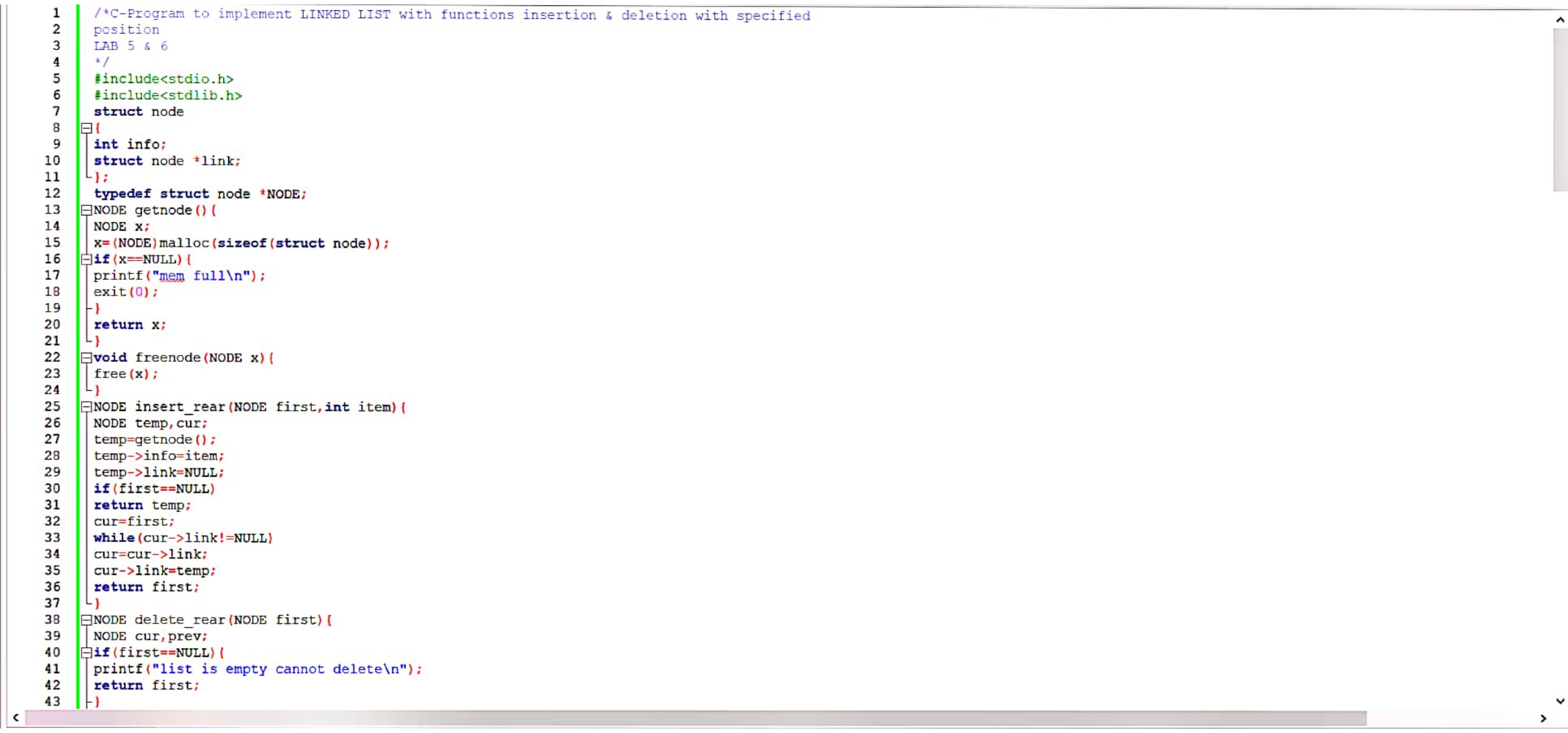

```c
/*C-Program to implement LINKED LIST with functions insertion & deletion with specified
position
LAB 5 & 6
*/
#include<stdio.h>
#include<stdlib.h>
struct node
{
int info;
struct node *link;
};
typedef struct node *NODE;
NODE getnode(){
NODE x;
x=(NODE)malloc(sizeof(struct node));
if(x==NULL){
printf("mem full\n");
exit(0);
}
return x;
}
void freenode(NODE x){
free(x);
}
NODE insert_rear(NODE first,int item){
NODE temp,cur;
temp=getnode();
temp->info=item;
temp->link=NULL;
if(first==NULL)
return temp;
cur=first;
while(cur->link!=NULL)
cur=cur->link;
cur->link=temp;
return first;
}
NODE delete_rear(NODE first){
NODE cur,prev;
if(first==NULL){
printf("list is empty cannot delete\n");
return first;
}
```

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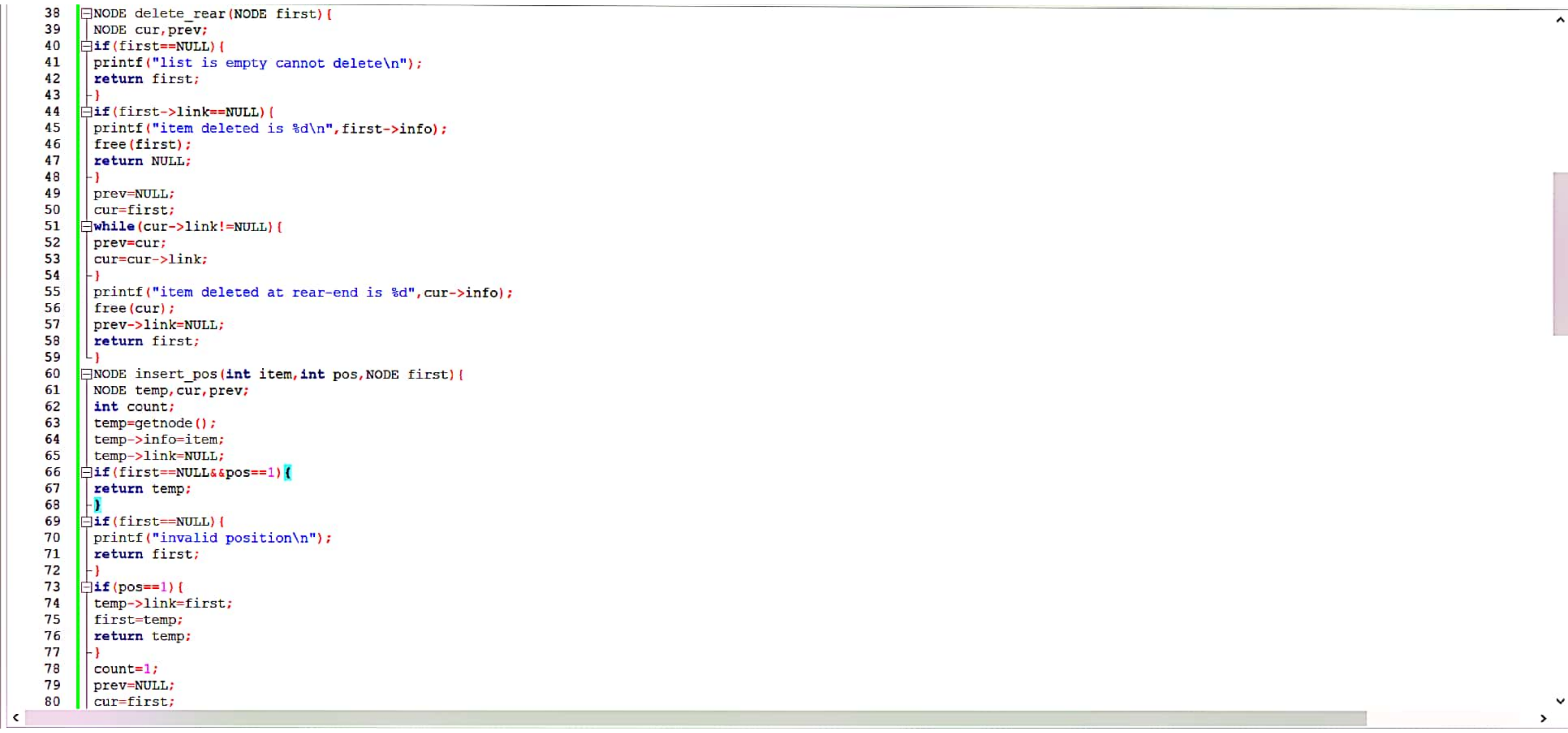

```
NODE delete_rear(NODE first){
NODE cur,prev;
if(first==NULL){
printf("list is empty cannot delete\n");
return first;
}
if(first->link==NULL){
printf("item deleted is %d\n",first->info);
free(first);
return NULL;
}
prev=NULL;
cur=first;
while(cur->link!=NULL){
prev=cur;
cur=cur->link;
}
printf("item deleted at rear-end is %d",cur->info);
free(cur);
prev->link=NULL;
return first;
}
NODE insert_pos(int item,int pos,NODE first){
NODE temp,cur,prev;
int count;
temp=getnode();
temp->info=item;
temp->link=NULL;
if(first==NULL&&pos==1){
return temp;
}
if(first==NULL){
printf("invalid position\n");
return first;
}
if(pos==1){
temp->link=first;
first=temp;
return temp;
}
count=1;
prev=NULL;
cur=first;
```

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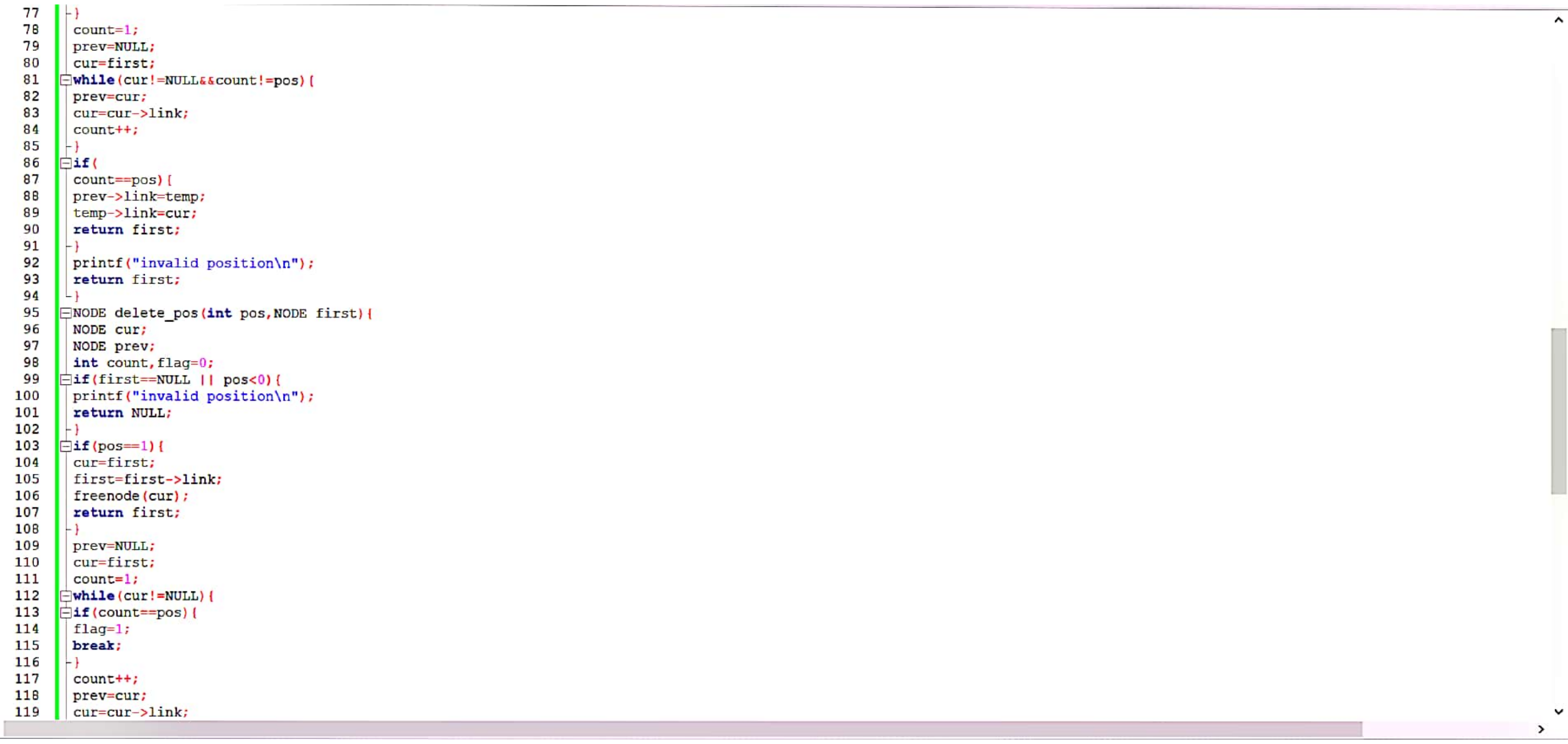

```
}
count=1;
prev=NULL;
cur=first;
while(cur!=NULL&&count!=pos){
prev=cur;
cur=cur->link;
count++;
}
if(
count==pos){
prev->link=temp;
temp->link=cur;
return first;
}
printf("invalid position\n");
return first;
}
NODE delete_pos(int pos,NODE first){
NODE cur;
NODE prev;
int count,flag=0;
if(first==NULL || pos<0){
printf("invalid position\n");
return NULL;
}
if(pos==1){
cur=first;
first=first->link;
freenode(cur);
return first;
}
prev=NULL;
cur=first;
count=1;
while(cur!=NULL){
if(count==pos){
flag=1;
break;
}
count++;
prev=cur;
cur=cur->link;
```

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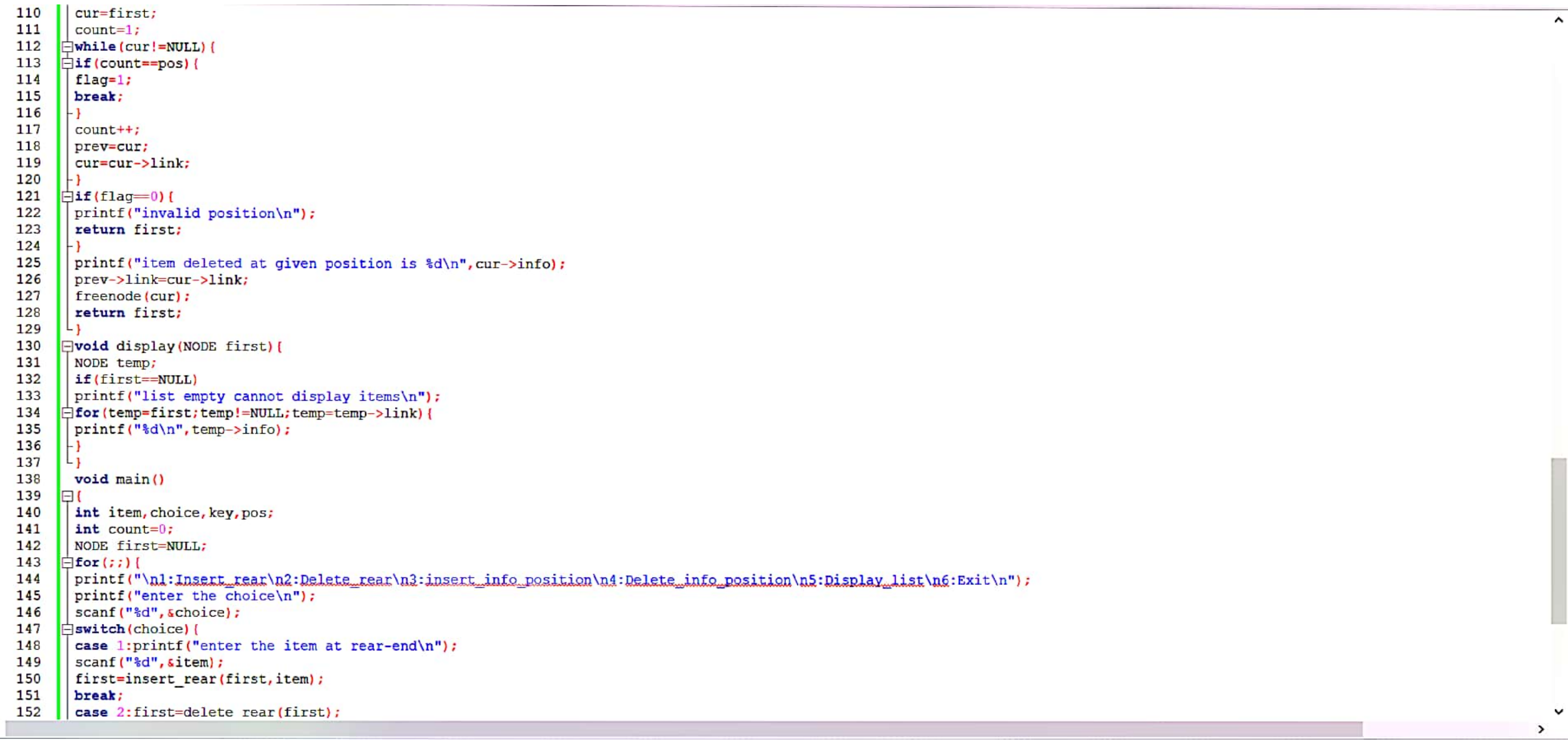

```
cur=first;
count=1;
while(cur!=NULL){
if(count==pos){
flag=1;
break;
}
count++;
prev=cur;
cur=cur->link;
}
if(flag==0){
printf("invalid position\n");
return first;
}
printf("item deleted at given position is %d\n",cur->info);
prev->link=cur->link;
freenode(cur);
return first;
}
void display(NODE first){
NODE temp;
if(first==NULL)
printf("list empty cannot display items\n");
for(temp=first;temp!=NULL;temp=temp->link){
printf("%d\n",temp->info);
}
}
void main()
{
int item,choice,key,pos;
int count=0;
NODE first=NULL;
for(;;){
printf("\n1:Insert_rear\n2:Delete_rear\n3:insert_info_position\n4:Delete_info_position\n5:Display_list\n6:Exit\n");
printf("enter the choice\n");
scanf("%d",&choice);
switch(choice){
case 1:printf("enter the item at rear-end\n");
scanf("%d",&item);
first=insert_rear(first,item);
break;
case 2:first=delete_rear(first);
```

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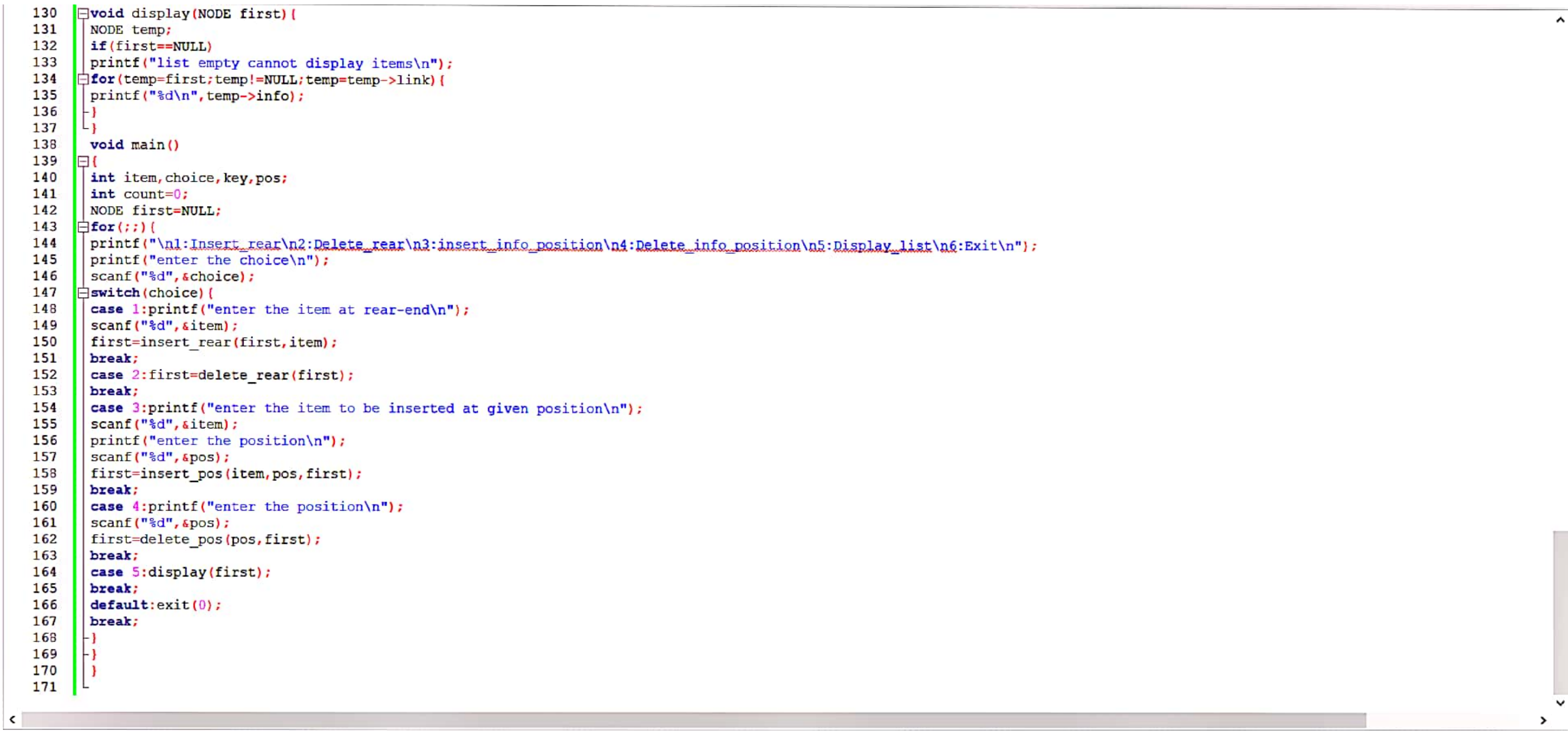

```c
void display(NODE first){
NODE temp;
if(first==NULL)
printf("list empty cannot display items\n");
for(temp=first;temp!=NULL;temp=temp->link){
printf("%d\n",temp->info);
}
}
void main()
{
int item,choice,key,pos;
int count=0;
NODE first=NULL;
for(;;){
printf("\n1:Insert_rear\n2:Delete_rear\n3:insert_info_position\n4:Delete_info_position\n5:Display_list\n6:Exit\n");
printf("enter the choice\n");
scanf("%d",&choice);
switch(choice){
case 1:printf("enter the item at rear-end\n");
scanf("%d",&item);
first=insert_rear(first,item);
break;
case 2:first=delete_rear(first);
break;
case 3:printf("enter the item to be inserted at given position\n");
scanf("%d",&item);
printf("enter the position\n");
scanf("%d",&pos);
first=insert_pos(item,pos,first);
break;
case 4:printf("enter the position\n");
scanf("%d",&pos);
first=delete_pos(pos,first);
break;
case 5:display(first);
break;
default:exit(0);
break;
}
}
}
```

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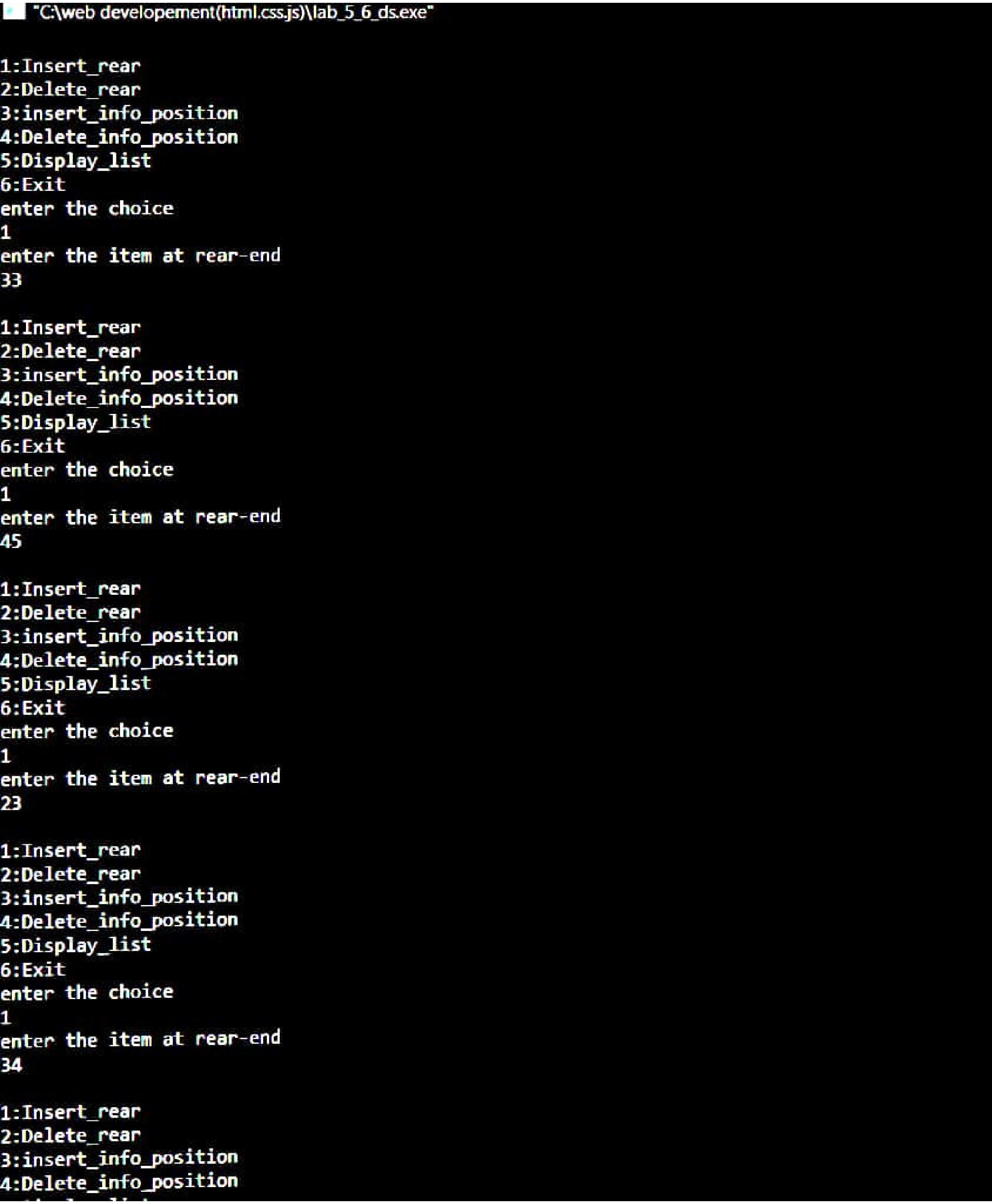

```
"C:\web developement(html.css.js)\lab_5_6_ds.exe"

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
1
enter the item at rear-end
33

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
1
enter the item at rear-end
45

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
1
enter the item at rear-end
23

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
1
enter the item at rear-end
34

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
```

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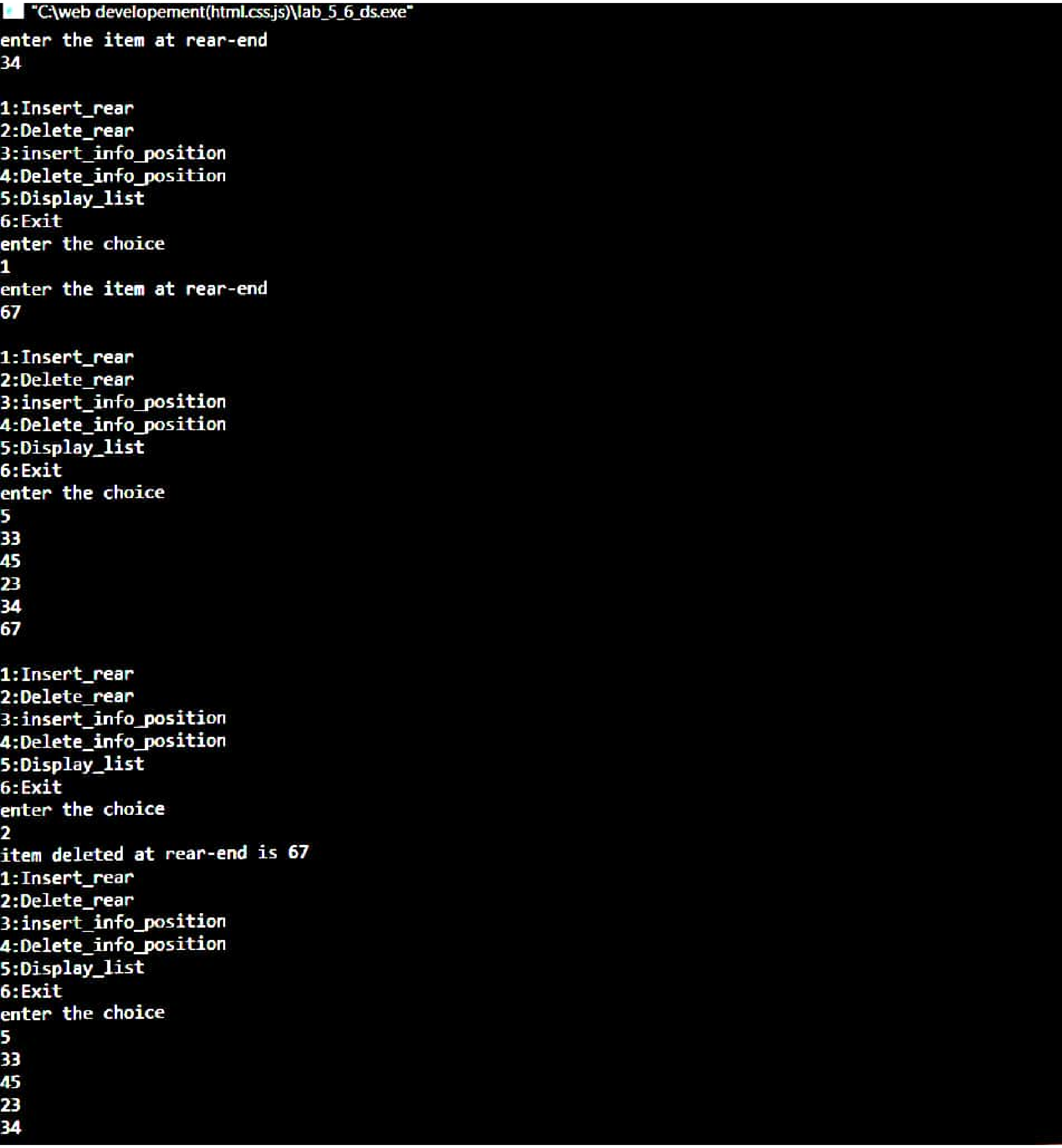


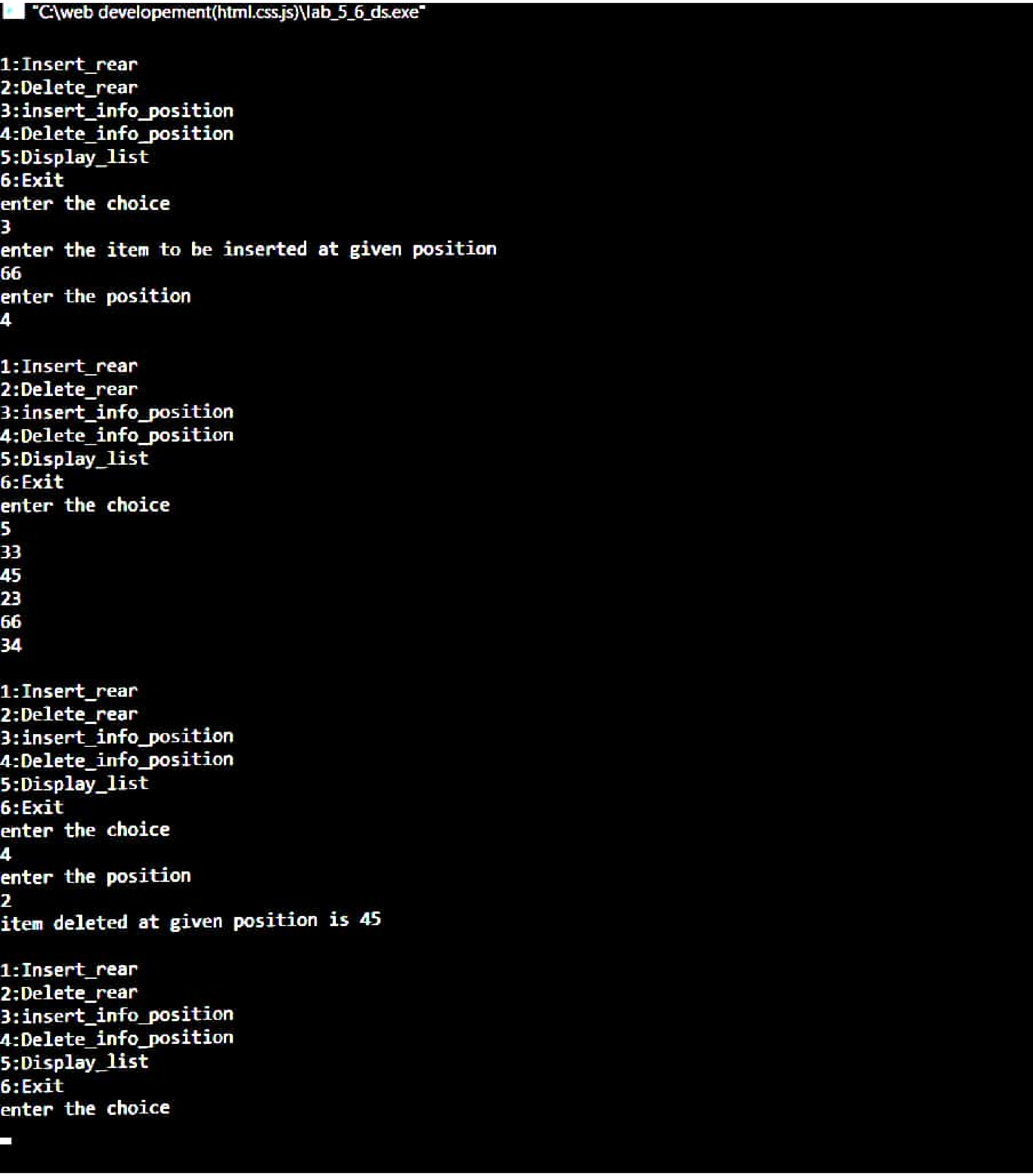
```
"C:\web developement(html.css.js)\lab_5_6_ds.exe"
enter the item at rear-end
34

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
1
enter the item at rear-end
67

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
5
33
45
23
34
67

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
2
item deleted at rear-end is 67
1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
5
33
45
23
34
```

Scanned with CamScanner



```
"C:\web developement(html.css.js)\lab_5_6_ds.exe"

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
3
enter the item to be inserted at given position
66
enter the position
4

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
5
33
45
23
66
34

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
4
enter the position
2
item deleted at given position is 45

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
```

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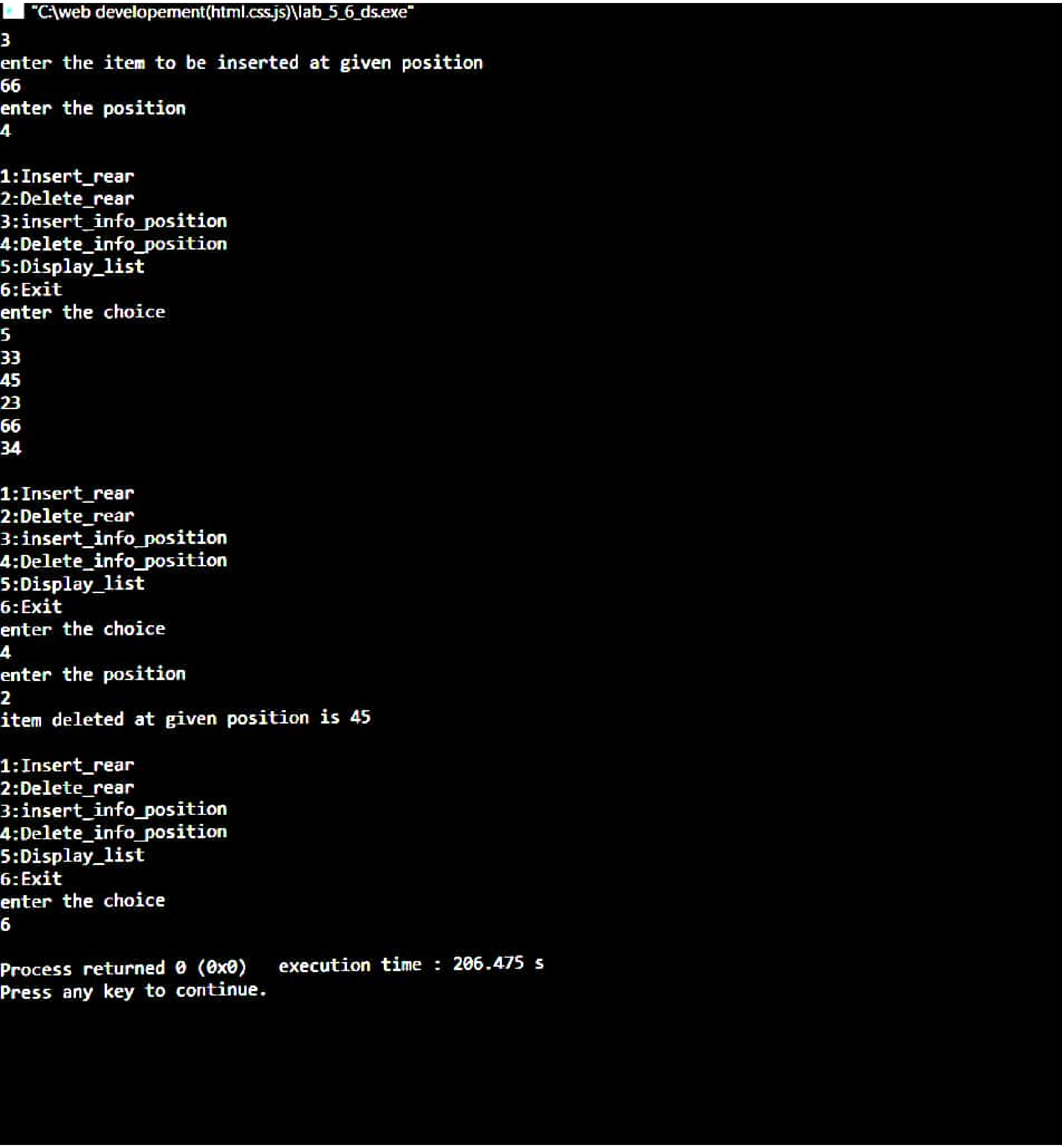

```
3
enter the item to be inserted at given position
66
enter the position
4

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
5
33
45
23
66
34

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
4
enter the position
2
item deleted at given position is 45

1:Insert_rear
2:Delete_rear
3:insert_info_position
4:Delete_info_position
5:Display_list
6:Exit
enter the choice
6

Process returned 0 (0x0)   execution time : 206.475 s
Press any key to continue.
```

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