



The Open University of Sri Lanka
B.Sc Degree Programme: Level 4
Open Book Test 2007/2008
CSU 2279: Data Structures and Algorithms
Duration: One and Half Hours
Date: 04th March 2008

Time: 4.00pm – 5.30pm

Answer All Questions.

Q1)

- a)
 - i). Name the differences between a *composite data type* and an *abstract data type*.
 - ii). Suppose you are given to implement a large program. Suggest a method of data representation that allows addition of data in between. State clearly the property of ADT which is used for the above task.
- b)
 - i). State the pointer based type definition of the doubly linked list data structure.
 - ii). Using an appropriate diagram, briefly describe the purposes of the header, nodes and the nil pointer.
 - iii). What are the differences between a list and a set?

Q2)

- a)
 - i). What are the differences between a *Stack* and a *Queue*?
 - ii). Write down a pascal procedure to add 10 integer elements into an array based Stack. State clearly the assumptions you made.
 - iii). State two instances where the stack data structure can be used.
- b)
 - i). Using an appropriate diagram explain the circular array implementation of a Queue.
 - ii). What is the role of the function *Newposition* (i) of a Queue.

Q3)

- a)
 - i). Create a binary tree for following integers.
26,61,33,70,16,54,18,52,80,90
 - ii). Give the preorder, inorder and postorder outputs of the above tree.
 - iii). State whether the above tree is a strictly binary tree? Justify your answer.
- b)
 - i). What are the functionalities of of *CONCAT*(s1,s2) and *COPY*(s1,start,extent,s2) ?
 - ii) Implement the functions in part b) i). using pascal language.

*** All Rights Reserved ***