Lab Program 3:-

3) Write a program to simulate the working of a queue of integers using an array. Provide the following operations.
a) Insert b) Delete c) Display.
The program should print appropriate messages for queue empty & queue overflow conditions.

A)

```
#include<stdio.h>
#include<stdlib.h>
#define QUE_SIZE 3
int item, front = 0, rear = -1, q[10];
void insertrear(){
if(rear == QUE_SIZE - 1){
printf("queue overflow \n");
return;
}
rear = rear+1;
q[rear] = item;
}
int deletefront(){
If (front>rear){
front = 0;
rear = -1;
return -1;
}
return q[front++];
}
void displayQ(){
int i;
if(front > rear){
printf("queue is emptly \n");
return;
}
printf("contents of queue \n");
```

```
for(i=front; i<=rear; i++){
printf("%d \n", q[i]);
}}
int main(){
int choice;
for(;;){
printf("1: insert rear \n 2: delete front \n 3: display \4: exit \n");
printf(" enter your choice \n");
scanf("%d", &choice);
switch(choice){
case 1: printf("enter item to be ~~ing~~ inserted \n");
scanf("%d", &item);
insertrear();
break;
case 2: item=deletedfront();
if(item==-1)
printf("queue is empty \n");
else
printf("item deleted = %d \n", item);
break;
case 3: displayQ();
break;
default: exit(0);
}}}
```

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(globals)

linear_q.cpp

```
1
2   #include<stdio.h>
3   #include<stdlib.h>
4   #define QUE_SIZE 3
5   int item,front=0,rear=-1,q[10];
6   void insertrear()
7   {if(rear==QUE_SIZE-1)
8   {
9       printf("queue overflow\n");
10      return;
11  }
12  rear=rear+1;
13  q[rear]=item;
14  }int deletefront()
15  {if (front>rear)
16  {front=0;
17  rear=-1;
18  return -1;
19  }return q[front++];
20  }void displayQ()
21  {int i;
22  if (front>rear)
23  {
24      printf("queue is empty\n");
25      return;
26  }
27  printf("contents of queue\n");
28  for(i=front;i<=rear;i++)
29  {
30      printf("%d\n",q[i]);
31  }}
32  int main()
33  {
34      int choice;
35      for(;;)
36      {
37          printf("1:insertrear 2:deletefront 3:display 4:exit\n");
38          printf("enter the choice\n");
```

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TDM-GCC 4.9.2 64-bit Release

(globals)

linear_q.cpp

```
23  {
24      printf("queue is empty\n");
25      return;
26  }
27  printf("contents of queue\n");
28  for(i=front;i<=rear;i++)
29  {
30      printf("%d\n",q[i]);
31  }}
32  int main()
33  {
34      int choice;
35      for(;;)
36      {
37          printf("1:insertrear 2:deletefront 3:display 4:exit\n");
38          printf("enter the choice\n");
39          scanf("%d",&choice);
40          switch(choice)
41          {
42              case 1:printf("enter the item to be inserted\n");
43              scanf("%d",&item);
44              insertrear ();
45              break;
46              case 2:item=deletefront();
47              if(item==-1)
48              printf("queue is empty\n");
49              else
50              printf("item deleted=%d\n",item);
51              break;
52              case 3:displayQ();
53              break;
54              default:exit (0);
55
56          }
57
58      }
59      }
```

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C:\Users\sohan\Desktop\C Programs\Data Structures Lab\linear queue\linear_q.exe

```
1:insertrear 2:deletefront 3:display 4:exit
enter the choice
1
enter the item to be inserted
12
1:insertrear 2:deletefront 3:display 4:exit
enter the choice
1
enter the item to be inserted
32
1:insertrear 2:deletefront 3:display 4:exit
enter the choice
1
enter the item to be inserted
55
1:insertrear 2:deletefront 3:display 4:exit
enter the choice
1
enter the item to be inserted
3
queue overflow
1:insertrear 2:deletefront 3:display 4:exit
enter the choice
2
item deleted=12
1:insertrear 2:deletefront 3:display 4:exit
enter the choice
3
contents of queue
32
55
1:insertrear 2:deletefront 3:display 4:exit
enter the choice
4

--------------------------------
Process exited after 29.8 seconds with return value 0
Press any key to continue . . .
```