/*doubly ll full op*/

```
#include<stdio.h>
#include<stdlib.h>
struct node
{
	int data;
	struct node*rlink;
	struct node*llink;
};
struct node*header;
struct node*create_dll(struct node*);
struct node*display(struct node*);
struct node*insert_beg(struct node*);
struct node*insert_end(struct node*);
struct node*insert_any(struct node*);
struct node*delete_beg(struct node*);
struct node*delete_end(struct node*);
struct node*delete_any(struct node*);
void search();
struct node*sort_list(struct node*);
int main()
{
	int ch;
	while(ch!=11)
	{
		printf("MAIN MENU\n");
		printf("1.create the list\n2.display the list\n3.insert at beg\n4.insert at end\n5.insert at any position\n6.delete at beg\n7.delete at end\n8.delete from any position\n9.search\n10.sort the list\n11.exit\n");
		printf("enter your choice\n");
		scanf("%d",&ch);
```

```
                switch(ch)
                {
                        case 1:header=create_dll(header);
                        break;
                        case 2:header=display(header);
                        break;
                        case 3:header=insert_beg(header);
                        break;
                        case 4:header=insert_end(header);
                        break;
                        case 5:header=insert_any(header);
                        break;
                        case 6:header=delete_beg(header);
                        break;
                        case 7:header=delete_end(header);
                        break;
                        case 8:header=delete_any(header);
                        break;
                        case 9:search();
                        break;
                        case 10:header=sort_list(header);
                        break;
                        case 11:exit(0);
                        default:
                                printf("invalid choice\n");
                }
        }
}
struct node*create_dll(struct node*header)
{
        struct node*new_node,*ptr;
```

```
        int item;
        printf("enter -1 to end\n");
        printf("enter the data: \n");
        scanf("%d",&item);
        while(item!=-1)
        {
                new_node=(struct node*)malloc(sizeof(struct node));
                new_node->data=item;
                if(header==NULL)  //list is empty
                {
                        new_node->rlink=NULL;
                        new_node->llink=NULL;
                        header=new_node;
                }
                else
                {
                        ptr=header;
                        while(ptr->rlink!=NULL)
                        {
                                ptr=ptr->rlink;
                        }
                        ptr->rlink=new_node;
                        new_node->llink=ptr;
                        new_node->rlink=NULL;
                }
                printf("enter the data: \n");
           scanf("%d",&item);
        }
        printf("list created\n");
        return header;
}
```

```
struct node*display(struct node*header)
{
	printf("the list is below\n");
	struct node*ptr;
	ptr=header;
	while(ptr!=NULL)
	{
		printf("%d\n",ptr->data);
		ptr=ptr->rlink;
	}
	return header;
}
struct node*insert_beg(struct node*header)
{
	struct node*new_node;
	int item;
	if(header==NULL)	//memory bank returns null
	{
		printf("over flow ,insertion not possible\n");
	}
	else
	{
		printf("enter the data to be inserted: \n");
		scanf("%d",&item);
		new_node=(struct node*)malloc(sizeof(struct node));
		new_node->data=item;
		new_node->rlink=header;
		header->llink=new_node;
		new_node->llink=NULL;
		header=new_node;
		printf("node imserted at the beg\n");
```

```
        }
        return header;
}
struct node*insert_end(struct node*header)
{
        struct node*new_node,*ptr;
        int item;
        if(header==NULL)     //memory bank returns null
        {
                printf("over flow ,insertion not possible\n");
        }
        else
        {
                printf("enter the data to be inserted: \n");
                scanf("%d",&item);
                new_node=(struct node*)malloc(sizeof(struct node));
                new_node->data=item;
                ptr=header;
                while(ptr->rlink!=NULL)
                {
                        ptr=ptr->rlink;
                }
                ptr->rlink=new_node;
                new_node->llink=ptr;
                new_node->rlink=NULL;
                printf("node imserted at the end\n");
        }
        return header;
}
struct node*insert_any(struct node*header)
{
```

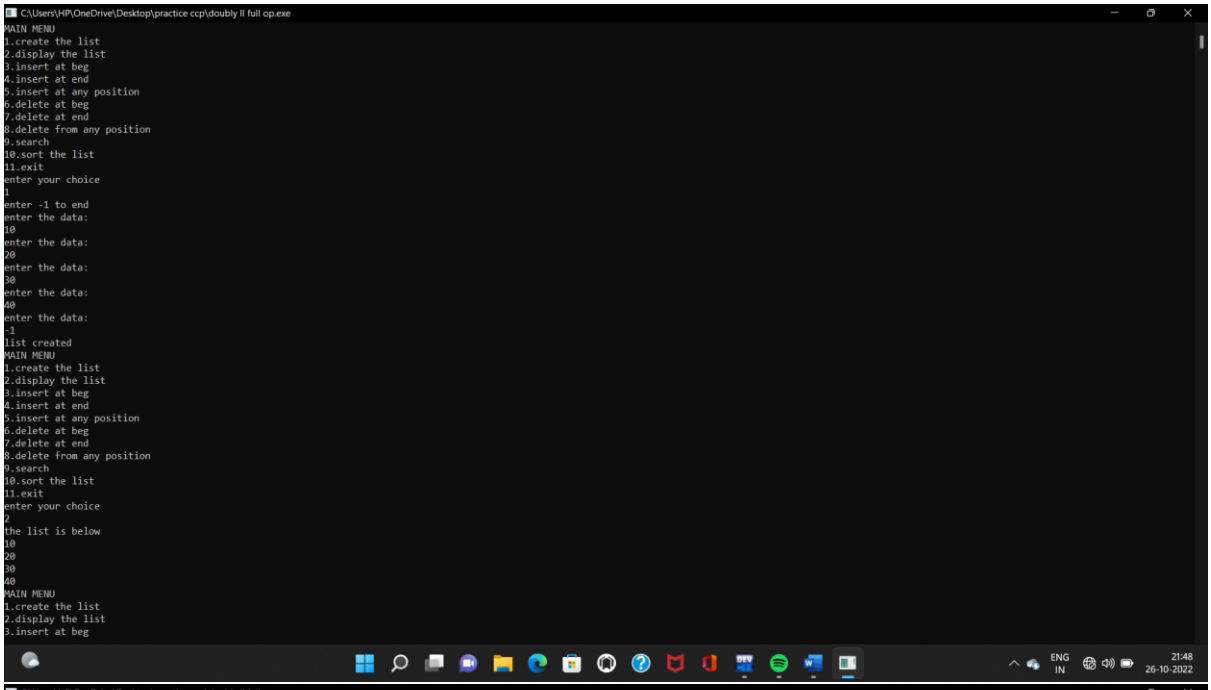
```
	struct node*new_node,*ptr,*ptr1;
	int item,loc,i;
	if(header==NULL)	//memory bank returns null
	{
		printf("over flow ,insertion not possible\n");
	}
	else
	{
		printf("enter the location at which the data has to be inserted: \n");
		scanf("%d",&loc);
		printf("enter the data to be inserted: \n");
		scanf("%d",&item);
		new_node=(struct node*)malloc(sizeof(struct node));
		new_node->data=item;
		ptr=header;
		for(i=0;i<loc-1;i++)
		{
			ptr=ptr->rlink;
		}
		ptr1=ptr->rlink;
		new_node->rlink=ptr1;
		new_node->llink=ptr;
		ptr->rlink=new_node;
		ptr1->llink=new_node;
		printf("the node is inserted st specific position\n");
	}
	return header;
}
struct node*delete_beg(struct node*header)
{
	struct node*ptr;
```

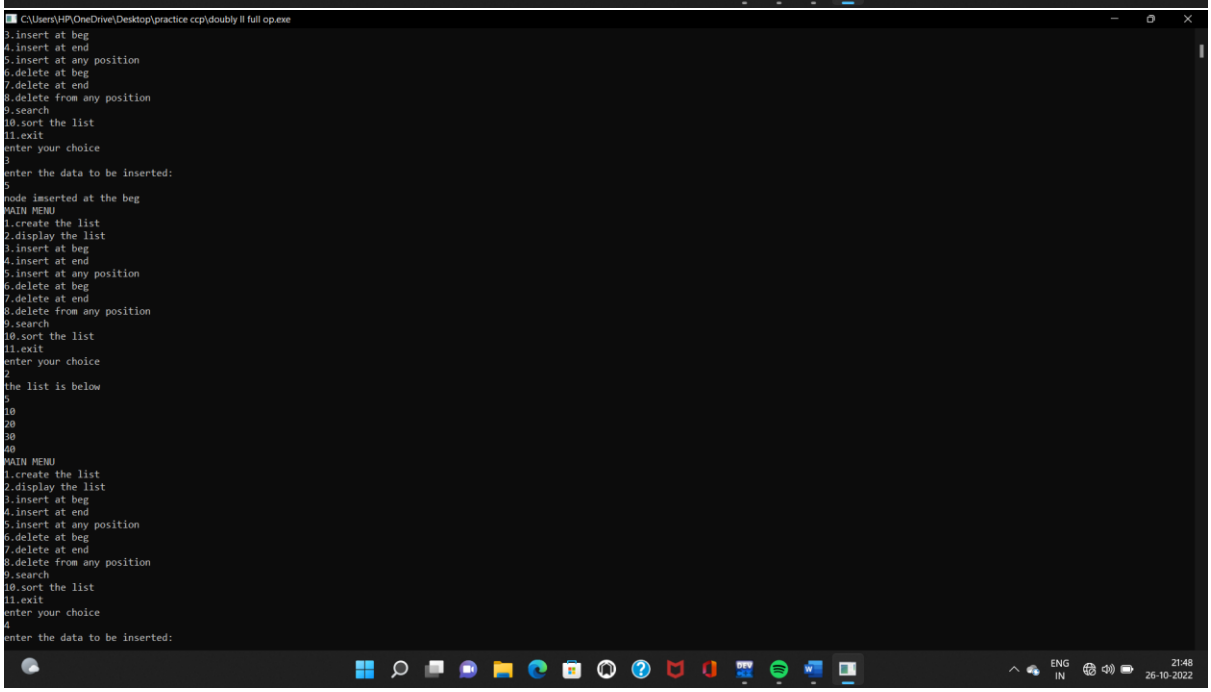
```
	if(header==NULL)   //list is empty
	{
		printf("deletion not possible\n");
	}
	else
	{
		ptr=header;
		header=header->rlink;
		header->llink=NULL;
		free(ptr);
		printf("node deleted from the beg\n");
	}
	return header;
}
struct node*delete_end(struct node*header)
{
	struct node*ptr,*ptr1;
	if(header==NULL)   //list is empty
	{
		printf("deletion not possible\n");
	}
	else
	{
		ptr=header;
		while(ptr->rlink!=NULL)
		{
			ptr1=ptr;
			ptr=ptr->rlink;
		}
		ptr1->rlink=NULL;
		free(ptr);
```

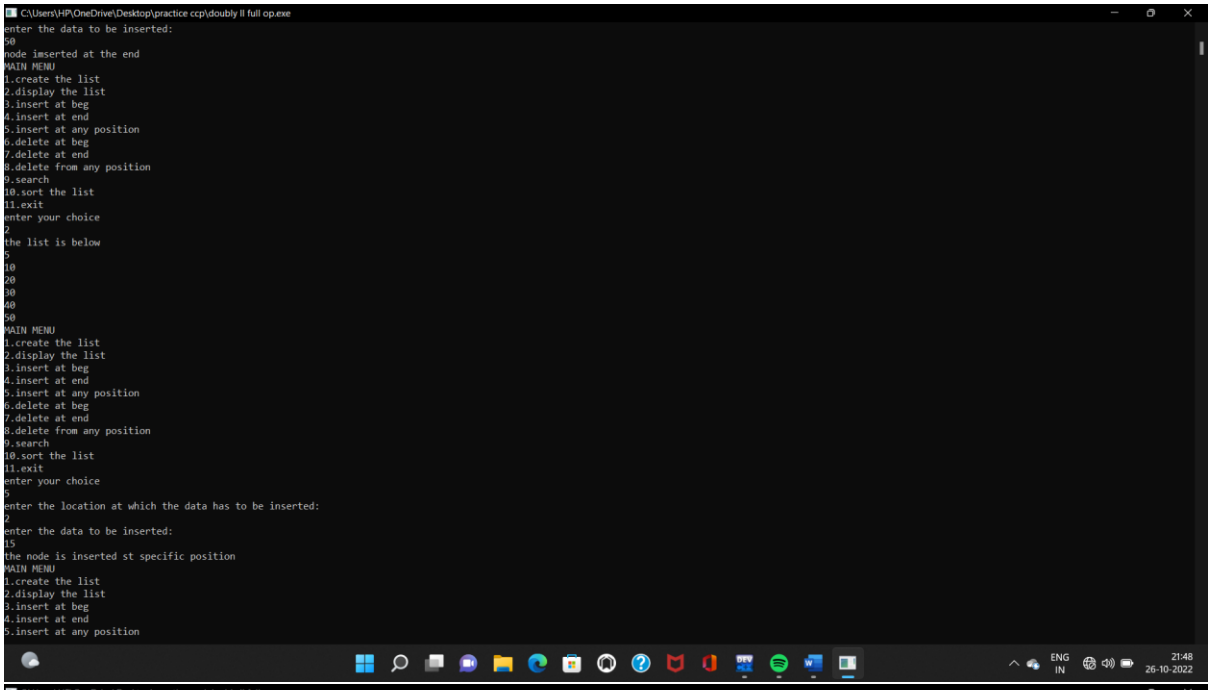
```
                printf("node deleted from end\n");
        }
        return header;
}
struct node*delete_any(struct node*header)
{
        struct node*ptr,*ptr1;
        int loc,i;
        if(header==NULL)   //list is empty
        {
                printf("deletion not possible\n");
        }
        else
        {
                printf("enter the location after which the node has to be deleted: \n");
                scanf("%d",&loc);
                ptr=header;
                for(i=0;i<=loc;i++)
                {
                        ptr1=ptr;
                        ptr=ptr->rlink;
                }
                ptr1->rlink=ptr->rlink;
                ptr->rlink->llink=ptr1;
                free(ptr);
                printf("the node is deleted from the specific position\n");
        }
        return header;
}
void search()
{
```

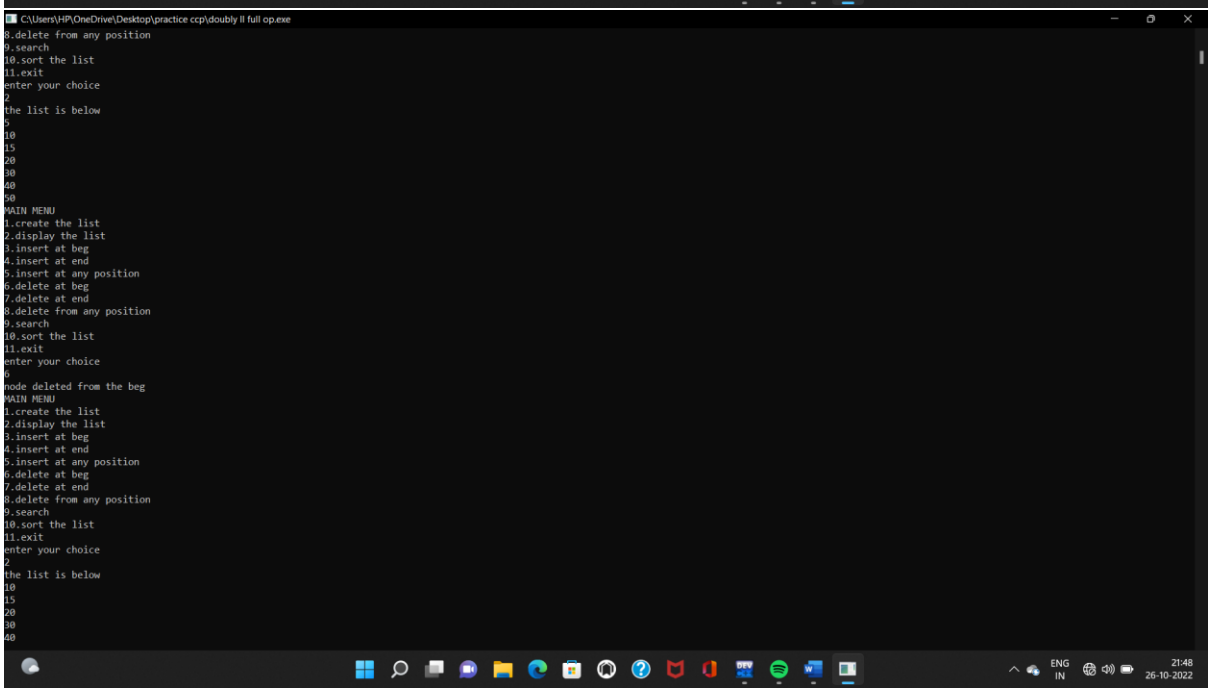
```
struct node*ptr;
int item,flag=0,loc,i=0;
if(header==NULL)
{
	printf("list is empty\n");
}
else
{
	printf("enter the data to be searched: \n");
	scanf("%d",&item);
	ptr=header;
	while(ptr!=NULL)
	{
		if(ptr->data==item)
		{
			flag=1;
			loc=i+1;
			break;
		}
		else
		{
			flag=0;
		}
		++i;
		ptr=ptr->rlink;
	}
	if(flag==0)
	{
		printf("search item not found\n");
	}
	else
```

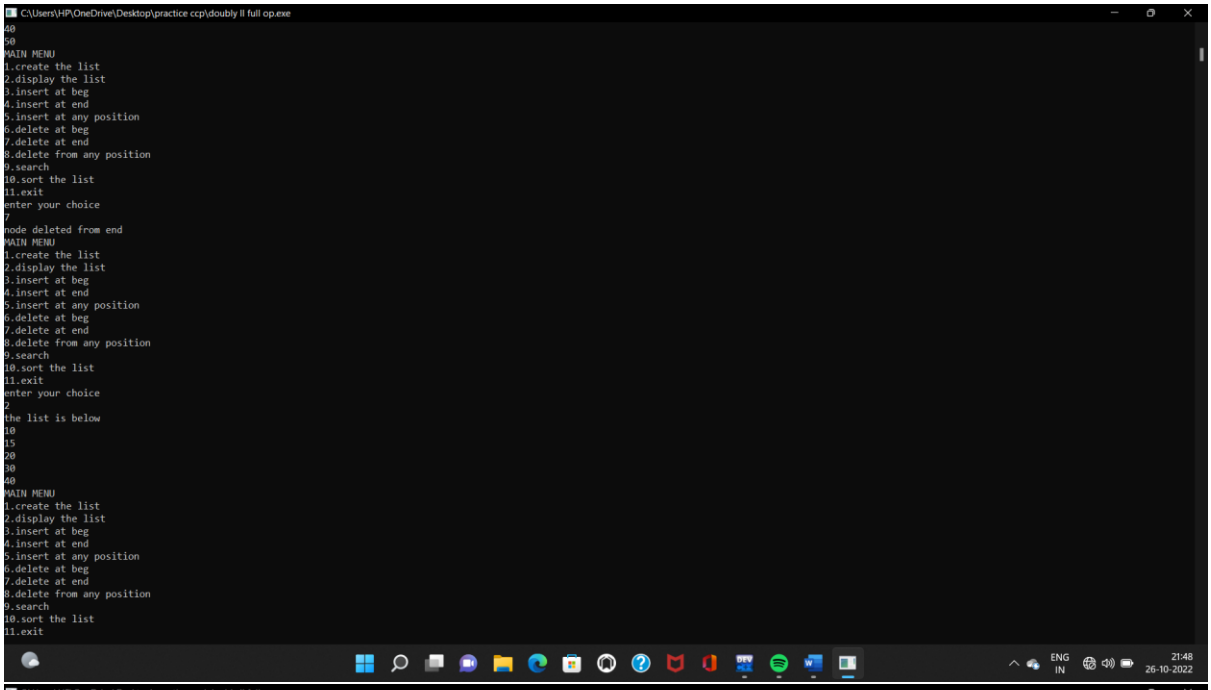
```
                {
                        printf("item found at location:%d\n",loc);
                }
        }
}
struct node*sort_list(struct node*header)
{
        struct node*ptr1,*ptr2;
        int temp;
        ptr1=header;
        while(ptr1->rlink!=NULL)
        {
                ptr2=ptr1->rlink;
                while(ptr2!=NULL)
                {
                        if(ptr1->data>ptr2->data)
                        {
                                temp=ptr1->data;
                                ptr1->data=ptr2->data;
                                ptr2->data=temp;
                        }
                        ptr2=ptr2->rlink;
                }
                ptr1=ptr1->rlink;
        }
        printf("the lost is sorted\n");
        return header;
}
```

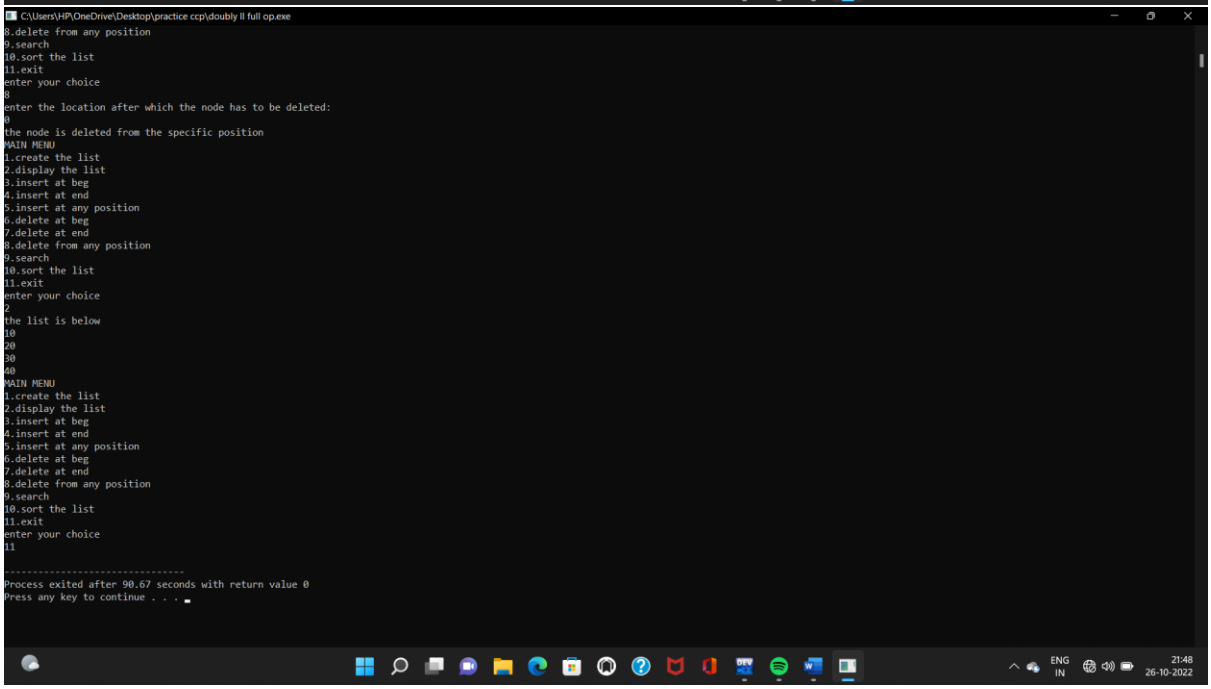

C:\Users\HP\OneDrive\Desktop\practice ccp\doubly ll full op.exe
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
1
enter -1 to end
enter the data:
10
enter the data:
20
enter the data:
30
enter the data:
40
enter the data:
-1
list created
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
2
the list is below
10
20
30
40
MAIN MENU
1.create the list
2.display the list
3.insert at beg
ENG
IN
21:48
26-10-2022


C:\Users\HP\OneDrive\Desktop\practice ccp\doubly ll full op.exe
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
3
enter the data to be inserted:
5
node imserted at the beg
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
2
the list is below
5
10
20
30
40
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
4
enter the data to be inserted:
ENG
IN
21:48
26-10-2022


C:\Users\HP\OneDrive\Desktop\practice ccp\doubly ll full op.exe
enter the data to be inserted:
50
node imserted at the end
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
2
the list is below
5
10
20
30
40
50
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
5
enter the location at which the data has to be inserted:
2
enter the data to be inserted:
15
the node is inserted st specific position
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
ENG
IN
21:48
26-10-2022


C:\Users\HP\OneDrive\Desktop\practice ccp\doubly ll full op.exe
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
2
the list is below
5
10
15
20
30
40
50
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
6
node deleted from the beg
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
2
the list is below
10
15
20
30
40
ENG
IN
21:48
26-10-2022


C:\Users\HP\OneDrive\Desktop\practice ccp\doubly ll full op.exe
40
50
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
7
node deleted from end
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
2
the list is below
10
15
20
30
40
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
ENG
IN
21:48
26-10-2022


C:\Users\HP\OneDrive\Desktop\practice ccp\doubly ll full op.exe
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
8
enter the location after which the node has to be deleted:
0
the node is deleted from the specific position
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
2
the list is below
10
20
30
40
MAIN MENU
1.create the list
2.display the list
3.insert at beg
4.insert at end
5.insert at any position
6.delete at beg
7.delete at end
8.delete from any position
9.search
10.sort the list
11.exit
enter your choice
11

Process exited after 90.67 seconds with return value 0
Press any key to continue . . .
ENG
IN
21:48
26-10-2022