CMPUT366 Programming Assignment#4

These files solve a windy GridWorld task with 4actions, 8actions and 9actions.

File modified:

1) windyGridworld_env.py

2) windyGridworld_exp.py

3) windyGridworld_agent.py (Please change the action number manual in this python file, follow the instruction provided beside the action_number parameter setting)

4) plot.py

5) result.txt

Plot submitted:

1) 4actions.png (same figure as figure6.4 in the book)

2) 8actions.png

3) 9actions.png

Answer for question1):

According to the test points showed on 4_actions plot and 8_actions plot, the solution with more actions result in less steps to finish a unit of episode, thus the extra actions is better. If math is necessary, the solution with 8_actions is 9%~12% faster than the 4_actions solution. (calculated from the test point)

Answer for question 2):
No, and according to the plot provided in this folder, comparing with the 8_actions solution, the 9_actions solution actually slow down the learning process, it takes more steps for a unit of episode to reach the goal.

Parameter Settings:
Epsilon = 0.1 (exploring rate) . Here I am using a normal or default epsilon value.
Alpha = 0.5 (learning rate) . After trying some different value of alpha, 0.5 is a appropriate rate that match the diagram showed in the book (figure6.4), so in order to compare the differences between different action solutions, I decided to use the same learning rate as the 4_action solution provided in the book.