BRAC University (Department of Computer Science and Engineering)
Summer 2022 Semester

CSE-220 (Data Structures)
Section 14

Quiz 1
22 June, 2022

Student ID: **Full Marks: 20**
Name: **Duration: 35 minutes**

[No extra sheet will be provided. Write your answer to the questions in this answer script.]
[Marks allocated to each question is given in the statement of corresponding question.]

Answer all the questions

1. A linked list has following properties - (2)
    a. Fixed Capacity, Shifting elements in insert/remove
    b. Dynamic Capacity, Shifting elements in insert/remove
    c. Fixed Capacity, No shifting required in insert/remove
    d. Dynamic Capacity, No shifting required in insert/remove

2. A code segment of right shifting an array is given below:

```
For i in range(len(array)):
        array[i+1] = array[i]
array[0] = 0
```

   Is the code segment correct? If not, underline the errors in the question and write the corrections beside. (3)

3. Difference between deep copy and shallow copy in array. Illustrate with an example of both deep copy and shallow copy. How do you do deep copy and shallow copy? (3)

4. Suppose you iterate a circular array, ‘cir_arr’ using the iterator ‘counter’. In the circular array, how do you-
    a. Change the counter iterator in each step in forward iteration in your code?
    b. Change the counter iterator in each step in backward iteration in your code?
    c. Suppose, ‘cir_arr’ has the start position = -3, size = 5 and capacity = 7. Find out the last index of ‘cir_arr’ showing the formula that you use in your code.

    You do not need to explain. (3)

5. Suppose you are given an array-

    arr = [14,41,33,43,25,32,0,0,0] where 0 represents empty space.

    a. Write the corresponding circular array, ‘cir_arr’ when
        i. start = 3
        ii. start = 5
    b. How many elements do you need to shift left after removing element from offset = 2 in the circular array of 5.a(ii)? Show the resulting circular array.

    You do not need to write any code. (3)

6. Suppose you are given a Linked List-

   14→41→33→43→25→32→None

   a. Show the resulting linked list after inserting the node 15→None in between 33 & 43 . Illustrate the insertion.
   b. Show the resulting linked list after left rotating it 2 times. Illustrate the rotation.

   You do not need to write any code. (4)

7. Rate the quiz-

   a. Easy b. Standard c. Hard d. :) (2)