IQRA NATIONAL UNIVERSITY
Phase II,Hayatabad peshawer

Student: Hayat ahmad khan ID# 14486

Dept: BS (CS) Assignment:01 Subject: Design and Analysis of Algorithms

Task# 1

Design a Program (in any Computer Language of your choice) to implement the Algorithms to

- Push an Element in a Queue
- Pop an element from a Queue

ANSWER:-

Push and Pop an Element in a Queue:-

QUEUE.py - C:\Users\hayat\Desktop\Assigment DAA\QUEUE.py (3.7.4)

File Edit Format Run Options Window Help

```
class Queue:
    def __init__(self):
        self.queue = []
    """ Add an element """
    def inqueue(self, element):
        self.queue.append(element)
    """ Remove an element """
    def outqueue(self):
        if len(self.queue) < 1:
            return None
        return self.queue.pop(0)
    """ Display the queue """
    def display(self):
        print (self.queue)
    def size(self):
        return len(self.queue)
print ("Adding an Elements:")
a = Queue()
a.inqueue(21)
a.inqueue(32)
a.inqueue(43)
a.inqueue(54)
a.inqueue(65)
a.inqueue(76)
a.inqueue(87)
a.display()
a.outqueue()
print("After Removing an Element:")
a.display()
a.outqueue()
print("After Removing an Other Element:")
a.display()
```

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Result:-

```
Python 3.7.4 Shell
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29:22) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:\Users\hayat\Desktop\Assigment DAA\QUEUE.py ==========
Adding an Elements:
[21, 32, 43, 54, 65, 76, 87]
After Removing an Element:
[32, 43, 54, 65, 76, 87]
After Removing an Other Element:
[43, 54, 65, 76, 87]
>>>
```

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Q2: Linked List and One Way Linked List:-

Linked List.py - C:\Users\hayat\Desktop\Assigment DAA\Linked List.py (3.7.4)

File Edit Format Run Options Window Help

```
class Node:
    """ Establishing a Node """
    def __init__(self, element):
        self.element = element
        self.next = None

class linked_list:
    def __init__(self):
        self.head = None
if __name__ == '__main__':
    LinkedList = linked_list()

    """ Assign Element Values """
    LinkedList.head = Node(8)
    second = Node(4)
    third = Node(12)
    fourth = Node(34)
    fifth = Node(61)
    sixth = Node(15)

    """ Connect Nodes """
    LinkedList.head.next = second
    second.next = third
    third.next = fourth
    fourth.next = fifth
    fifth.next = sixth

    """ Print the Linked List Elements """
    while LinkedList.head != None:
        print(LinkedList.head.element, end = " ")
        LinkedList.head = LinkedList.head.next
```

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Result:-