RL Assignment 2 Report
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***** Only plots for question 7 were required, for other question run the notebook or python script for tutput *****

Ques 2. The value function is :

```
array([[ 3.3,  8.8,  4.4,  5.3,  1.5],
       [ 1.5,  3. ,  2.3,  1.9,  0.5],
       [ 0.1,  0.7,  0.7,  0.4, -0.4],
       [-1. , -0.4, -0.4, -0.6, -1.2],
       [-1.9, -1.3, -1.2, -1.4, -2. ]])
```

Ques 4. The value function is :

```
 array([[22.76991695, 35.19854115, 18.02905475, 32.81064425,  0.,]
       [32.08420173, 21.15857741, 26.27809446, 22.59199399,  2.59589407,]
       [29.95416953, 16.35824981, 23.39691244, 26.01775976,  0.,]
       [30.52333117, 15.11080157, 31.5314702 , 14.5132011 , 42.5075844 ,]
       [0.         , 21.21408504, 14.9038878 , 11.38853121, 10.24967809]])
```

Ques 6.

***** Answer is same for both*****

a. **Policy Iteration and Value Iteration:**
   i. **Value function:**

```
[[ 0. -1. -2. -3.]
 [-1. -2. -3. -2.]
 [-2. -3. -2. -1.]
 [-3. -2. -1.  0.]]
```

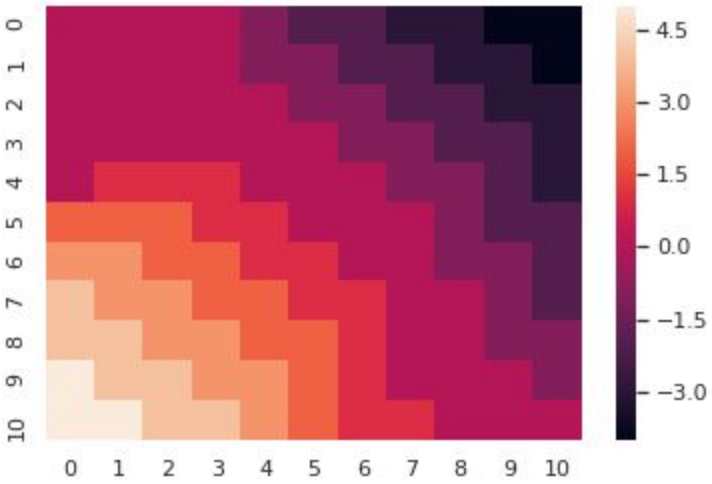
   ii. **Optimal policy:**

```
(0, 0): [0. 0. 0. 0.]
(0, 1): [0. 0. 0. 1.]
(0, 2): [0. 0. 0. 1.]
(0, 3): [0.  0.5 0.  0.5]
(1, 0): [1. 0. 0. 0.]
(1, 1): [0.5 0.  0.  0.5]
```

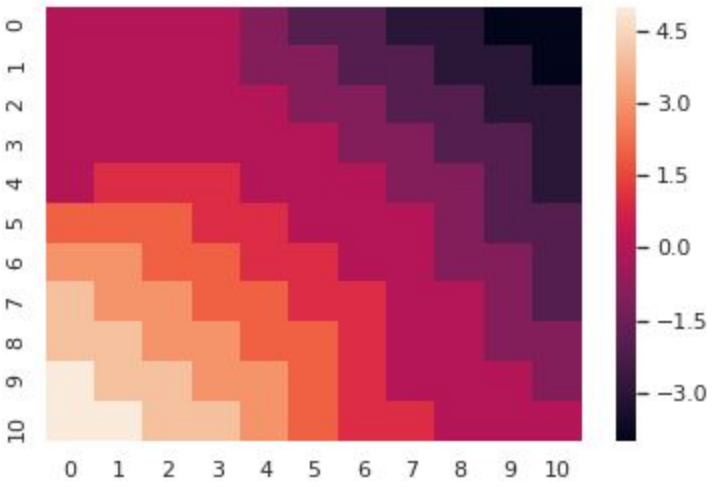
(1, 2): [0.25 0.25 0.25 0.25]
(1, 3): [0. 1. 0. 0.]
(2, 0): [1. 0. 0. 0.]
(2, 1): [0.25 0.25 0.25 0.25]
(2, 2): [0. 0.5 0.5 0.]
(2, 3): [0. 1. 0. 0.]
(3, 0): [0.5 0. 0.5 0.]
(3, 1): [0. 0. 1. 0.]
(3, 2): [0. 0. 1. 0.]
(3, 3): [0. 0. 0. 0.]

Ques 7.

a. **Plot for the original Jack's Car Rental Problem:**



b. **Plot for exercise 4.7:**


0
1
2
3
4
5
6
7
8
9
10
0 1 2 3 4 5 6 7 8 9 10
4.5
3.0
1.5
0.0
−1.5
−3.0