**ASSIGNMENT – 03**

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**Question 1**

**Write a function “insert\_any()” for inserting a node at any given position of the linked list. Assume**

**position starts at 0.**

**Question 2**

**Write a function “delete\_beg()” for deleting a node from the beginning of the linked list.**

**Question 3**

**Write a function “delete\_end()” for deleting a node from the end of the linked list.**

**Code:**

#include<stdio.h>

typedef struct node

{

int data;

struct node \*next;

}node;

node \*create(int x);

node \* insert\_end(node \*head, int x);

node \*insert\_beg(node \*head, int x);

node \*insert\_any(node \*head, int x, int pos);

node \*delete\_beg(node \*head);

node \*delete\_end(node \*head);

int main()

{

node \*head = NULL;

head = insert\_end(head, 10);

head = insert\_end(head, 20);

head = insert\_end(head, 30);

//display(head);

printf("\nOriginal List\n");

head = insert\_beg(head, 15);

display(head);

printf("\nList after insertion at position 3\n");

head = insert\_any(head, 25, 3);

display(head);

printf("\nList after deletion from beginning\n");

head = delete\_beg(head);

display(head);

printf("\nList after deletion from end\n");

head = delete\_end(head);

display(head);

}

node \*create(int x)

{

node \*new = (node \*)malloc(sizeof(node));

new -> data = x;

new -> next = NULL;

return new;

}

node \* insert\_end(node \*head, int x)

{

node \*new = create(x);

node \*temp = head;

if(!head)

{

head = new;

return head;

}

while(temp -> next)

{

temp = temp -> next;

}

temp -> next = new;

return head;

}

node \*insert\_beg(node \*head, int x)

{

node \*new = create(x);

new -> next = head;

head = new;

return head;

}

void display(node \*head)

{

if(!head)

{

printf("No node to display\n");

return;

}

node \*temp = head;

while(temp)

{

printf("|%d| -> ", temp -> data);

temp = temp -> next;

}

printf("N\n");

}

node \*insert\_any(node \*head, int x, int pos) //Question 1

{

int d = 0;

node \*new = create(x);

node \*temp = head;

node \*temp1 = head;

while(temp1->next != NULL)

{

temp1 = temp1->next;

d++;

}

if(pos>d)

{

printf("Cannot insert at this position\n");

}

else

{

while(pos-1 != 0)

{

pos--;

temp = temp->next;

}

new->next = temp->next;

temp->next = new;

}

return head;

}

node \*delete\_beg(node \*head) //Question 2

{

node \*temp = head;

head = head->next;

free(temp);

return(head);

}

node \*delete\_end(node \*head) //Question 3

{

node \*temp = head;

node \*temp1;

while(temp->next->next != NULL)

{

temp = temp->next;

}

temp1 = temp->next;

temp->next = NULL;

free(temp1);

return head;

}