DSA Practical No -4

AIM :- Implement a single linked list and perform the operation like insertion, deletion and traversal

Program:

// implement a double linked list and perform the operation like insertion, deletion and traversal.

```
#include <stdio.h>
#include <stdlib.h>
#include <stdbool.h>

struct node
{

   int data;
   struct node *next;
   struct node *priv;
};

int main()
{
   struct node *a, *b, *c, *d, *e, *f, *g;
   int search;
  a = (struct node *)malloc(sizeof(struct node));
   b = (struct node *)malloc(sizeof(struct node));
   c = (struct node *)malloc(sizeof(struct node));
   d = (struct node *)malloc(sizeof(struct node));
   e = (struct node *)malloc(sizeof(struct node));
```

```
f = (struct node *)malloc(sizeof(struct node));



a->data = 12;

b->data = 22;

c->data = 32;

d->data = 80;

e->data = 200;



a->next = b;



b->next = c;


c->next = d;



d->next = e;




e->next = NULL;




struct node *p = a;

printf("Traversal of the linked list in forward direction: \n");

while (p != NULL)

{
```

```
   printf("%d\t", p->data);
   p = p->next;
}

struct node *m = e;



printf("\n");


m = a;


printf("Enter the node after which you have to insert the data:\n");
scanf("%d", &search);
while (m != NULL && m->data != search)
{
   m = m->next;
};


if (m->data == search)
{
   printf("Enter the data of the new node:\n");
   scanf("%d", &f->data);
   f->next = m->next;
   f -> priv = m;
   m->next = f;
}else
{
   printf("The searching data not found\n");
}
```

```
m = a;
while (m != NULL)
{
   printf("%d\t", m->data);
   m = m->next;
}

printf("\n");

m = a;

printf("Enter the node  which you have to DELETE:\n");
scanf("%d", &search);
while (m != NULL && m->data != search)
{
   g = m;
   m = m->next;
}

if (m->data == search)
{
   g->next = m->next;
   free(m);
}
else
{
   printf("The data not found.\n");
}
```

```
    m = a;
    while (m != NULL)
    {
        printf("%d\t", m->data);
        m = m->next;
    }

    return 0;
}
```

Output:

Github link : https://github.com/MayurThaware122/DSA