```
#include<stdio.h>
#include<stdlib.h>
struct node
  struct node *prev;
  struct node *next;
  int data;
}:
struct node *head;
void insertion_beginning();
void insertion_last();
void insertion_specified();
void deletion_beginning();
void deletion_last();
void deletion_specified();
void display();
void search();
void main ()
int choice =0;
  while(choice != 9)
    printf("\n******Main Menu******\n");
    printf("\nChoose one option from the following
list ...\n");
    printf("\n===========
\n");
    printf("\n1.Insert in begining\n2.Insert at last
\n3.Insert at any random location\n4.Delete from
```

```
Beginning\n 5.Delete from last\n6.Delete the node
after the given data\n7.Search\n8.Show\n9.Exit\n");
    printf("\nEnter your choice?\n");
    scanf("\n%d",&choice);
    switch(choice)
    {
       case 1:
       insertion_beginning();
       break:
       case 2:
           insertion_last();
       break;
       case 3:
       insertion_specified();
       break;
       case 4:
       deletion_beginning();
       break;
       case 5:
       deletion_last();
       break;
       case 6:
       deletion_specified();
       break;
       case 7:
       search();
       break;
       case 8:
       display();
       break;
```

```
case 9:
       exit(0);
       break;
       default:
       printf("Please enter valid choice..");
void insertion_beginning()
 struct node *ptr;
 int item;
 ptr = (struct node *)malloc(sizeof(struct node));
 if(ptr == NULL)
 {
    printf("\nOVERFLOW");
 else
  printf("\nEnter Item value");
  scanf("%d",&item);
 if(head==NULL)
 {
    ptr->next = NULL;
    ptr->prev=NULL;
    ptr->data=item;
    head=ptr;
 else
```

```
{
    ptr->data=item;
    ptr->prev=NULL;
    ptr->next = head;
    head->prev=ptr;
    head=ptr;
 printf("\nNode inserted\n");
}
void insertion_last()
 struct node *ptr,*temp;
 int item;
 ptr = (struct node *) malloc(sizeof(struct node));
 if(ptr == NULL)
 {
    printf("\nOVERFLOW");
 }
 else
 {
    printf("\nEnter value");
    scanf("%d",&item);
    ptr->data=item;
    if(head == NULL)
    {
      ptr->next = NULL;
      ptr->prev = NULL;
      head = ptr;
```

```
else
     temp = head;
     while(temp->next!=NULL)
        temp = temp->next;
     temp->next = ptr;
     ptr ->prev=temp;
     ptr->next = NULL;
  printf("\nnode inserted\n");
void insertion_specified()
 struct node *ptr,*temp;
 int item,loc,i;
 ptr = (struct node *)malloc(sizeof(struct node));
 if(ptr == NULL)
    printf("\n OVERFLOW");
 }
 else
   temp=head;
    printf("Enter the location");
    scanf("%d",&loc);
```

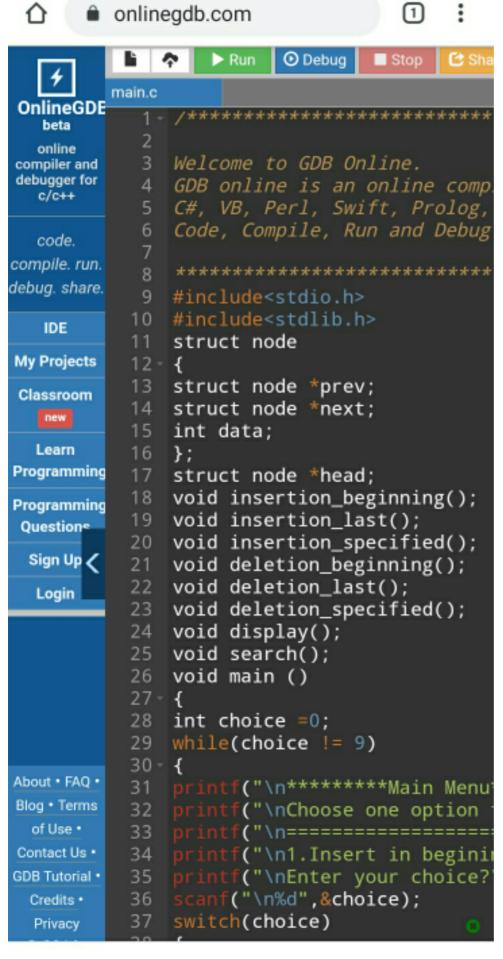
```
for(i=0;i<loc;i++)
      temp = temp->next;
      if(temp == NULL)
         printf("\n There are less than %d elements",
loc);
        return;
    printf("Enter value");
    scanf("%d",&item);
    ptr->data = item;
    ptr->next = temp->next;
    ptr -> prev = temp;
    temp->next = ptr;
    temp->next->prev=ptr;
    printf("\nnode inserted\n");
 }
void deletion_beginning()
{
  struct node *ptr;
  if(head == NULL)
  {
    printf("\n UNDERFLOW");
  else if(head->next == NULL)
    head = NULL;
```

```
free(head);
    printf("\nnode deleted\n");
  }
  else
    ptr = head;
    head = head -> next;
    head -> prev = NULL;
    free(ptr);
    printf("\nnode deleted\n");
void deletion_last()
  struct node *ptr;
  if(head == NULL)
    printf("\n UNDERFLOW");
  else if(head->next == NULL)
  {
    head = NULL;
    free(head);
    printf("\nnode deleted\n");
  else
    ptr = head;
    if(ptr->next != NULL)
```

```
ptr = ptr -> next;
    ptr -> prev -> next = NULL;
    free(ptr);
    printf("\nnode deleted\n");
void deletion_specified()
{
  struct node *ptr, *temp;
  int val;
  printf("\n Enter the data after which the node is to be
deleted: ");
  scanf("%d", &val);
  ptr = head;
  while(ptr -> data != val)
  ptr = ptr -> next;
  if(ptr -> next == NULL)
  {
    printf("\nCan't delete\n");
  }
  else if(ptr -> next -> next == NULL)
  {
    ptr ->next = NULL;
  else
    temp = ptr -> next;
    ptr -> next = temp -> next;
```

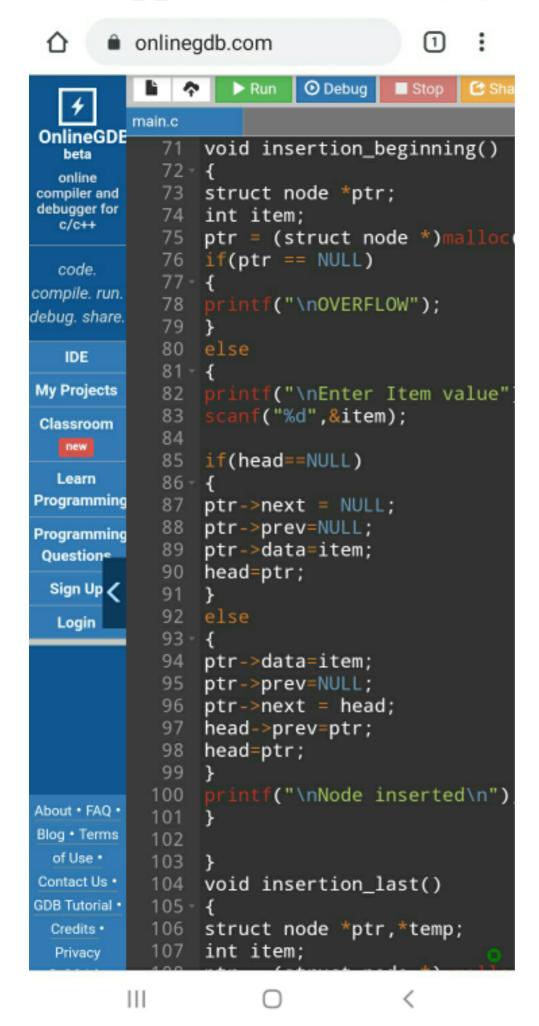
```
temp -> next -> prev = ptr;
    free(temp);
    printf("\nnode deleted\n");
void display()
  struct node *ptr;
  printf("\n printing values...\n");
  ptr = head;
  while(ptr != NULL)
  {
    printf("%d\n",ptr->data);
    ptr=ptr->next;
void search()
  struct node *ptr;
  int item,i=0,flag;
  ptr = head;
  if(ptr == NULL)
    printf("\nEmpty List\n");
  else
  {
    printf("\nEnter item which you want to search?\n");
    scanf("%d",&item);
    while (ptr!=NULL)
```

```
if(ptr->data == item)
  {
     printf("\nitem found at location %d ",i+1);
    flag=0;
    break;
  else
    flag=1;
  i++;
  ptr = ptr -> next;
if(flag==1)
  printf("\nltem not found\n");
```

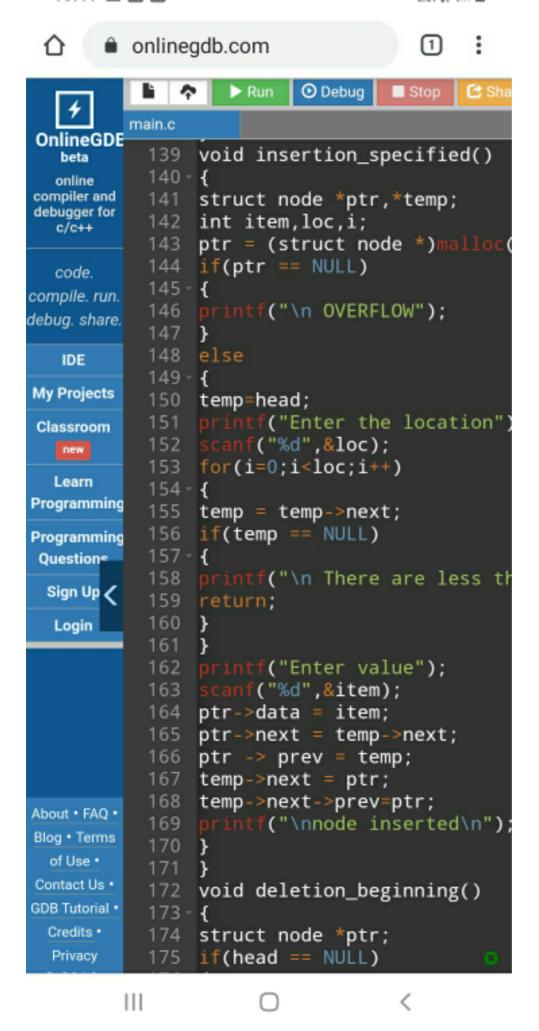


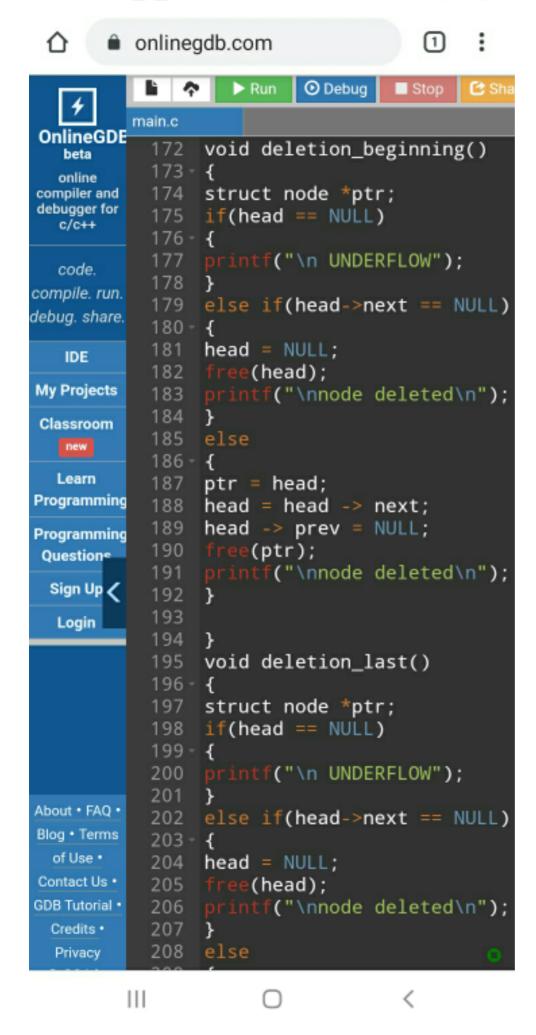
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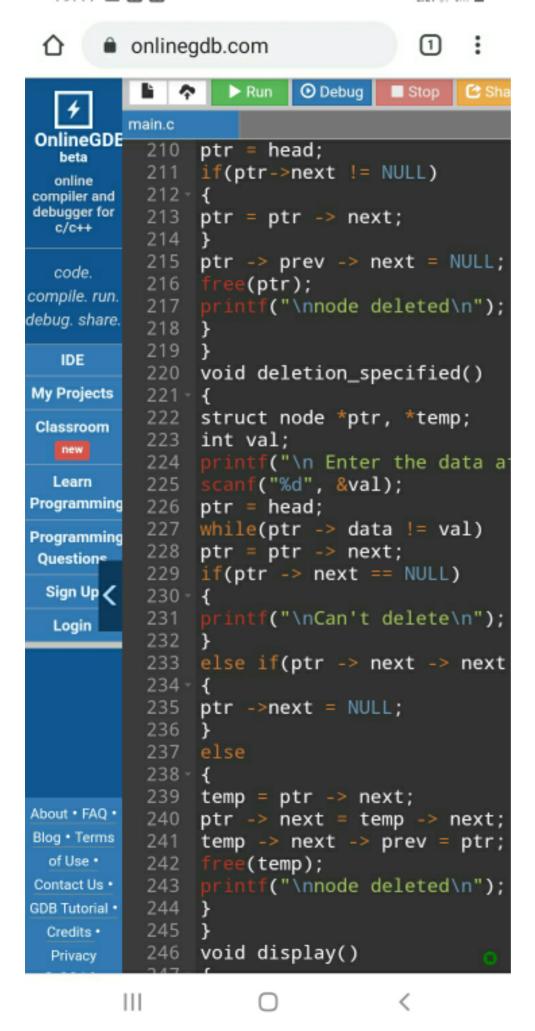


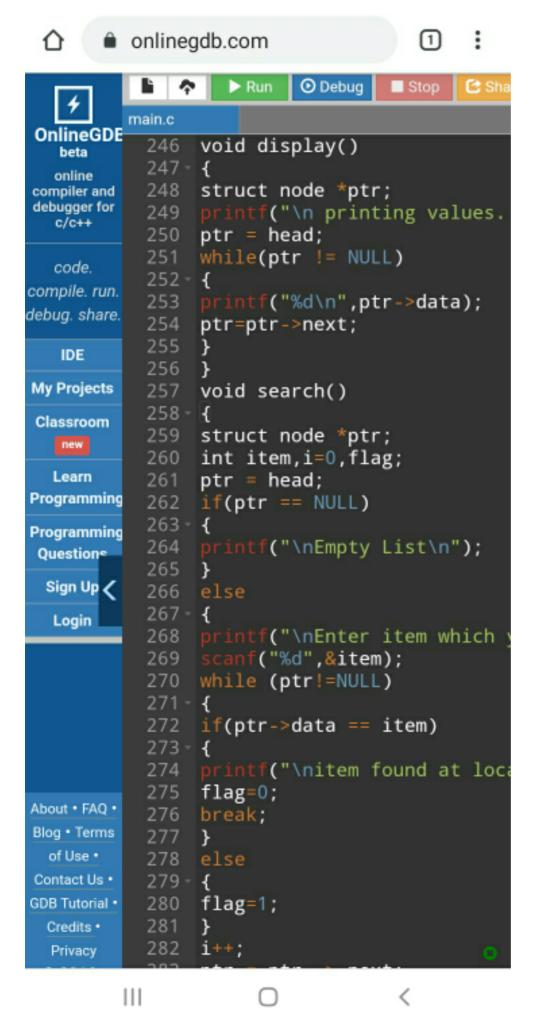


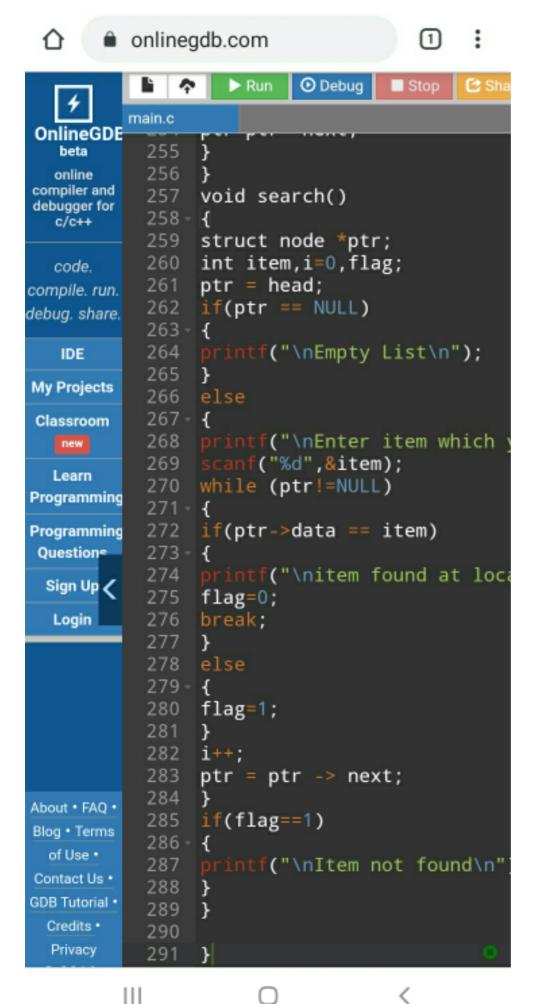


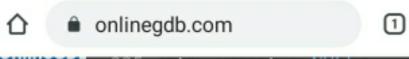












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ptr ->next = NULL;
             235
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compiler and
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                   else
debugger for
             238 -
                   {
   c/c++
             239
                    temp = ptr -> next;
             240
                   ptr -> next = temp -> next;
   code.
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compile. run.
debug, share, a
           7.Search
   IDE
           8.Show
           9.Exit
My Projects
 Classroom
          Enter your choice?
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   Learn
Programming printing values...
Programming
              ******Main Menu*****
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    Insert in begining

           Insert at last

    Insert at any random location

About · FAQ · 4. Delete from Beginning
            5.Delete from last
Blog • Terms
           Delete the node after the given dat
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              235
                    ptr ->next = NULL:
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                    temp = ptr -> next;
              240
                    ptr -> next = temp -> next;
   code.
                               input
compile. run.
debug. share, <sup>8</sup> . Show
           9.Exit
   IDE
           Enter your choice?
My Projects
 Classroom
   new
           Enter Item value10
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Programming
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   c/c++
              239
                    temp = ptr -> next;
              240
                    ptr -> next = temp -> next;
   code.
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compile. run.
debug. share, <sup>8</sup> . Show
           9.Exit
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   new
           Enter Item value20
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online 235 ptr ->next = NULL;

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compiler and
              237
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debugger for
              238 -
                    {
   c/c++
              239
                    temp = ptr -> next;
              240
                    ptr -> next = temp -> next;
   code.
                                input
compile. run.
debug. share, <sup>8</sup> . Show
           9.Exit
    IDE
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My Projects
 Classroom
   new
           Enter Item value30
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              238 -
                    {
   c/c++
              239
                    temp = ptr -> next;
              240
                    ptr -> next = temp -> next;
   code.
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compile, run.
debug. share. <sup>9</sup> . Exit
    IDE
           Enter your choice?
My Projects
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   new
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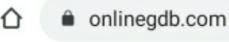
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ptr ->next = NULL;
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              239
                    temp = ptr -> next;
              240
                    ptr -> next = temp -> next;
   code.
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debug. share, <sup>8</sup> . Show
           9.Exit
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           Enter your choice?
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           Enter value40
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ptr ->next = NULL; 235 beta 236 online 237 else compiler and debugger for 238 -{ c/c++ 239 temp = ptr -> next; 240 ptr -> next = temp -> next; code. input compile. run. debug. share, ⁸ . Show 9.Exit IDE Enter your choice? My Projects Classroom Enter the location1 new Enter value50 Learn Programmingnode inserted Programming *****Main Menu****** Questione Sign Up Choose one option from the following list ... Login -------- Insert in begining 2.Insert at last Insert at any random location About · FAQ · 4. Delete from Beginning 5.Delete from last Blog • Terms Delete the node after the given dat of Use • Contact Us . a GDB Tutorial . 7 . Search Credits . 8.Show Privacy 9.Exit 0 © 2016 -2021 GDB Enter your choice? Online

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236
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                    {
   c/c++
              239
                    temp = ptr -> next;
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                    ptr -> next = temp -> next;
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debug.share.Enter your choice?
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ptr ->next = NULL;
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                    temp = ptr -> next;
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                   ptr -> next = temp -> next;
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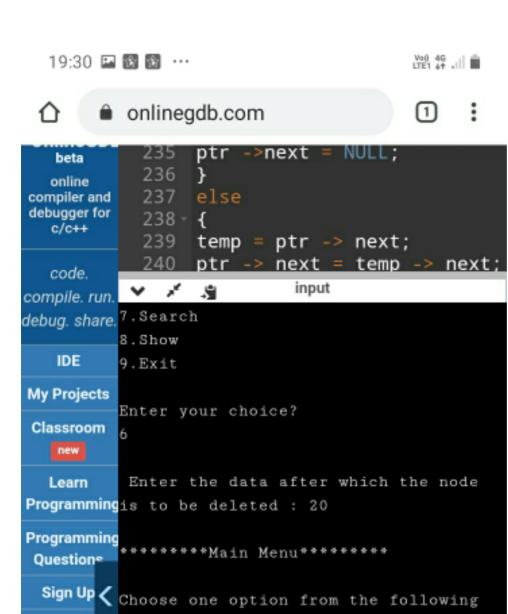
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                    temp = ptr -> next;
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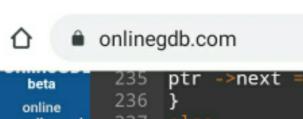
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                    temp = ptr -> next;
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                    ptr -> next = temp -> next;
   code.
                                input
compile. run.
debug. share, <sup>8</sup> . Show
           9.Exit
   IDE
           Enter your choice?
My Projects
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           2.Insert at last

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ptr ->next = NULL;
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compiler and
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    Insert in begining

           2.Insert at last
           3. Insert at any random location
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About • FAQ • 7 . Search
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  of Use •
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Contact Us .
GDB Tutorial . Enter your choice?
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 2021 GDB ... Program finished with exit code 0
  Online
          Press ENTER to exit console.
```