



COMSATS UNIVERSITY ISLAMABAD (CUI)
COMPUTER SCIENCE DEPARTMENT
Mid-Term. Fall - 2021.

Course: Data Structures & Algo.
Program: BSCS + BSSE
Semester: 3rd
Date: 17/11/2021

Course Code: CSC-211
Total Marks: 25
Time Allowed: 1.5 Hr.
Instructor: Dr. Inayat & Azfar

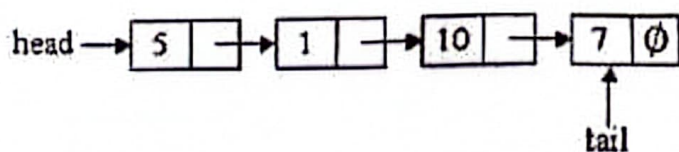
NOTE: 1) ALL QUESTIONS SHOULD BE SOLVED. (NO CHOICE).

Question-1:

(CLO-1)

[Marks: 05]

Write down a function to delete all the Nodes of a list greater than or equal to OR less than or equal to a given value.



```
void deleteNodes ( int val, char criteria)
```

```
{
```

```
    if criteria is G all the vlaues greater than or eqaul to val are deleted.
```

```
    if criteria is L all the vlaues less than or eqaul to val are deleted.
```

```
}
```

You are required to write just the above function, not allowed to assume any other function is available to you.

Question-2:

(CLO-1)

[Marks: 05]

Write the method to swap two nodes with their addresses. One of node is having minimum value and other is having maximum value.

- Consider the following points:
- Write only one method to find the node having minimum value by assuming that the finding maximum method is already defined.
- These two nodes are not consecutive.
- None of these two nodes is first or last node.
- Write each step its code and elaborate with diagram.

Question-3:

(CLO-2)

[Marks: 05]

Show with the example, what difference is created between `push(pop())` and `pop(push(x))` in terms of status of Stack.

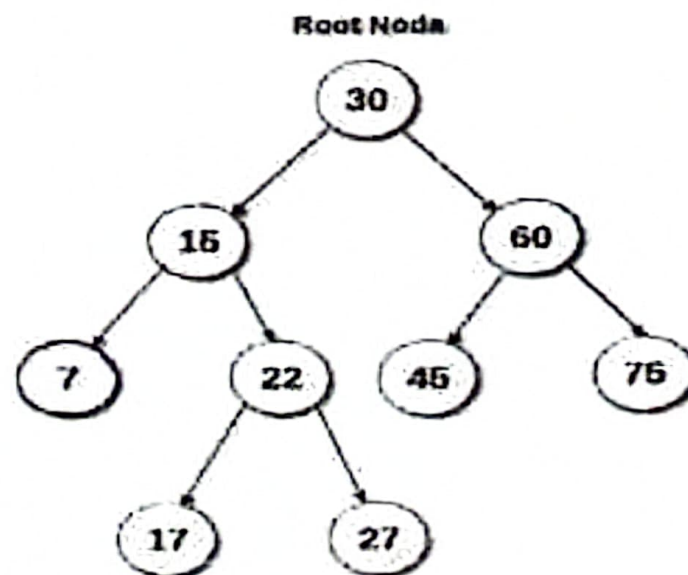
Question-4:

(CLO-4)

[Marks: 2+2+3+3]

Consider the following Binary Search Tree (BST) and answer the questions:

- What is the advantage of using BST over simple linear search?
- Write method to find the difference of minimum and maximum value in the given BST.
- In the given tree if we delete the root node, then insert 35, 65 and the 10 in the tree, show your steps and logic for each operation.
- Write the method to print the Leaf Nodes and Number of Leaf Nodes of a tree.



Binary Search Tree

G 😊 😞 D LMK