WAP to Implement Singly Linked List with following operations

a) Create a linked list.

b) Insertion of a node at first position, at any position and at end of list.

c) Display the contents of the linked list.

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

void create();
void display();
void Insert_beg();
void Insert_end();
void Insert_pos();

struct NODE
{
   int data;
   struct NODE *link;
};

typedef struct NODE node;
node *start = NULL;

void create()
{
   int c;
   node *new, *curr;
   start = (node *)malloc(sizeof(node));
   curr = start;
```

```
    printf("Enter element\n");
    scanf("%d", &start->data);
    while (1)
    {
        printf("Do you want to add another element(Yes=1/No=0)\n");
        scanf("%d", &c);
        if (c == 1)
        {
            new = (node *)malloc(sizeof(node));
            printf("Enter element\n");
            scanf("%d", &new->data);
            curr->link = new;
            curr = new;
        }
        else
        {
            curr->link = NULL;
            break;
        }
    }
}

void Insert_beg()
{
    node *new;
    new = (node *)malloc(sizeof(node));
    printf("Enter element\n");
    scanf("%d", &new->data);

    if (start == NULL)
```

```
    {
        start = new;
        new->link = NULL;
        return;
    }
    new->link = start;
    start = new;
}

void Insert_end()
{
    node *new, *temp;
    new = (node *)malloc(sizeof(node));
    printf("Enter element\n");
    scanf("%d", &new->data);

    if (start == NULL)
    {
        start = new;
        new->link = NULL;
        return;
    }

    temp = start;
    while (temp->link != NULL)
    {
        temp = temp->link;
    }
    temp->link = new;
    new->link = NULL;
```

```
}

void Insert_pos()
{
   int pos;
   node *new, *temp;
   new = (node *)malloc(sizeof(node));
   printf("Enter element\n");
   scanf("%d", &new->data);
   printf("Enter position\n");
   scanf("%d", &pos);
   if (pos == 1)
   {
      new->link = start;
      start = new;
      return;
   }
   int i = 1;
   temp = start;
   while (i < pos - 1 && temp->link != NULL)
   {
      temp = temp->link;
      i++;
   }
   if (i == (pos - 1))
   {
      new->link = temp->link;
      temp->link = new;
      return;
   }
```

```
    if (temp == NULL)
    {
        printf("Invalid position");
    }
}

void display()
{
    node *temp;
    if (start == NULL)
    {
        printf("Linked list is empty");
        return;
    }
    temp = start;
    printf("\nCONTENTS\n");
    while (temp != NULL)
    {
        printf("%d\t", temp->data);
        temp = temp->link;
    }
    printf("\n");
}

void main()
{
    int ch;
    while (1)
    {
        printf("\n1.Create LinkedList\n2.Insert at Beginning\n3.Insert at End\n4.Insert at any Position\n5.Display \n6.Exit\n");
```

```
        printf("Enter your choice:\n");
        scanf("%d", &ch);
        switch (ch)
        {
        case 1:
            create();
            break;

        case 2:
            Insert_beg();
            break;
        case 3:
            Insert_end();
            break;
        case 4:
            Insert_pos();
            break;
        case 5:
            display();
            break;
        case 6:
            exit(0);
        default:
            printf("Invalid choice\n");
        }
    }
}
```

OUTPUT:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

PS C:\Users\VIGNESH\OneDrive\Desktop\DSLAB> gcc P6_LinkedList_Insertion.c
PS C:\Users\VIGNESH\OneDrive\Desktop\DSLAB> ./a.exe

1.Create LinkedList
2.Insert at Beginning
3.Insert at End
4.Insert at any Position
5.Display
6.Exit
Enter your choice:
1
Enter element
10
Do you want to add another element(Yes=1/No=0)
0

1.Create LinkedList
2.Insert at Beginning
3.Insert at End
4.Insert at any Position
5.Display
6.Exit
Enter your choice:
2
Enter element
5


1.Create LinkedList
2.Insert at Beginning
3.Insert at End
4.Insert at any Position
5.Display
6.Exit
Enter your choice:
5

CONTENTS
5       10

1.Create LinkedList
2.Insert at Beginning
3.Insert at End
4.Insert at any Position
5.Display
6.Exit
Enter your choice:
3
Enter element
15
```

```
1.Create LinkedList
2.Insert at Beginning
3.Insert at End
4.Insert at any Position
5.Display
6.Exit
Enter your choice:
5

CONTENTS
5       10      15

1.Create LinkedList
2.Insert at Beginning
3.Insert at End
4.Insert at any Position
5.Display
6.Exit
Enter your choice:
3

1.Create LinkedList
2.Insert at Beginning
3.Insert at End
4.Insert at any Position
5.Display
6.Exit
Enter your choice:
5

CONTENTS
5       10      20      15

1.Create LinkedList
2.Insert at Beginning
3.Insert at End
4.Insert at any Position
5.Display
6.Exit
Enter your choice:
6
PS C:\Users\VIGNESH\OneDrive\Desktop\DSLAB>
```