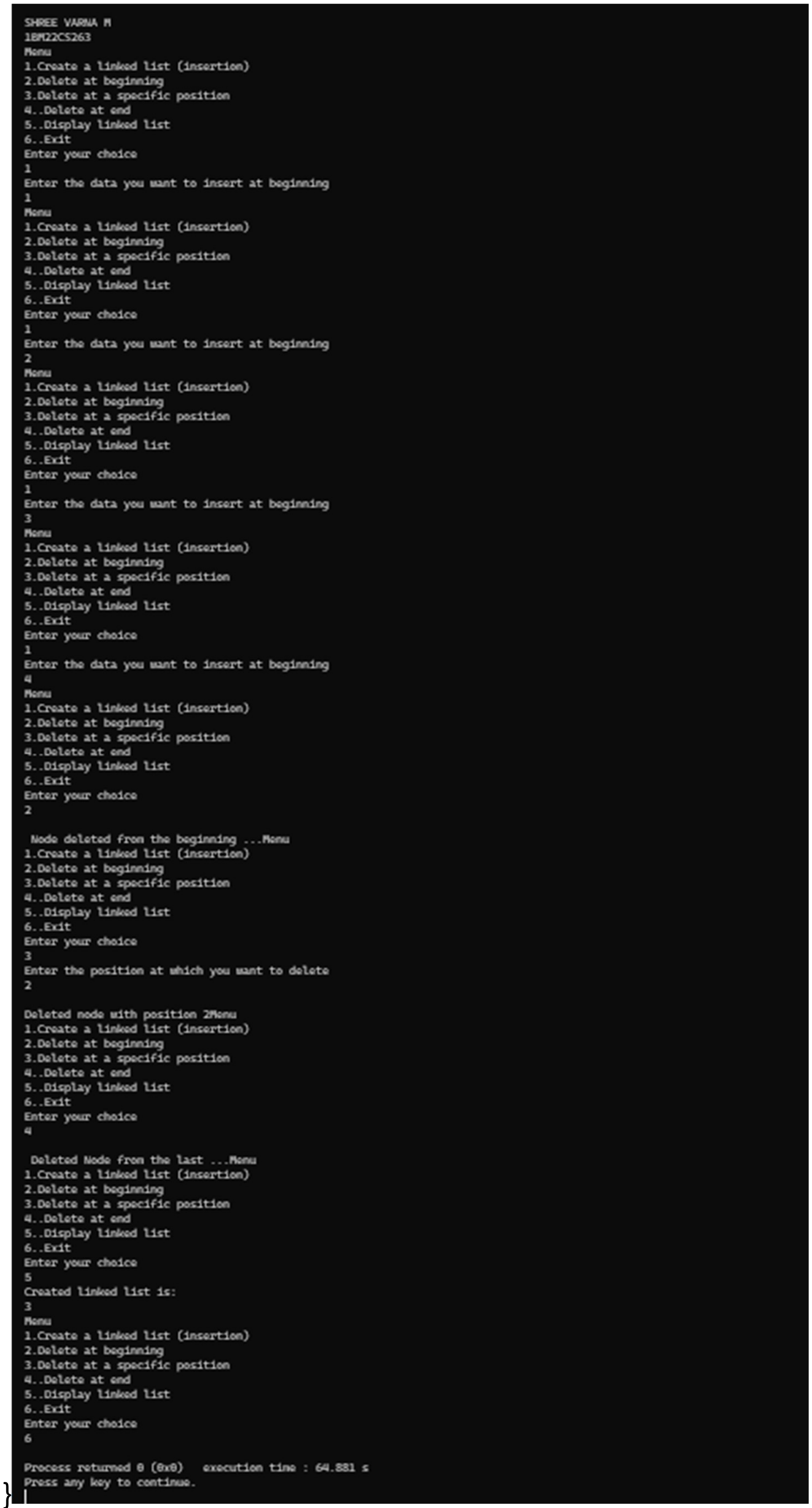
1. Implement a C program to perform deletion operation (on all the three position) on singly linked list.

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


typedef struct Node {
   int data;
   struct Node *next;
}Node;

void InsertAtBeginning( Node **head_ref,int new_data);
void DeleteAtBeginning( Node **head_ref);
void DeleteAtEnd( Node **head_ref);
void Delete( Node **prev_node,int pos);
void PrintList(Node * next);

void InsertAtBeginning( Node **head_ref,int new_data)
{
   struct Node* new_node=(struct Node*)malloc(sizeof( Node));
   new_node->data=new_data;
   new_node->next=*head_ref;
   *head_ref=new_node;
}

void DeleteAtBeginning( Node **head_ref)
{
   Node *ptr;
if(head_ref == NULL)
{
printf("\nList is empty");
}
else
{
ptr = *head_ref;
*head_ref = ptr->next;
```

```
free(ptr);
printf("\n Node deleted from the beginning ...");

}

}


void DeleteAtEnd(Node **head_ref)
{
   Node *ptr,*ptr1;

if(*head_ref == NULL)

{

printf("\nlist is empty");

}

else if((*head_ref)-> next == NULL)

{

free(*head_ref);

*head_ref= NULL;

printf("\nOnly node of the list deleted ...");

}

else

{

ptr = *head_ref;
```

```
while(ptr->next != NULL)

{

ptr1 = ptr;

ptr = ptr ->next;

}

ptr1->next = NULL;

free(ptr);

printf("\n Deleted Node from the last ...");

}

}
void Delete(Node **head_ref, int pos)
{
   Node *temp = *head_ref, *prev;

   if (temp == NULL)
   {
      printf("\nList is empty");
      return;
   }

   if (pos == 1)
   {
      *head_ref = temp->next;
      free(temp);
      printf("\nDeleted node with position %d", pos);
      return;
   }
   for (int i = 0; temp != NULL && i < pos - 1; i++)
   {
      prev = temp;
      temp = temp->next;
   }

   if (temp == NULL)
   {
      printf("\nPosition out of range");
      return;
   }

   prev->next = temp->next;
   free(temp);
   printf("\nDeleted node with position %d", pos);
}
void PrintList(Node *node)
{
   while (node!=NULL)
   {
      printf("%d\n",node->data);
      node=node->next;
   }
}


int main()
{
   int ch,new,pos;
   Node* head=NULL;
   printf("SHREE VARNA M\n");
   printf("1BM22CS263\n");
   while(ch!=6)
   {
   printf("Menu\n");
   printf("1.Create a linked list (insertion)\n");
   printf("2.Delete at beginning\n");
   printf("3.Delete at a specific position\n");
   printf("4..Delete at end\n");
   printf("5..Display linked list\n");
   printf("6..Exit\n");
   printf("Enter your choice\n");
   scanf("%d",&ch);
   switch(ch)
   {
      case 1:
      {
      printf("Enter the data you want to insert at beginning\n");
      scanf("%d",&new);
      InsertAtBeginning(&head,new);
      break;
      }
      case 2:
      {
      DeleteAtBeginning(&head);
      break;
      }
      case 3:
      {
      printf("Enter the position at which you want to delete \n");
      scanf("%d",&pos);
      Delete(&head,pos);
      break;
      }
      case 4:
      {
      DeleteAtEnd(&head);
      break;
      }
      case 5:
      {
         printf("Created linked list is:\n");
         PrintList(head);
```

```
            break;
        }
        case 6:
        {
            return 0;
            break;
        }
        default:
        {
            printf("Invalid data!");
            break;
        }
    }
}
```



```
SHREE VARNA M
1BM22CS263
Menu
1.Create a linked list (insertion)
2.Delete at beginning
3.Delete at a specific position
4..Delete at end
5..Display linked list
6..Exit
Enter your choice
1
Enter the data you want to insert at beginning
1
Menu
1.Create a linked list (insertion)
2.Delete at beginning
3.Delete at a specific position
4..Delete at end
5..Display linked list
6..Exit
Enter your choice
1
Enter the data you want to insert at beginning
2
Menu
1.Create a linked list (insertion)
2.Delete at beginning
3.Delete at a specific position
4..Delete at end
5..Display linked list
6..Exit
Enter your choice
1
Enter the data you want to insert at beginning
3
Menu
1.Create a linked list (insertion)
2.Delete at beginning
3.Delete at a specific position
4..Delete at end
5..Display linked list
6..Exit
Enter your choice
1
Enter the data you want to insert at beginning
4
Menu
1.Create a linked list (insertion)
2.Delete at beginning
3.Delete at a specific position
4..Delete at end
5..Display linked list
6..Exit
Enter your choice
2

 Node deleted from the beginning ...Menu
1.Create a linked list (insertion)
2.Delete at beginning
3.Delete at a specific position
4..Delete at end
5..Display linked list
6..Exit
Enter your choice
3
Enter the position at which you want to delete
2

Deleted node with position 2Menu
1.Create a linked list (insertion)
2.Delete at beginning
3.Delete at a specific position
4..Delete at end
5..Display linked list
6..Exit
Enter your choice
4

 Deleted Node from the last ...Menu
1.Create a linked list (insertion)
2.Delete at beginning
3.Delete at a specific position
4..Delete at end
5..Display linked list
6..Exit
Enter your choice
5
Created linked list is:
3
Menu
1.Create a linked list (insertion)
2.Delete at beginning
3.Delete at a specific position
4..Delete at end
5..Display linked list
6..Exit
Enter your choice
6

Process returned 0 (0x0)   execution time : 64.881 s
Press any key to continue.
```

```
}
```