Daffodil International University

Department of Computer Science and Engineering

Faculty of Science and Information Technology

Midterm Examination **Semester: FALL 2019**

Course Code: CSE134 **Course Title: Data Structures**

Section: ALL **Course Teacher: ALL**

Time: 1 hr 30 minutes **Full Marks: 25**

Question 1: **03 + 07**

(a) How is Link list different from the array data structure. Why array data structure is sometimes preferred over link list.

(b) Suppose you have to create a data structure to represent a "Student" where student is represented by "studid" whose data type is integer and "studname" whose data type is character array of size 40. You have decided to create a "Student" link list to store student information. Using the data type "Student" created by you, you need to create two students having their information as follows:

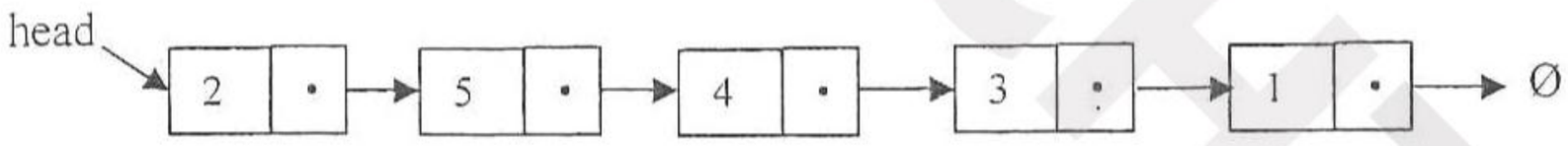
1^{st} – ID = 1001 Name: Karim 2^{nd} – ID = 1002 Name: Rahim

Define the data node "Student" and allocate memory and create and show the link list of two students.

Question 2: **03 + 07**

(a) How is single link list is different from doubly link list. Show using pictorial illustration.

(b) Consider the following representation of link list:



The "Node" contains an integer data member "data" and a pointer member "next". Write code for the following operations and show visual representations.

(1) Write code using C language to delete 3 from the link list.
(2) Write code using C language to insert a node between 5 and 4.

Question 3: **02 + 03**

(a) Convert the following infix expression into prefix and postfix expression:

(1) 8+3*2-9/3+5*2 (2) 3^2+6-2*2+7-6/2

(b) Convert the following expression into postfix expression using stack:

5*3+7-3+9/3+2*3-7

---------- Good Luck ----------