Lab № 8

CSCI B505 Applied Algorithms 10/19/2022

Instructions

1. Please write the code for the problems in python language in Jupyter notebook
2. The code should readable with variables named meaningfully
3. Plagiarism is unacceptable and we have ways to find it. So do not do it.
4. Follow the instructions and define the methods/functions as given in the problem statement.
5. Write test cases wherever required so that they cover all scenarios.
6. Please do not use in-built python functions for solving the problem.

Problem 1

Implement Priority Queues in python from scratch using Lists. The Priority Queue object should have insert, delete and min methods. The element of the priority queue is a tuple of integer and string where the integer represents the priority. Use the following python code as a template for the implementation.

```
1
2  class PriorityQueue ():
3    def __init__ ():
4
5    def insert(element):
6    ## inserts the tuple into priority queue
7    def get_max ():
8    ## removes and returns the element with highest priority
9    def print ():
10   ## prints all the tuples in the priority queue
11   ## order is trivial
12
13 if __name__ =="__main__":
14   ## usage will be like this
15   pq = PriorityQueue ([.....])
16   pq.insert ((4, "Applied Algorithms"))
17   pq.insert ((1, "Database Design"))
18   pq.insert ((2, "Data Science"))
```

```
19    k, v = pq.get_max ()
20    print(v) ## should print Applied Algorithms
21    k, v = pq.get_max ()
22    print(v) ## should print Data Science
```