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DS Lab Program 3 :-

Q. Write a Program to simulate the working of queue of integers using an array. Provide the following operation

(a) Insert Rear
(b) Delete Front
(c) Display the contents of queue.

The program should print the appropriate messages for a queue empty and queue full condition.

Ans

Input :-

```
#include <stdio.h>
# include <conio.h>
# include <process.h>
# define QUE_SIZE 3

int item, front of que = 0, rear = -1, q[10];
{
if ( rear == QUE_SIZE -1)
{
printf ("Queue Overflow \n");
return;
}
rear = rear + 1;
q[rear] = item;
}
int delete front ()
{
if ( front of que > rear)
{
```

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```
front of que = 0;
rear = -1;
return -1;
}
return q[front of que++];
}
void display Q()
{
  int i;
  if (front of que > rear)
{
  printf("queue is empty \n");
  return;
}
printf("Contents of queue \n");
for (i = front of que; i <= rear; i++)
  {
    printf("%d \n", q[i]);
}
}
int main()
{
  int choice;
  for(;;)
{
  printf("\n 1: insert rear \n 2: delete front \n 3: display \n 4: exit \n");
  printf("Enter the choice \n");
  scanf("%d", &choice);
  switch (choice)
  {
    case 1: printf("Enter the item to be inserted \n");
            scanf("%d", &item);
            insert rear();
            break;
```

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```
case 2 : item = deletefront ();
         if (item == -1)
         printf ("Queue is empty \n");

else
      printf ("Item deleted = %d \n", item);
 break;

case 3 : display q ();
         break;
  }
}

  return 0;
}
```

Output :-

```
1 : insertrear
2 : deletefront
3 : display
4 : exit
Enter the choice
 1
Enter the item to be inserted
 11
1 : insertrear
2 : delete front
3 : display
4 : exit
Enter the choice
1.
Enter the item to be inserted
22
Enter 1 : insert rear
```

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2 : delete front
3: display
4 : exit
Enter the choice
1
Enter the item to be inserted
33
1 : insert rear
2 : delete front
3 : display
4 : exit
Enter the choice
1
Enter the item to be inserted
44
Queue Overflow
1 : insert rear
2 : delete front
3: display
4 : exit
Enter the choice
3
Contents of Queue :-
11
22
33
1 : insert rear
2: delete front
3 : display
4 : exit
Enter the choice
2
Item deleted = 11

1: insert rear
2 : delete front
3 : display
4 : exit
Enter the choice
2
Item deleted is = 22
1 : insert rear
2 : delete front
3 : display
4 : exit
Enter the choice
2
Item deleted = 33.
1 : insert rear
2 : delete front
3 : display
4 : exit
Enter the choice
2
Queue is Empty.
1 : insert rear
2 : delete front
3 : display
4 : exit
Enter the choice
3
Queue is empty.