Lab session 5 : Single Linked List

Objective

The objective of **lab session 5** is

- To define a structure for single linked list
- To add and delete item on the list
- To display linked list items

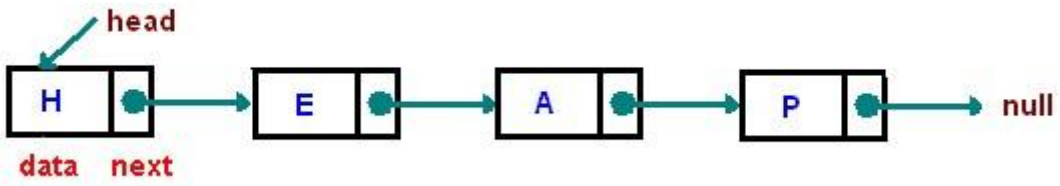
Pre-lab Exercise

1. Which of the following is true about linked list and structure
    a. Structures that hold pointers of instance of them are called self referential structures.
    b. A linked list is a data structure that can store an indefinite amount of items
    c. Item can be added or removed from the middle of the list
    d. To use linked list we need to define an initial size.
    e. Structures can contain instance of themselves
    f. There is no random access in linked list.
2. Which of the following basic operation that single linked list support
    a. Insert last− Add an element at the end of the list.
    b. Delete first − Deletes an element at the beginning of the list.
    c. Display backward − Displays the complete list in a backward manner.
    d. Search − Searches an element using the given key.
    e. Delete − Deletes an element using the given key.
3. Assume the below structure declaration and implement the given algorithm using C++ struct Student

```
{
        int age;
        string name;
        Student *next;
}*head=NULL;
```

a. Create a new node with age=19 and name='Abrham'
b. Initialize the new node with head
c. Check whether the list is empty or not
d. Check whether the node is the last node or not

4. Using the below diagram write the output of the following block of code




```
{
    cout<<head->data; head=head->next;
    cout<<head->data; head=head-
    >next->next; cout<<head->data;
}
```

In-lab Exercise

5. Write a C++ program to implement login profile, which help the organization to perform the following functions:
    a. Insert the record of login profile
    b. Delete the record of an existing login profile
    c. Find the record of an existing login profile
    d. Display Report

    Following information of each login profile will be stored
    Login ID: an integer value to store the unique id for user Username:
    the username of each user.
    Password: password of each user

Post-lab Exercise

1. What is the benefit and drawback of using linked lists?