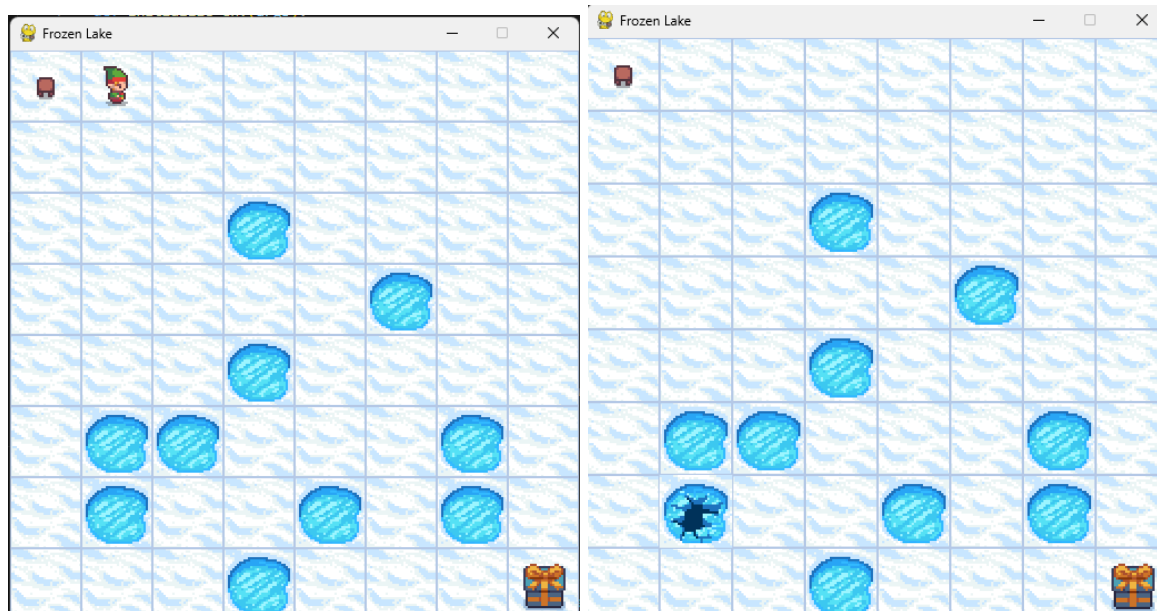Kerim Sever
Professor Jing Li
Ds699-852
09 February 2025

Part1 A: Based on the above instruction, please compile code_base.py file without changing
any default code or settings.

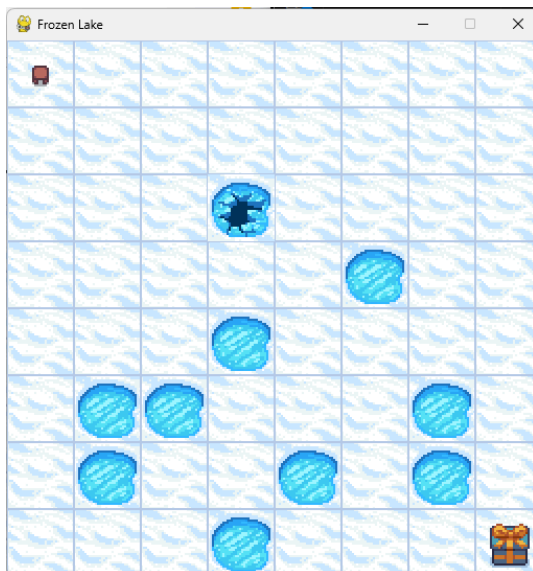Part1 B: Can you initialize a 8x8 size Frozen Lake environment?

Part 2 A: What is the initial state? Where is its location on the map?

- The original location in the top left of the 8x8 diagram. X is 0 and Y is 0.

Part 2 B: At initial state, with action 1, what is the next state? Where is its location on the map?
Action 1 next state is 8 which moves it down 1 x0,y1


```
PS E:\Ds699\Hw0>  e:; cd 'e:\Ds699\Hw0'; & 'c:\Users\kermi\anaconda3\e
exe' 'c:\Users\kermi\.vscode\extensions\ms-python.debugpy-2024.14.0-wi
ugpy\adapter/../..\debugpy\launcher' '52567' '--' 'E:\Ds699\Hw0\code_b
mode: test_action
0
action:0, next state:0, reward:0.0, done:False, prob:{'prob': 1.0}
action:1, next state:8, reward:0.0, done:False, prob:{'prob': 1.0}
action:2, next state:1, reward:0.0, done:False, prob:{'prob': 1.0}
action:3, next state:0, reward:0.0, done:False, prob:{'prob': 1.0}
PS E:\Ds699\Hw0>
```
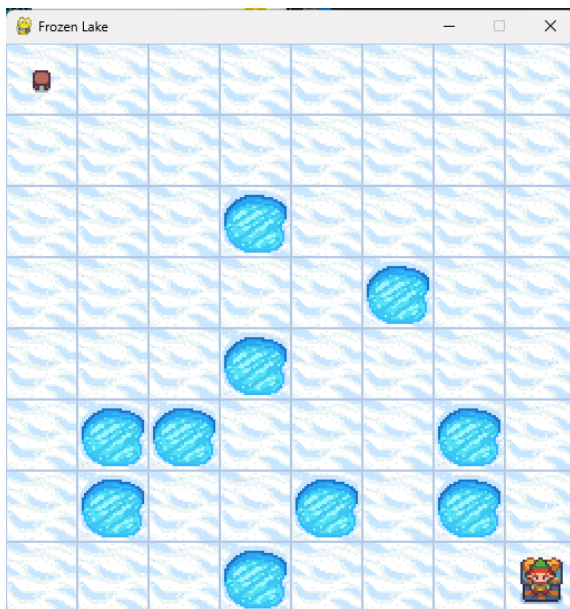
Part 3 A: Did the agent reach the termina? Did the episode end?
The agent did not reach the end but it did stop when the agent fell into the ice.

Part 3 B: Can you help the agent move from starting position to the terminal position in the shortest path?
Yes by changing the default in -actions in get_args.py to default = [2,2,1,2,2,1,2,2,1,2,1,1,1,1] this makes the agent go to the terminal successfully. The count of moves is 14 which is the shortest amount of moves without going diagonally.

```
PS E:\Ds699\Hw0>  e:; cd 'e:\Ds699\Hw0'; & 'c:\Users\
exe' 'c:\Users\kermi\.vscode\extensions\ms-python.deb
ugpy\adapter/../..\debugpy\launcher' '52636' '--' 'E:
mode: test_moves
next state:1, reward:0.0, done:False
total reward:0.0, num_steps: 1
next state:2, reward:0.0, done:False
total reward:0.0, num_steps: 2
next state:10, reward:0.0, done:False
total reward:0.0, num_steps: 3
next state:11, reward:0.0, done:False
total reward:0.0, num_steps: 4
next state:12, reward:0.0, done:False
total reward:0.0, num_steps: 5
next state:20, reward:0.0, done:False
total reward:0.0, num_steps: 6
next state:21, reward:0.0, done:False
total reward:0.0, num_steps: 7
next state:22, reward:0.0, done:False
total reward:0.0, num_steps: 8
next state:30, reward:0.0, done:False
total reward:0.0, num_steps: 9
next state:31, reward:0.0, done:False
total reward:0.0, num_steps: 10
next state:39, reward:0.0, done:False
total reward:0.0, num_steps: 11
next state:47, reward:0.0, done:False
total reward:0.0, num_steps: 12
next state:55, reward:0.0, done:False
total reward:0.0, num_steps: 13
next state:63, reward:1.0, done:True
total reward:1.0, num_steps: 14
PS E:\Ds699\Hw0> []
```