

DS LAB PROGRAM 6

EXECUTION:-

The screenshot displays the OnlineGDB beta web interface, which serves as an online compiler and debugger for C/C++. The interface includes a sidebar with navigation links such as "My Projects", "Classroom", "Learn Programming", and "Programming Questions". The main area is divided into a code editor and a console output window.

The code being executed is a C program for a linked list, titled "main.c". It includes the following functions:

- `insert_front`: Inserts a new node at the front of the list.
- `delete_front`: Deletes the first node from the list.
- `insert_rear`: Inserts a new node at the rear of the list.
- `delete_rear`: Deletes the last node from the list.
- `display_list`: Displays the elements of the linked list.
- `main`: The entry point of the program, which takes user input to perform operations on the linked list.

The console output shows the program running successfully, with the following input choices:

```
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
```

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main.c

```
41 printf("list is empty **\n");
42 return first;
43 }
44 temp=first;
45 temp=temp->link;
46 printf("item deleted at front-end =%d\n",first->info);
47 free(first);
48 return temp;
49 }
50 NODE insert_rear(NODE first,int item)
51 {
52     NODE temp,cur;
53     temp=getnode();
54     temp->info=item;
55     temp->link=NULL;
56     if(first==NULL)
57         return temp;
58     cur=first;
59     while(cur->link!=NULL)
60         cur=cur->link;
61     cur->link=temp;
```

input

```
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
```

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main.c

```
61 cur->link=temp;
62 return first;
63 }
64 NODE delete_rear(NODE first)
65 {
66     NODE cur,prev;
67     if(first==NULL)
68     {
69         printf("list is empty ***\n");
70         return first;
71     }
72     if(first->link==NULL)
73     {
74         printf("item deleted is %d\n",first->info);
75         free(first);
76         return NULL;
77     }
78     prev=NULL;
79     cur=first;
80     while(cur->link!=NULL)
```

input

```
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
```

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main.c

```
80 while(cur->link!=NULL)
81 {
82     prev=cur;
83     cur=cur->link;
84 }
85 printf("item deleted at rear-end = %d",cur->info);
86 free(cur);
87 prev->link=NULL;
88 return first;
89 }
90
91 void display(NODE first)
92 {
93     NODE temp;
94     if(first==NULL)
95         printf("list empty **\n");
96     for(temp=first;temp!=NULL;temp=temp->link)
97     {
98         printf("%d\n",temp->info);
99     }
100 }
```

input

```
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
```

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The screenshot displays the OnlineGDB IDE interface. On the left is a sidebar with navigation links like 'IDE', 'My Projects', 'Classroom', 'Learn Programming', 'Programming Questions', 'Sign Up', and 'Login'. The main area shows a C program for a linked list. The code defines a 'NODE' structure and implements functions for inserting, deleting, and displaying list elements. The input field at the bottom contains a sequence of commands: 1:Insert_front, 2:Delete_front, 3:Insert_rear, 4:Delete_rear, 5:display_list, 6:Exit. The output field is empty.

```
main.c
100 }
101 void main()
102 {
103     int item,choice;
104     NODE first=NULL;
105     for(;;)
106     {
107         printf("***LINKED LIST***");
108         printf("\n 1:Insert_front\n 2:Delete_front\n 3:Insert_rear\n 4:Delete_rear\n 5:display_list \n 6:Exit\n");
109         printf("enter the choice\n");
110         scanf("%d",&choice);
111         switch(choice)
112         {
113             case 1:printf("enter the item at front-end\n");
114                     scanf("%d",&item);
115                     first=insert_front(first,item);
116                     break;
117             case 2:first=delete_front(first);
118                     break;
119             case 3:printf("enter the item at rear-end\n");
120                     scanf("%d",&item);
121                     first=insert_rear(first,item);
122                     break;
123             case 4:first=delete_rear(first);
124                     break;
125             case 5:display(first);
126                     break;
127             default:exit(0);
128                     break;
129         }
130     }
131     getch();
132 }
```

input

```
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
```

OUTPUT:-

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```
main.c
112: {
113:     case 1: printf("enter the item at front-end\n");
114:             scanf("%d", &item);
115:             first=insert_front(first,item);
```

Input

```
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
1
enter the item at front-end
10
***LINKED LIST***
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
1
enter the item at front-end
20
***LINKED LIST***
1:Insert_front
2:Delete_front
3:Insert_rear
```

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```
main.c
112: {
113:     case 1: printf("enter the item at front-end\n");
114:             scanf("%d", &item);
115:             first=insert_front(first,item);
```

Input

```
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
1
enter the item at front-end
30
***LINKED LIST***
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
5
30
20
10
***LINKED LIST***
1:Insert_front
2:Delete_front
3:Insert_rear
```

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main.c

```
112: {  
113:     case 1:printf("enter the item at front-end\n");  
114:     scanf("%d",&item);  
115:     first=insert_front(first,item);
```

input

```
3:insert_rear  
4:delete_rear  
5:display_list  
6:Exit  
enter the choice  
2  
item deleted at front-end =30  
****LINKED LIST****  
1:Insert_front  
2:Delete_front  
3:Insert_rear  
4:Delete_rear  
5:display_list  
6:Exit  
enter the choice  
5  
20  
10  
****LINKED LIST****  
1:Insert_front  
2:Delete_front  
3:Insert_rear  
4:Delete_rear  
5:display_list  
6:Exit
```

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```
main.c
112: {
113:     case 1: printf("enter the item at front-end\n");
114:             scanf("%d", &item);
115:             first=insert_front(first,item);
116: }
```

input

```
6:Exit
enter the choice
4
item deleted at rear-end = 10***LINKED LIST***
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
3
enter the item at rear-end
40
***LINKED LIST***
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
5
20
40
***LINKED LIST***
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
6
```

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```
main.c
112: {
113:     case 1: printf("enter the item at front-end\n");
114:             scanf("%d", &item);
115:             first=insert_front(first,item);
116: }
```

input

```
40
***LINKED LIST***
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
5
20
40
***LINKED LIST***
1:Insert_front
2:Delete_front
3:Insert_rear
4:Delete_rear
5:display_list
6:Exit
enter the choice
6
...Program finished with exit code 0
Press ENTER to exit console.
```