Data Structures and Algorithms

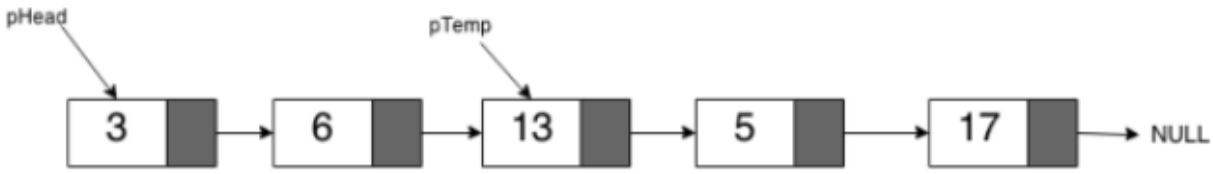
Tut 3 – Linked List

With the following struct:

```
struct node{
    int data;
    node* next = NULL;
};
```

Question 1

Suppose that we have a linked list as shown in the following figure:



a. Insert a node (value of data: 9) at the beginning of linked list.
b. Insert a node (value of data: 15) at the end of linked list.
c. Delete the node which have value of data 17.
d. Delete the node which pTemp pointed.

Question 2

a. Write a function to print a single linked list.

```
void printSingleLinkedList(node* pHead)
```

b. Write a function to print a circular linked list.

```
void printCircularLinkedList(node* pHead)
```

c. Write a function that could print either a single linked list or a circular linked list as the input.

```
void printList(node* pHead)
```

Question 3

Write function to search a node of a single linked list.

```
node* searchList(node* pHead, int data)
```

Question 4

Write a function that delete the n-th node of a linked list and return the new head if n is 0 (in case we delete the first node):

```
node* deleteNth(node* head, int n)
```

If n is greater than the length of the list or less than 0, no node will be deleted.

Question 5

Suppose we have a function:

```
void func1(node* head) {
    node* temp = head;
    while (temp != NULL) {
        if (temp->next == NULL) {
            temp->next = head;
            return;
        }
        temp = temp->next;
    }
}
```

What will happen to a linked list if we pass its head pointer to the function above?