6. WAP to Implement Singly Linked List with following operations a) a) Create a linked list. b) Deletion of first element, specified element and last element in the list. c) Display the contents of the linked list.

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

void create();
void display();
void insert_begin();
void insert_end();
void insert_pos();
struct node
{
   int info;
   struct node *next;
};
struct node *start = NULL;
int main()
{
   int choice;
   while (1)
   {

      printf("\n            MENU                    \n");
```

```
printf("\n 1.Create     \n");
printf("\n 2.Display    \n");
printf("\n 3.Insert at the beginning    \n");
printf("\n 4.Insert at the end  \n");
printf("\n 5.Insert at specified position       \n");
printf("\n 6.Exit       \n");
printf("\n-------------------------------------\n");
printf("Enter your choice:");
scanf("%d", &choice);
switch (choice)
{
case 1:
   create();
   break;
case 2:
   display();
   break;
case 3:
   insert_begin();
   break;
case 4:
   insert_end();
   break;
case 5:
```

```
            insert_pos();
            break;
        case 6:
            exit(0);
            break;

        default:
            printf("\n Wrong Choice:\n");
            break;
        }
    }
    return 0;
}
void create()
{
    struct node *temp, *ptr;
    temp = (struct node *)malloc(sizeof(struct node));
    if (temp == NULL)
    {
        printf("\nOut of Memory Space:\n");
        exit(0);
    }
    printf("\nEnter the data value for the node:");
    scanf("%d", &temp->info);
```

```
    temp->next = NULL;
    if (start == NULL)
    {
        start = temp;
    }
    else
    {
        ptr = start;
        while (ptr->next != NULL)
        {
            ptr = ptr->next;
        }
        ptr->next = temp;
    }
}
void display()
{
    struct node *ptr;
    if (start == NULL)
    {
        printf("\nList is empty:\n");
        return;
    }
    else
```

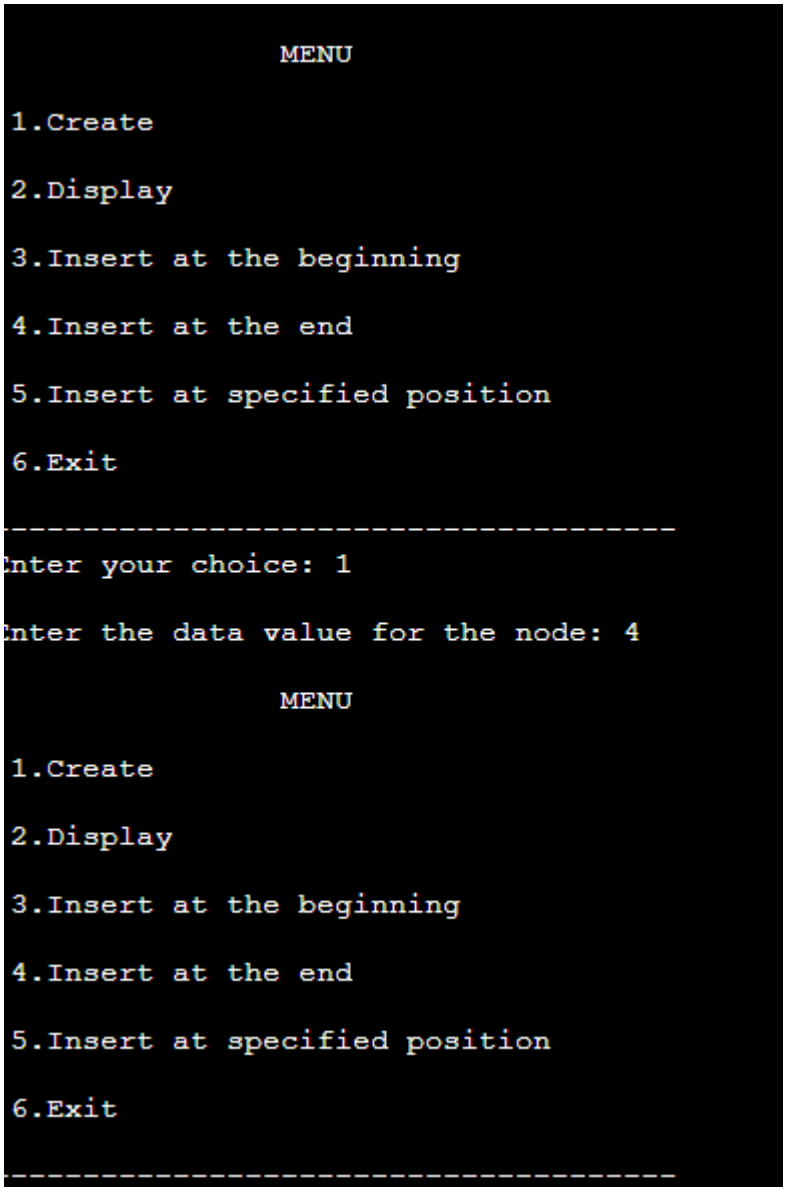
```
    {
        ptr = start;
        printf("\nThe List elements are:\n");
        while (ptr != NULL)
        {
            printf("%d", ptr->info);
            ptr = ptr->next;
        }
    }
}
void insert_begin()
{
    struct node *temp;
    temp = (struct node *)malloc(sizeof(struct node));
    if (temp == NULL)
    {
        printf("\nOut of Memory Space:\n");
        return;
    }
    printf("\nEnter the data value for the node:");
    scanf("%d", &temp->info);
    temp->next = NULL;
    if (start == NULL)
    {
```

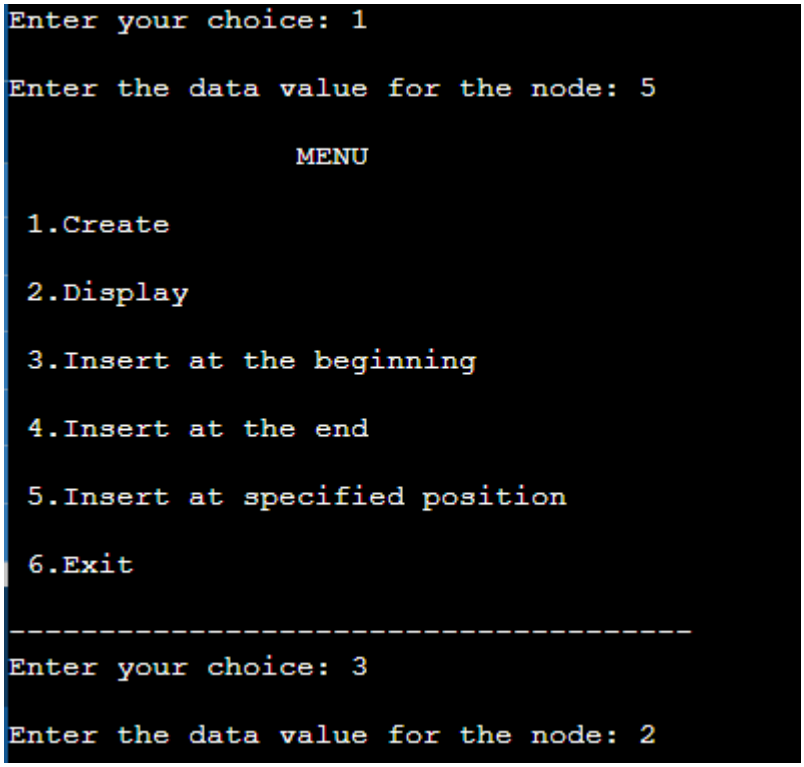
```
        start = temp;
    }
    else
    {
        temp->next = start;
        start = temp;
    }
}
void insert_end()
{
    struct node *temp, *ptr;
    temp = (struct node *)malloc(sizeof(struct node));
    if (temp == NULL)
    {
        printf("\nOut of Memory Space:\n");
        return;
    }
    printf("\nEnter the data value for the node:");
    scanf("%d", &temp->info);
    temp->next = NULL;
    if (start == NULL)
    {
        start = temp;
    }
```

```
    else
    {
        ptr = start;
        while (ptr->next != NULL)
        {
            ptr = ptr->next;
        }
        ptr->next = temp;
    }
}
void insert_pos()
{
    struct node *ptr, *temp;
    int i, pos;
    temp = (struct node *)malloc(sizeof(struct node));
    if (temp == NULL)
    {
        printf("\nOut of Memory Space:\n");
        return;
    }
    printf("\nEnter the position for the new node to be inserted:");
    scanf("%d", &pos);
    printf("\nEnter the data value of the node:");
    scanf("%d", &temp->info);
```

```
    temp->next = NULL;
    if (pos == 0)
    {
       temp->next = start;
       start = temp;
    }
    else
    {
       for (i = 0, ptr = start; i < pos - 1; i++)
       {
          ptr = ptr->next;
          if (ptr == NULL)
          {
             printf("\nPosition not found:\n");
             return;
          }
       }
       temp->next = ptr->next;
       ptr->next = temp;
    }
}
```

Output:


MENU
1.Create
2.Display
3.Insert at the beginning
4.Insert at the end
5.Insert at specified position
6.Exit
Enter your choice: 1
Enter the data value for the node: 4
MENU
1.Create
2.Display
3.Insert at the beginning
4.Insert at the end
5.Insert at specified position
6.Exit


Enter your choice: 1
Enter the data value for the node: 5
MENU
1.Create
2.Display
3.Insert at the beginning
4.Insert at the end
5.Insert at specified position
6.Exit
Enter your choice: 3
Enter the data value for the node: 2

```
                MENU

 1.Create

 2.Display

 3.Insert at the beginning

 4.Insert at the end

 5.Insert at specified position

 6.Exit

---------------------------------------
Enter your choice: 4

Enter the data value for the node: 6

                MENU

 1.Create

 2.Display

 3.Insert at the beginning

 4.Insert at the end

 5.Insert at specified position

 6.Exit

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```

```
Enter your choice: 5

Enter the position for the new node to be inserted: 3

Enter the data value of the node: 9
```

```
                MENU

 1.Create

 2.Display

 3.Insert at the beginning

 4.Insert at the end

 5.Insert at specified position

 6.Exit

--------------------------------------
Enter your choice: 2

The List elements are:
24596
                MENU

 1.Create

 2.Display

 3.Insert at the beginning

 4.Insert at the end

 5.Insert at specified position

 6.Exit

--------------------------------------
Enter your choice: 6
```