SLIIT
Discover Your Future

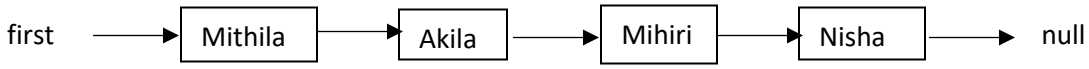
BSc (Hons) in Information Technology
Year 2
Data Structures and Algorithms – IT2070

Tutorial 3 – Link Lists 2023

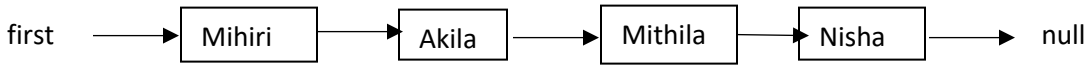
PART A

Question 1

Consider the below linked list.



Write code segment to change the above linked list to the link list given below



Question 2

Consider the link class and linked list class given below.

Link

int iData; Link next;
Link(int id) void displayLink()

LinkList

Link first;
void LinkList() boolean isEmpty() void displayList() boolean delete(int key) boolean insertAfter(int key, int newData) Link find(int key)

i) Implement insertAfter(int key, int newData) method of the LinkList class. InsertAfter() method finds the link with the given key and the new link (with newData value) is inserted immediately after that.

ii) Implement the delete(int key) method of the LinkList class. delete() method finds the link with the given key and remove it from the link list.

iii) Write an application to enter numbers from the keyboard to a link list.

1) Add a new link after a given number and display the list.
2) Delete a link from the link list and display the list.

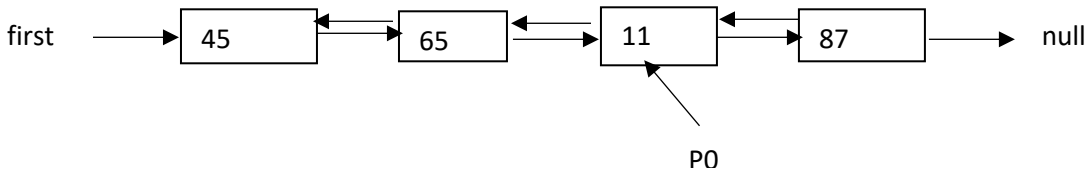
PART B

Question 3

How do you implement a "Stack" using a linked list instead of an array ?

Question 4

i) Consider the following doubly link list and illustrate and write the steps to be followed, if the link P0 is to be deleted.



ii) Illustrate the steps and write the statements to be followed to delete the first link.

iii) Illustrate the steps and write the statements to be followed to insert a new link as the first link