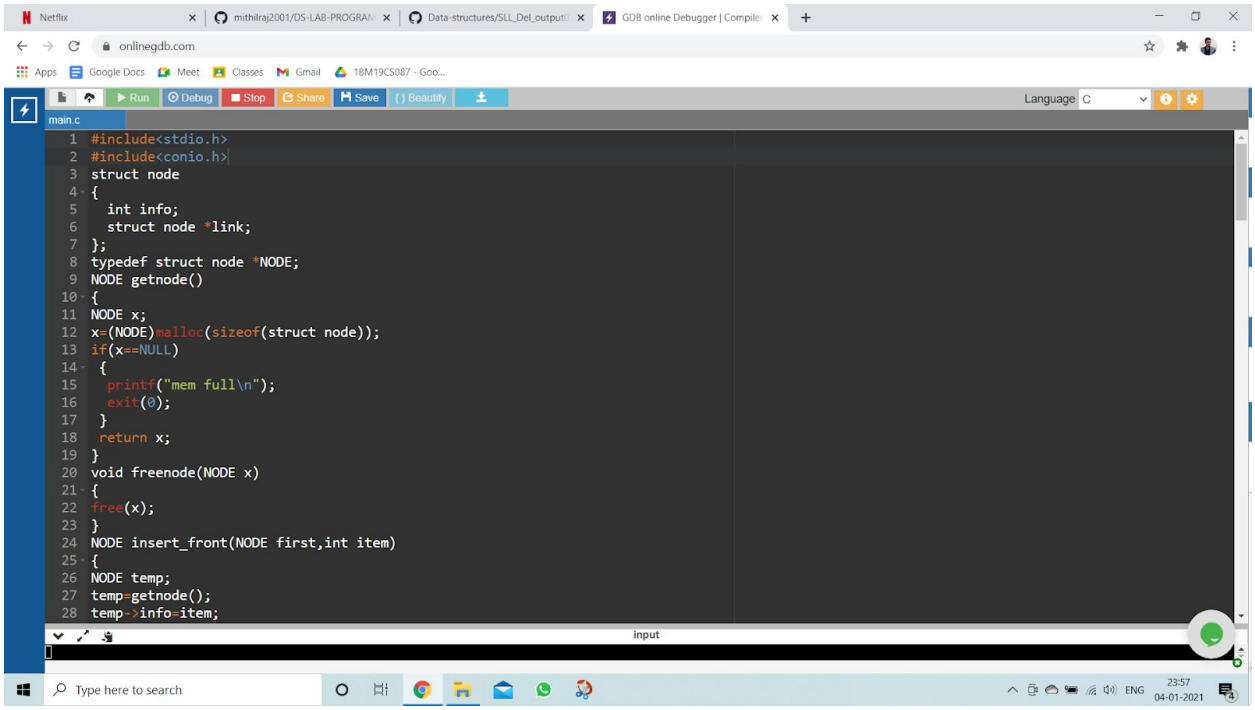
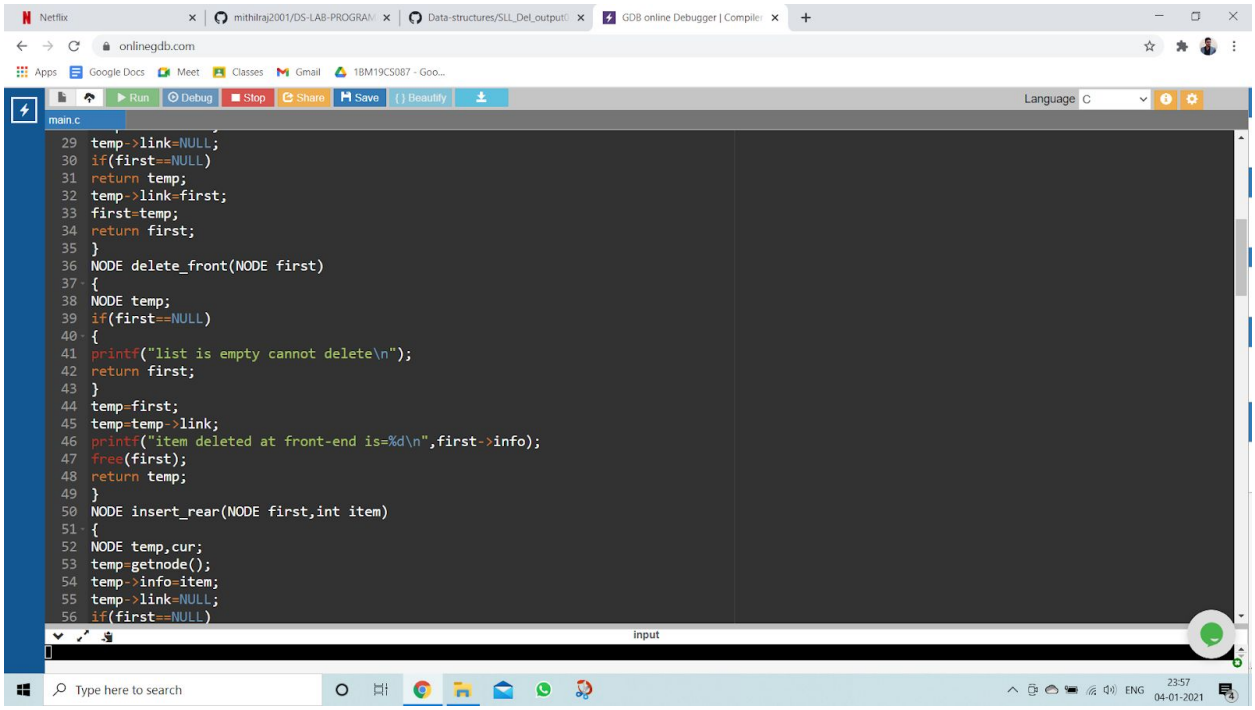
DS LAB PROGRAM 6

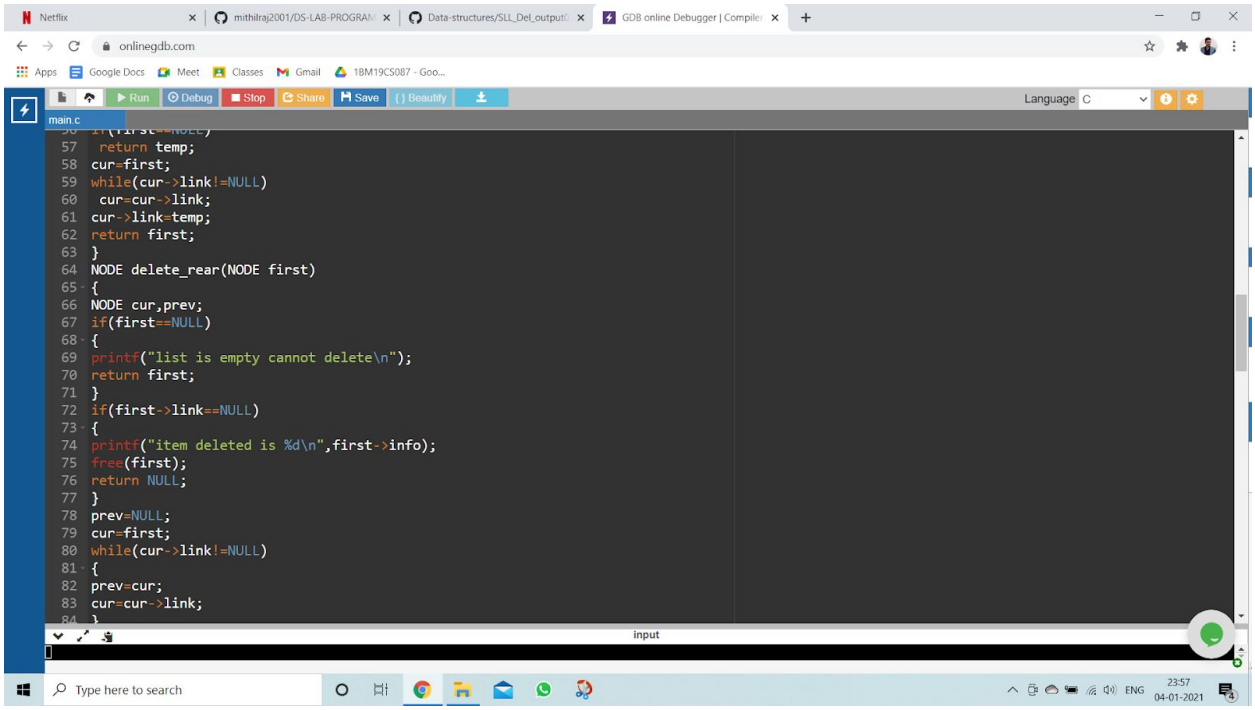
EXECUTION:-



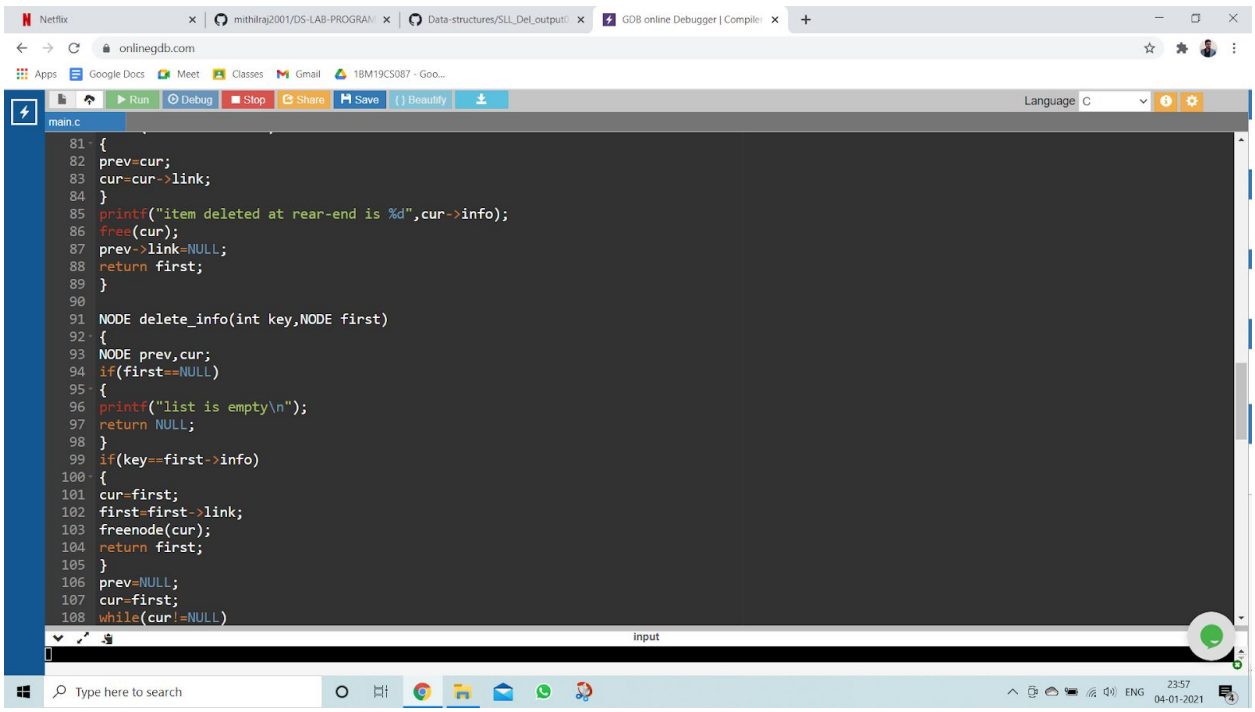
```c
#include<stdio.h>
#include<conio.h>
struct node
{
  int info;
  struct node *link;
};
typedef struct node *NODE;
NODE getnode()
{
NODE x;
x=(NODE)malloc(sizeof(struct node));
if(x==NULL)
 {
  printf("mem full\n");
  exit(0);
 }
 return x;
}
void freenode(NODE x)
{
free(x);
}
NODE insert_front(NODE first,int item)
{
NODE temp;
temp=getnode();
temp->info=item;
```



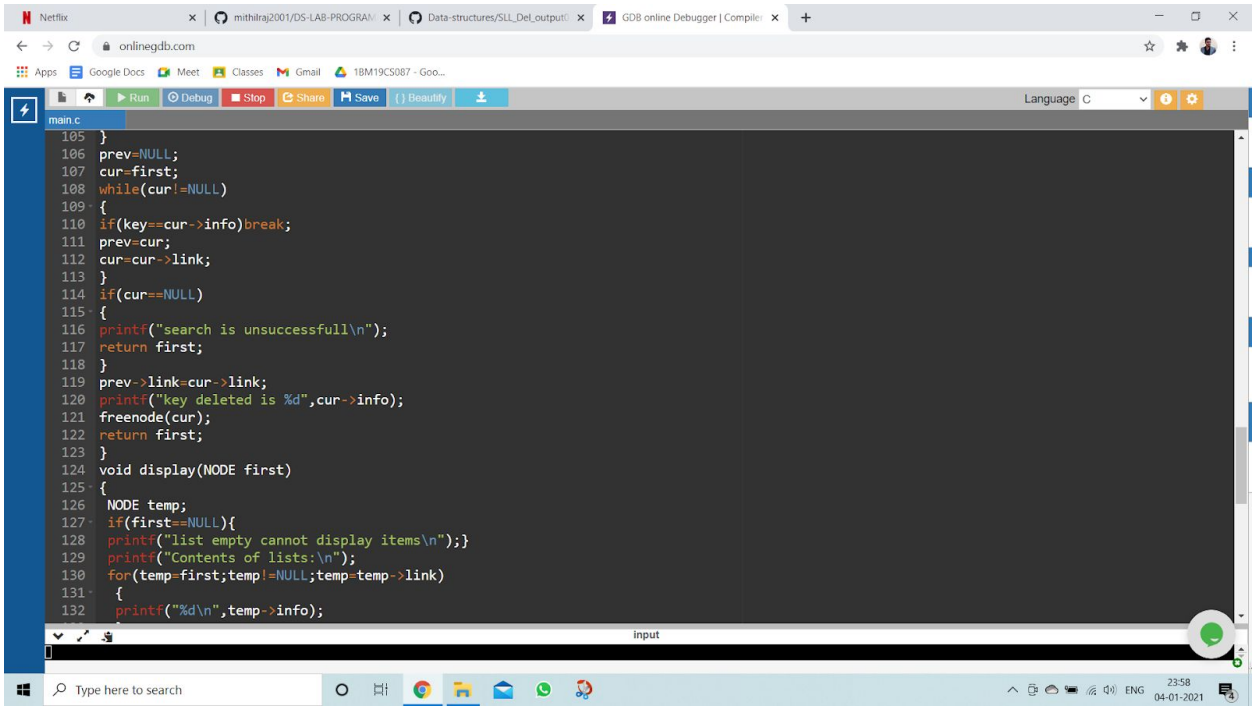
```c
temp->link=NULL;
if(first==NULL)
return temp;
temp->link=first;
first=temp;
return first;
}
NODE delete_front(NODE first)
{
NODE temp;
if(first==NULL)
{
printf("list is empty cannot delete\n");
return first;
}
temp=first;
temp=temp->link;
printf("item deleted at front-end is=%d\n",first->info);
free(first);
return temp;
}
NODE insert_rear(NODE first,int item)
{
NODE temp,cur;
temp=getnode();
temp->info=item;
temp->link=NULL;
if(first==NULL)
```



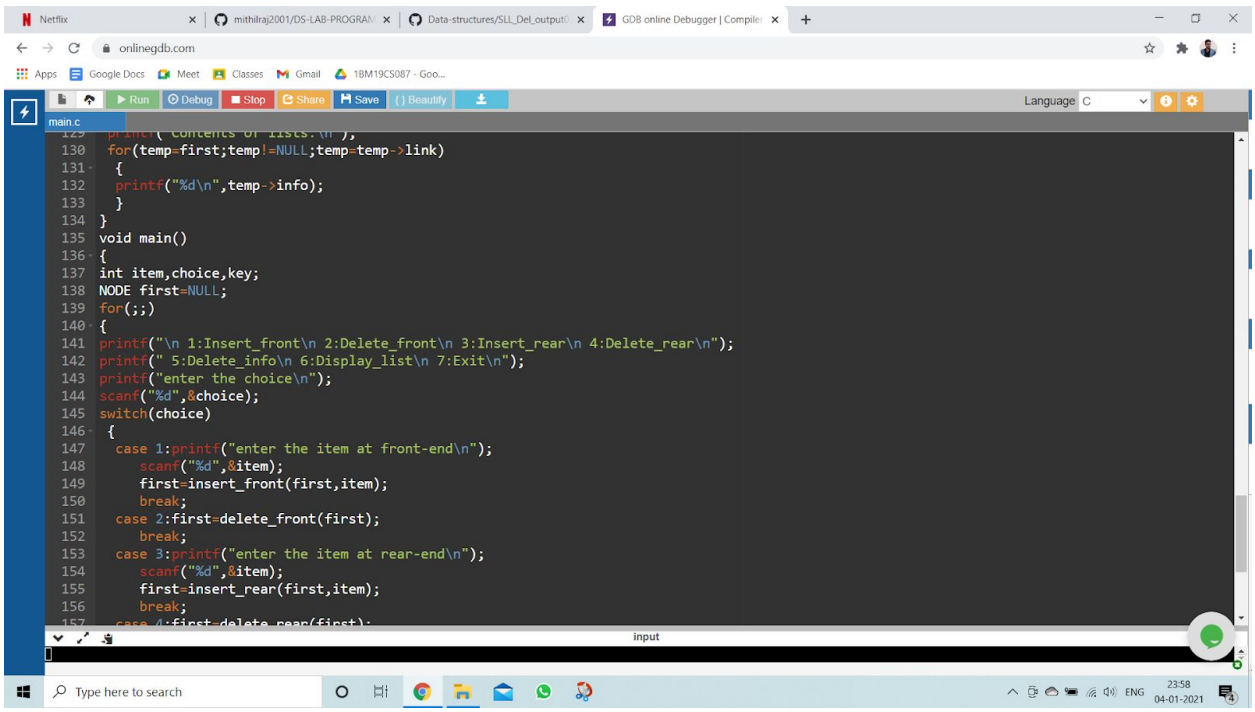
```
 return temp;
cur=first;
while(cur->link!=NULL)
 cur=cur->link;
cur->link=temp;
return first;
}
NODE delete_rear(NODE first)
{
NODE cur,prev;
if(first==NULL)
{
printf("list is empty cannot delete\n");
return first;
}
if(first->link==NULL)
{
printf("item deleted is %d\n",first->info);
free(first);
return NULL;
}
prev=NULL;
cur=first;
while(cur->link!=NULL)
{
prev=cur;
cur=cur->link;
}
```



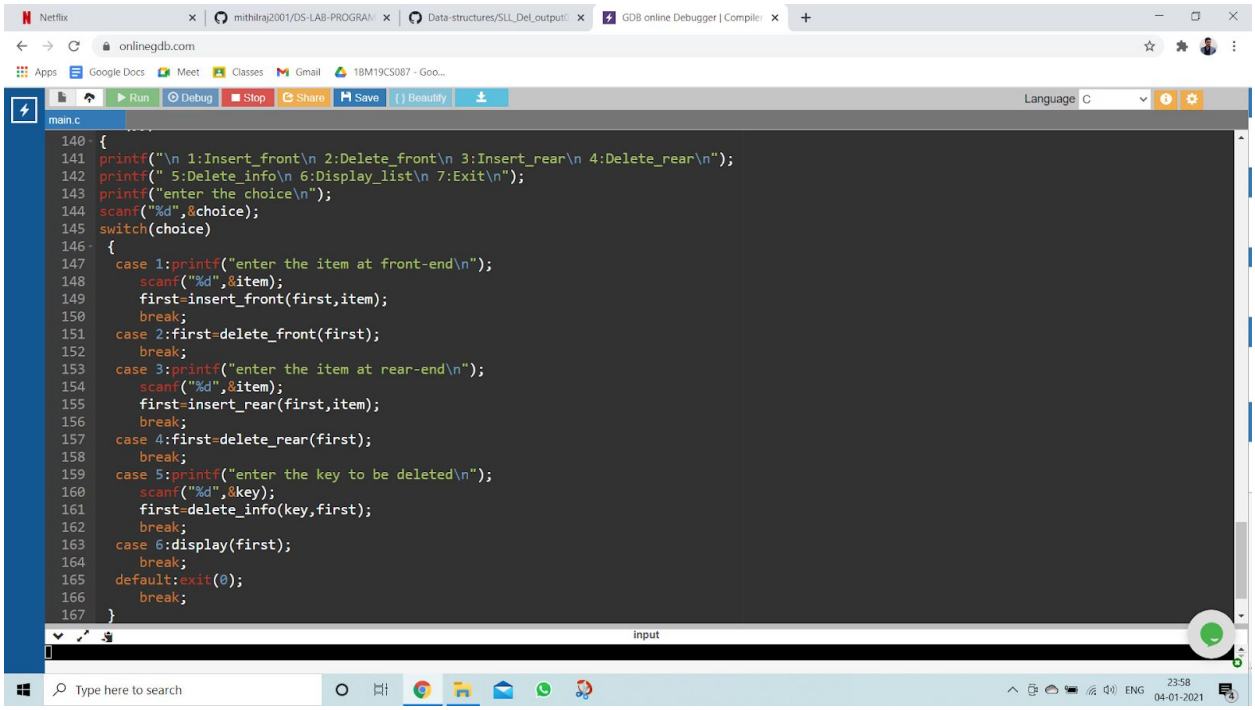
```
{
prev=cur;
cur=cur->link;
}
printf("item deleted at rear-end is %d",cur->info);
free(cur);
prev->link=NULL;
return first;
}

NODE delete_info(int key,NODE first)
{
NODE prev,cur;
if(first==NULL)
{
printf("list is empty\n");
return NULL;
}
if(key==first->info)
{
cur=first;
first=first->link;
freenode(cur);
return first;
}
prev=NULL;
cur=first;
while(cur!=NULL)
```



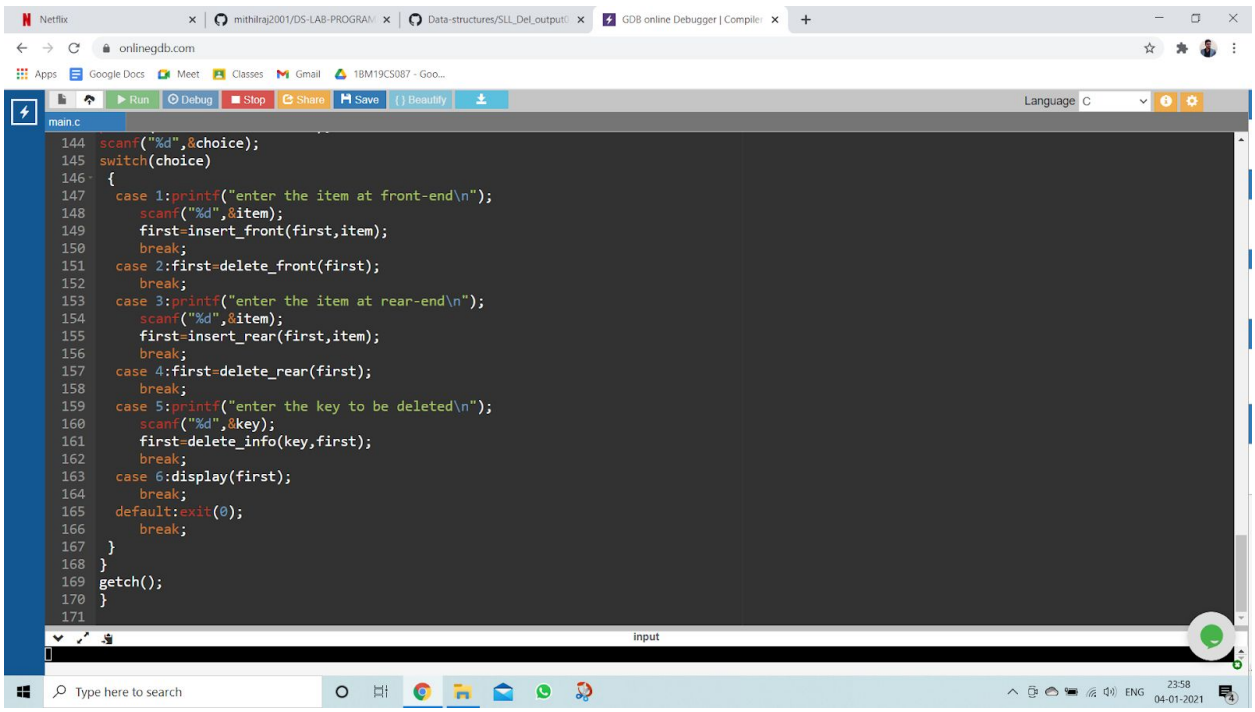
```
}
prev=NULL;
cur=first;
while(cur!=NULL)
{
if(key==cur->info)break;
prev=cur;
cur=cur->link;
}
if(cur==NULL)
{
printf("search is unsuccessfull\n");
return first;
}
prev->link=cur->link;
printf("key deleted is %d",cur->info);
freenode(cur);
return first;
}
void display(NODE first)
{
 NODE temp;
 if(first==NULL){
 printf("list empty cannot display items\n");}
 printf("Contents of lists:\n");
 for(temp=first;temp!=NULL;temp=temp->link)
  {
  printf("%d\n",temp->info);
```



```
 for(temp=first;temp!=NULL;temp=temp->link)
  {
  printf("%d\n",temp->info);
  }
}
void main()
{
int item,choice,key;
NODE first=NULL;
for(;;)
{
printf("\n 1:Insert_front\n 2:Delete_front\n 3:Insert_rear\n 4:Delete_rear\n");
printf(" 5:Delete_info\n 6:Display_list\n 7:Exit\n");
printf("enter the choice\n");
scanf("%d",&choice);
switch(choice)
 {
  case 1:printf("enter the item at front-end\n");
     scanf("%d",&item);
     first=insert_front(first,item);
     break;
  case 2:first=delete_front(first);
     break;
  case 3:printf("enter the item at rear-end\n");
     scanf("%d",&item);
     first=insert_rear(first,item);
     break;
```

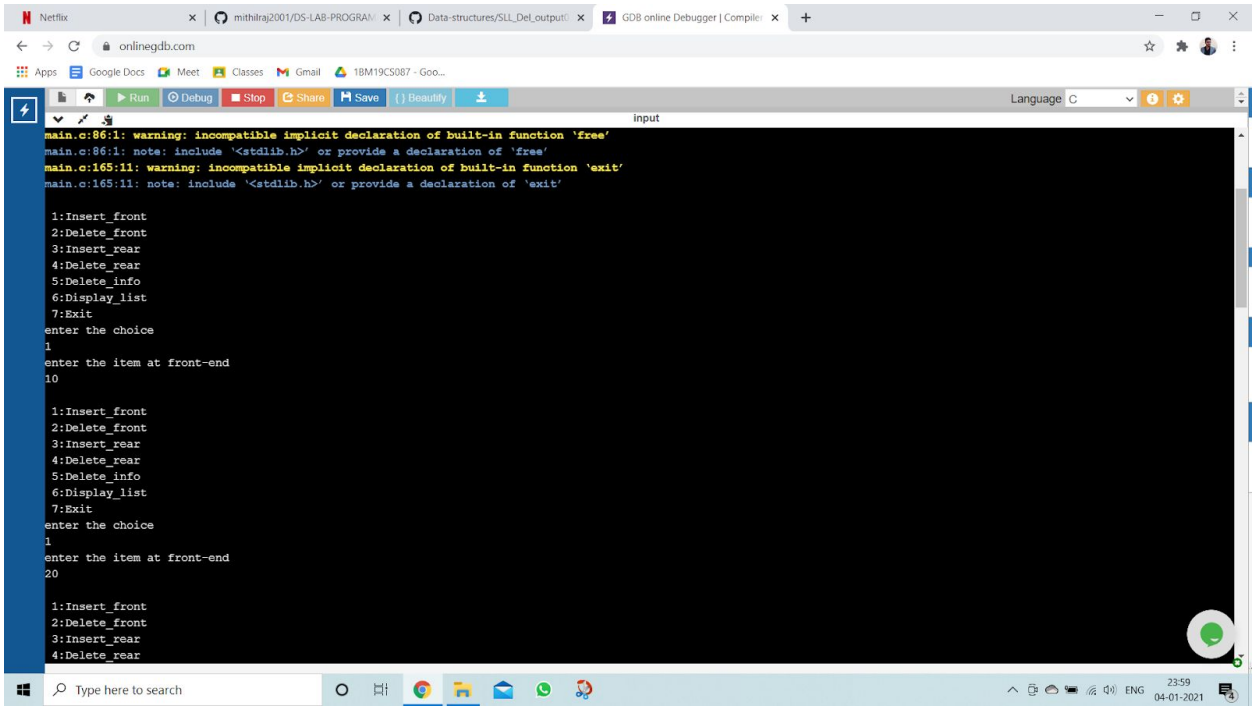


```
{
printf("\n 1:Insert_front\n 2:Delete_front\n 3:Insert_rear\n 4:Delete_rear\n");
printf(" 5:Delete_info\n 6:Display_list\n 7:Exit\n");
printf("enter the choice\n");
scanf("%d",&choice);
switch(choice)
 {
  case 1:printf("enter the item at front-end\n");
     scanf("%d",&item);
     first=insert_front(first,item);
     break;
  case 2:first=delete_front(first);
     break;
  case 3:printf("enter the item at rear-end\n");
     scanf("%d",&item);
     first=insert_rear(first,item);
     break;
  case 4:first=delete_rear(first);
     break;
  case 5:printf("enter the key to be deleted\n");
     scanf("%d",&key);
     first=delete_info(key,first);
     break;
  case 6:display(first);
     break;
  default:exit(0);
     break;
 }
```



```
scanf("%d",&choice);
switch(choice)
 {
  case 1:printf("enter the item at front-end\n");
     scanf("%d",&item);
     first=insert_front(first,item);
     break;
  case 2:first=delete_front(first);
     break;
  case 3:printf("enter the item at rear-end\n");
     scanf("%d",&item);
     first=insert_rear(first,item);
     break;
  case 4:first=delete_rear(first);
     break;
  case 5:printf("enter the key to be deleted\n");
     scanf("%d",&key);
     first=delete_info(key,first);
     break;
  case 6:display(first);
     break;
  default:exit(0);
     break;
 }
}
getch();
}
```

OUTPUT:-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Gmail
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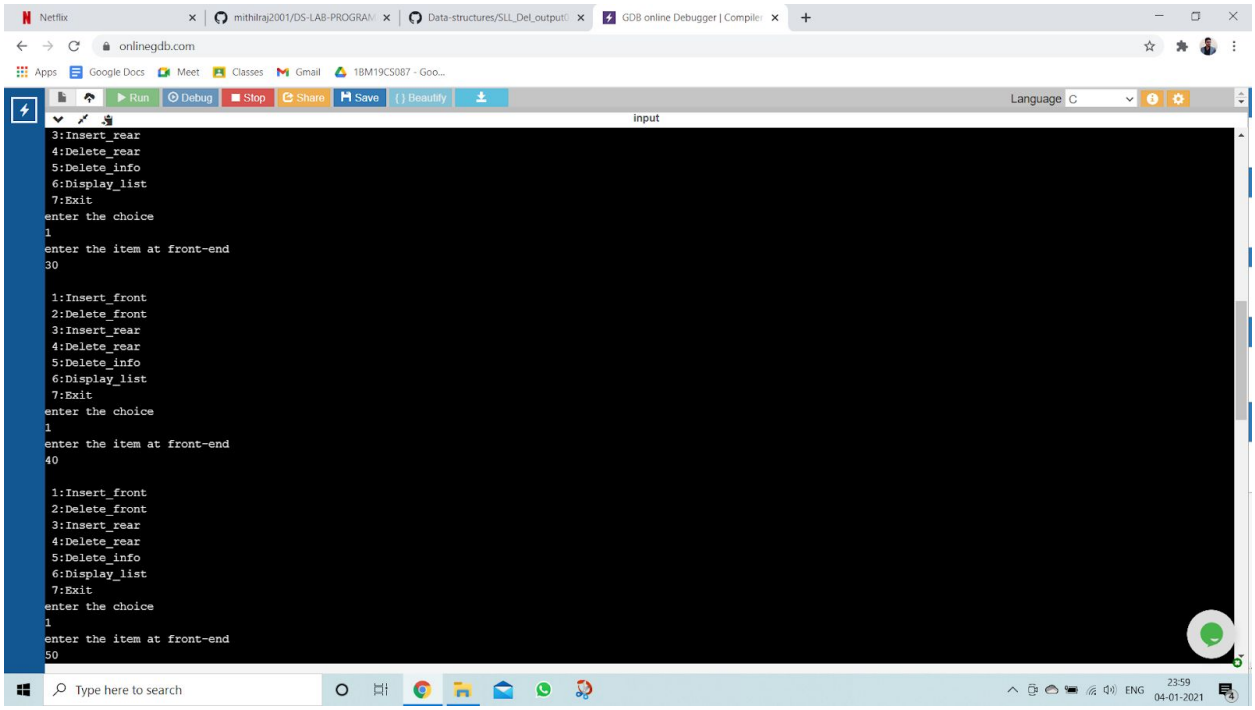
Run
Debug
Stop
Share
Save
{ } Beautify
Language C
input
main.c:86:1: warning: incompatible implicit declaration of built-in function 'free'
main.c:86:1: note: include '<stdlib.h>' or provide a declaration of 'free'
main.c:165:11: warning: incompatible implicit declaration of built-in function 'exit'
main.c:165:11: note: include '<stdlib.h>' or provide a declaration of 'exit'
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
1
enter the item at front-end
10
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
1
enter the item at front-end
20
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
Type here to search
ENG
23:59
04-01-2021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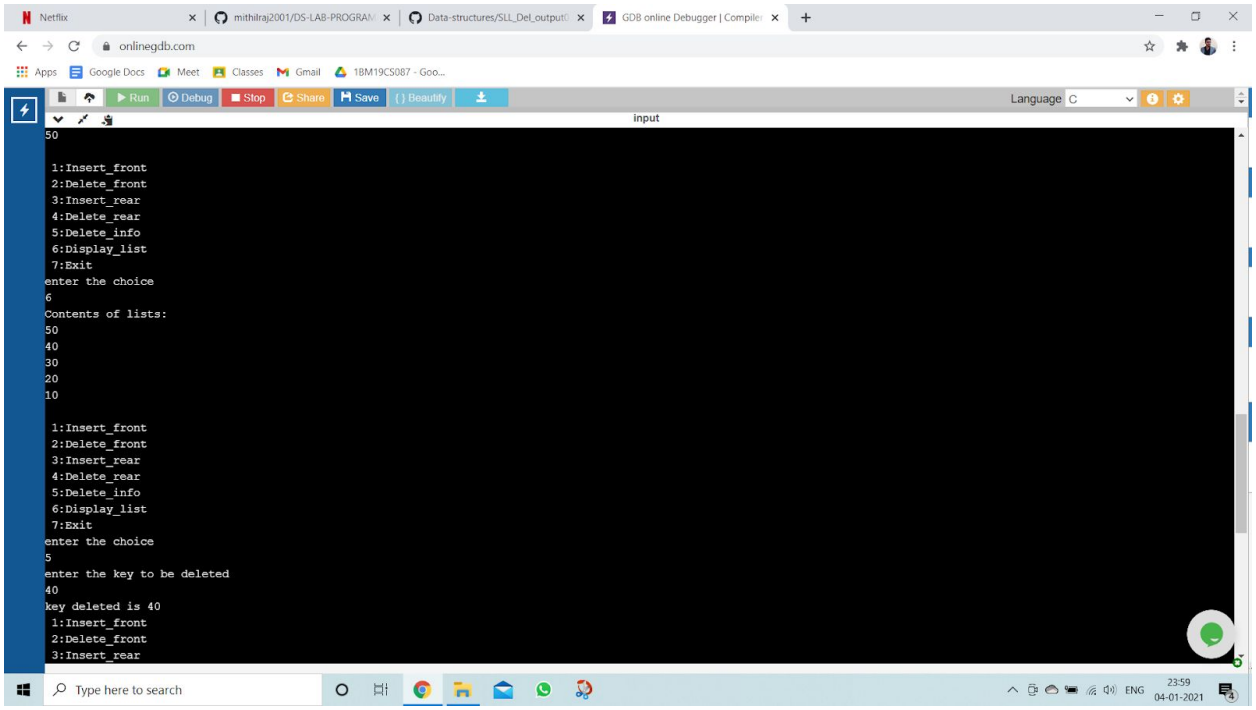
Run
Debug
Stop
Share
Save
{ } Beautify
Language C
input
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
1
enter the item at front-end
30
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
1
enter the item at front-end
40
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
1
enter the item at front-end
50
Type here to search
ENG
23:59
04-01-2021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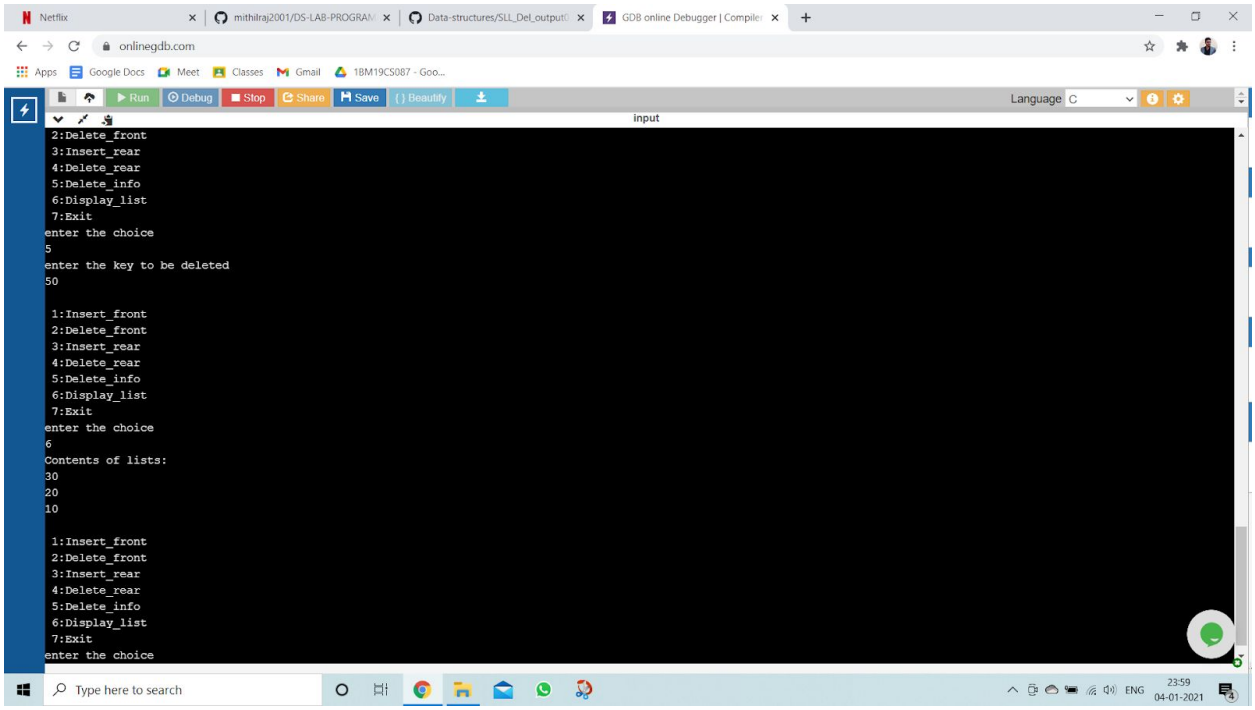
Run
Debug
Stop
Share
Save
{ } Beautify
Language C
input
50
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
6
Contents of lists:
50
40
30
20
10
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
5
enter the key to be deleted
40
key deleted is 40
1:Insert_front
2:Delete_front
3:Insert_rear
Type here to search
ENG
23:59
04-01-2021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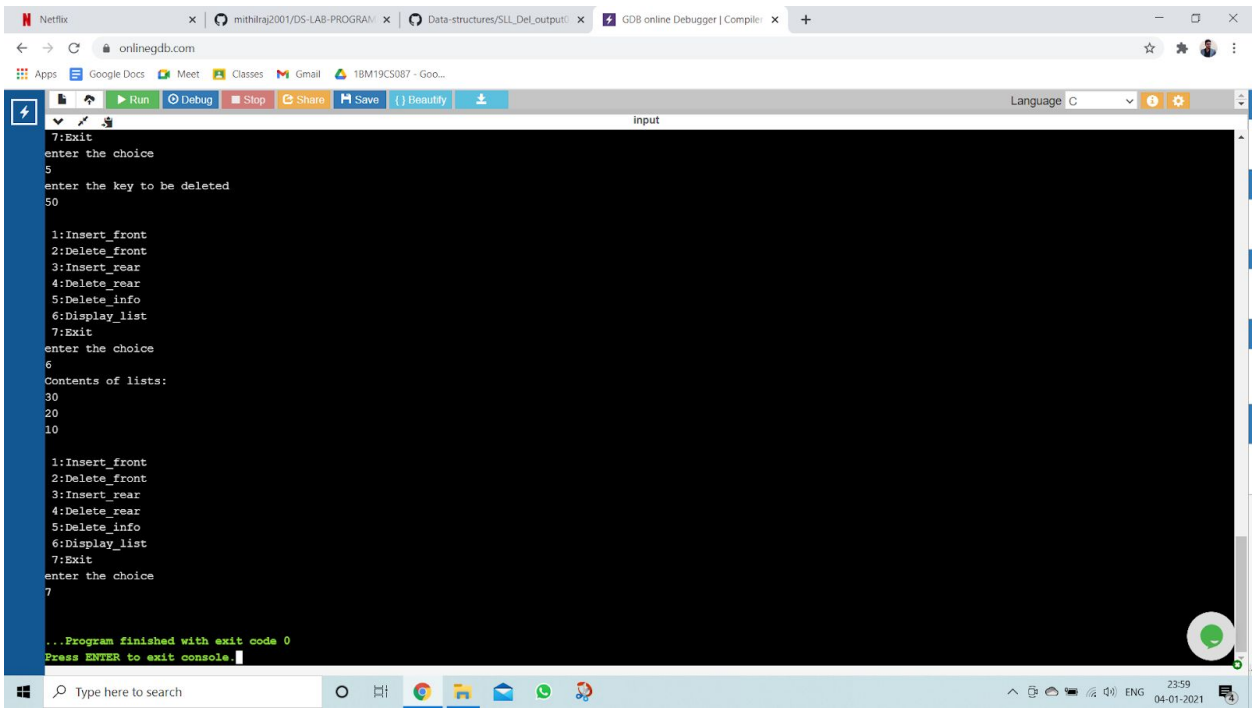
Meet
Classes
Gmail
1BM19CS087 - Goo...
Run
Debug
Stop
Share
Save
{ } Beautify
Language C
input
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
5
enter the key to be deleted
50
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
6
Contents of lists:
30
20
10
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
Type here to search
ENG
23:59
04-01-2021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Gmail
1BM19CS087 - Goo...
Run
Debug
Stop
Share
Save
{ } Beautify
Language C
input
7:Exit
enter the choice
5
enter the key to be deleted
50
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
6
Contents of lists:
30
20
10
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:Delete_info
6:Display_list
7:Exit
enter the choice
7
...Program finished with exit code 0
Press ENTER to exit console.
Type here to search
ENG
23:59
04-01-2021