/*circular ll full op*/

```
#include<stdio.h>

#include<stdlib.h>

struct node{

            int data;

            struct node*link;

};

struct node*header;

struct node*create_cll(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
list\n2.display\n3.insert_beg\n4.insert_end\n5.insert_any\n6.delete_beg\n7.delete_end\n8.delete_
any\n9.search\n10.sort_list\n11.exit\n");

   printf("enter your choice: \n");

   scanf("%d",&ch);

   switch(ch){

            case 1:header=create_cll(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_cll(struct node*header){
            int item;
            struct node*new_node,*ptr;
            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){
                        new_node->link=new_node;
                        header=new_node;
                }
                else{
                        ptr=header;
                        while(ptr->link!=header){
                                ptr=ptr->link;
                        }
                        new_node->link=header;
                        ptr->link=new_node;
                }
                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->link!=header){
                printf("%d\n",ptr->data);
                ptr=ptr->link;
        }
        printf("%d\n",ptr->data);
        return header;
}
struct node*insert_beg(struct node*header){
```

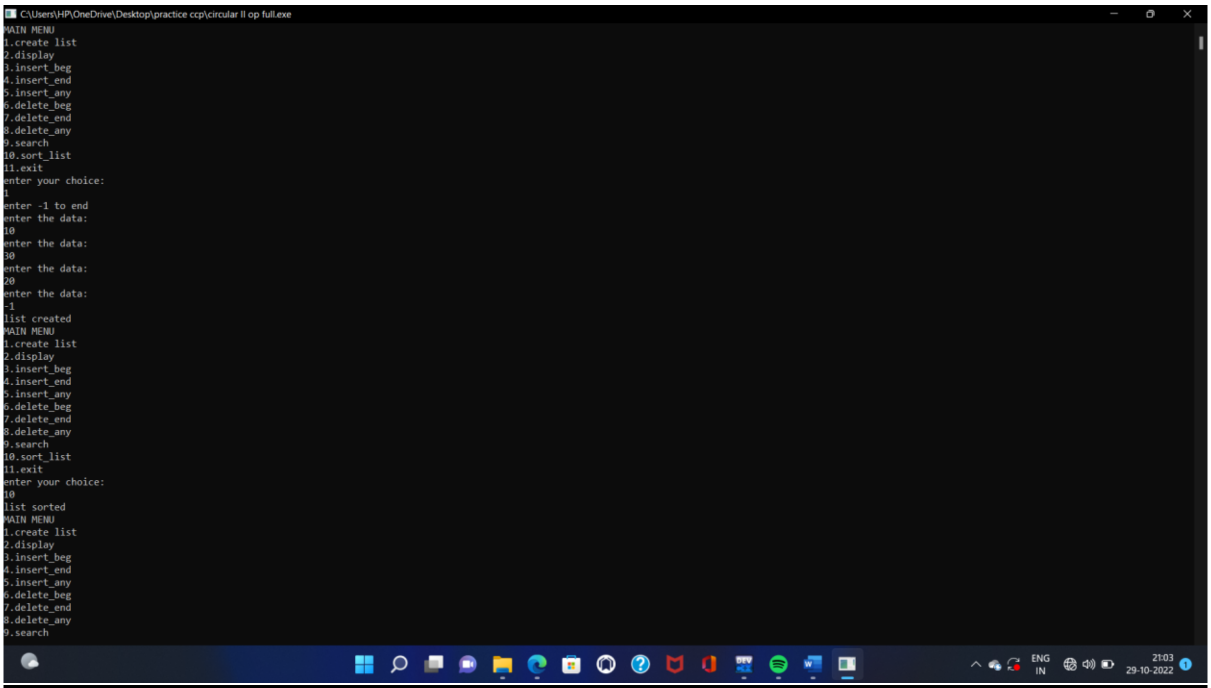
```
            struct node*new_node,*ptr;
            int item;
            if(header==NULL){
                        printf("overflow,insertion not possible\n");
            }
            else{
                        printf("enter the data to be inserted: \n");
        scanf("%d",&item);
        new_node=(struct node*)malloc(sizeof(struct node*));
        new_node->data=item;
                        ptr=header;
                        while(ptr->link!=header){
                                    ptr=ptr->link;
                        }
                        new_node->link=header;
                        ptr->link=new_node;
                        header=new_node;
            }
            printf("node inserted\n");
            return header;
}
struct node*insert_end(struct node*header){
            struct node*ptr,*new_node;
            int item;
            if(header==NULL){
                        printf("overflow,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->link!=header){
                            ptr=ptr->link;
                    }
                    new_node->link=header;
                    ptr->link=new_node;
            }
            printf("node inserted\n");
            return header;
    }
    struct node*insert_any(struct node*header){
            struct node*new_node,*ptr;
            int item,loc,i;
            if(header==NULL){
                    printf("overflow,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->link;
                    }
                    new_node->link=ptr->link;
                    ptr->link=new_node;
            }
```

```
              printf("node inserted at specific position\n");
return header;
}
struct node*delete_beg(struct node*header){
              struct node*ptr;
              if(header==NULL)
{
printf("deletion not possible\n");
}
 else{
              ptr=header;
              while(ptr->link!=header){
                            ptr=ptr->link;
               }
               ptr->link=header->link;
               free(header);
               header=ptr->link;
 }
 printf("node is deleted from the begining\n");
 return header;
}
struct node*delete_end(struct node*header){
              struct node*ptr,*ptr1;
              if(header==NULL)
{
printf("deletion not possible\n");
}
else{
              ptr=header;
              while(ptr->link!=header){
                            ptr1=ptr;
```

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

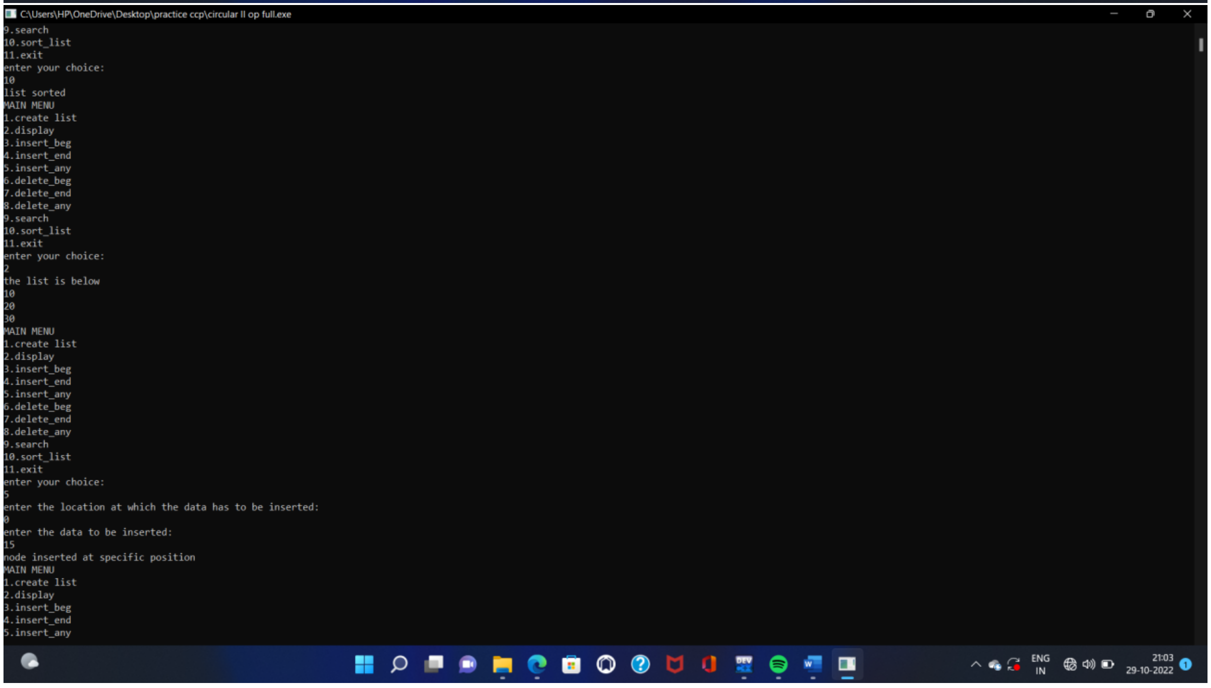
```
{
        struct node*ptr;
        int item,flag=0,loc,i=0;
        if(header==NULL)
        {
                printf("list is empty\n");
        }
        else
        {
                printf("enter the data to be searched: \n");
                scanf("%d",&item);
                ptr=header;
                while(ptr!=NULL)
                {
                        if(ptr->data==item)
                        {
                                flag=1;
                                loc=i+1;
                                break;
                        }
                        else
                        {
                                flag=0;
                        }
                        ++i;
                        ptr=ptr->link;
                }
                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->link!=header)
{
ptr2=ptr1->link;
while(ptr2!=header) //there are atleast 2 nodes in the list
{
if(ptr1->data>ptr2->data)
{
temp=ptr1->data;
ptr1->data=ptr2->data;
ptr2->data=temp;
}
ptr2=ptr2->link;
}
ptr1=ptr1->link;
}
printf("list sorted\n");
return header;
}
```



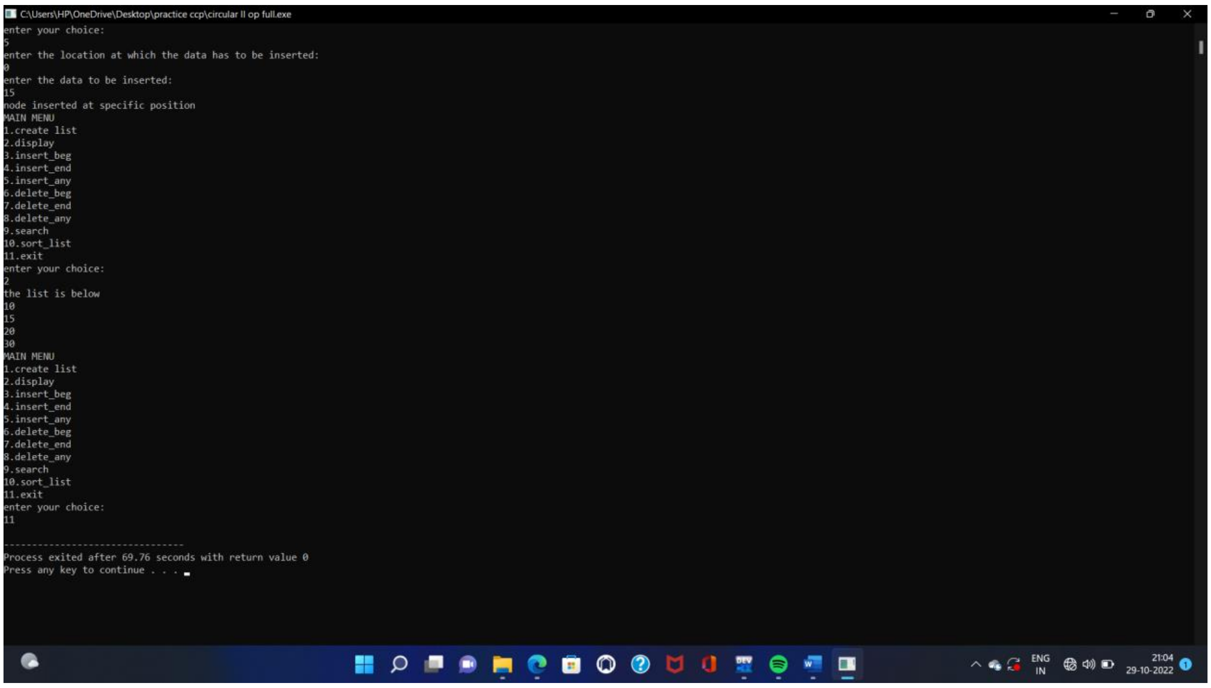
C:\Users\HP\OneDrive\Desktop\practice ccp\circular ll op full.exe

```
MAIN MENU
1.create list
2.display
3.insert_beg
4.insert_end
5.insert_any
6.delete_beg
7.delete_end
8.delete_any
9.search
10.sort_list
11.exit
enter your choice:
1
enter -1 to end
enter the data:
10
enter the data:
30
enter the data:
20
enter the data:
-1
list created
MAIN MENU
1.create list
2.display
3.insert_beg
4.insert_end
5.insert_any
6.delete_beg
7.delete_end
8.delete_any
9.search
10.sort_list
11.exit
enter your choice:
10
list sorted
MAIN MENU
1.create list
2.display
3.insert_beg
4.insert_end
5.insert_any
6.delete_beg
7.delete_end
8.delete_any
9.search
```



C:\Users\HP\OneDrive\Desktop\practice ccp\circular ll op full.exe

```
9.search
10.sort_list
11.exit
enter your choice:
10
list sorted
MAIN MENU
1.create list
2.display
3.insert_beg
4.insert_end
5.insert_any
6.delete_beg
7.delete_end
8.delete_any
9.search
10.sort_list
11.exit
enter your choice:
2
the list is below
10
20
30
MAIN MENU
1.create list
2.display
3.insert_beg
4.insert_end
5.insert_any
6.delete_beg
7.delete_end
8.delete_any
9.search
10.sort_list
11.exit
enter your choice:
5
enter the location at which the data has to be inserted:
0
enter the data to be inserted:
15
node inserted at specific position
MAIN MENU
1.create list
2.display
3.insert_beg
4.insert_end
5.insert_any
```


C:\Users\HP\OneDrive\Desktop\practice ccp\circular ll op full.exe

```
enter your choice:
5
enter the location at which the data has to be inserted:
0
enter the data to be inserted:
15
node inserted at specific position
MAIN MENU
1.create list
2.display
3.insert_beg
4.insert_end
5.insert_any
6.delete_beg
7.delete_end
8.delete_any
9.search
10.sort_list
11.exit
enter your choice:
2
the list is below
10
15
20
30
MAIN MENU
1.create list
2.display
3.insert_beg
4.insert_end
5.insert_any
6.delete_beg
7.delete_end
8.delete_any
9.search
10.sort_list
11.exit
enter your choice:
11

--------------------------------
Process exited after 69.76 seconds with return value 0
Press any key to continue . . .
```