→ Circular Queue

```
#include <stdio.h>
#include <stdlib.h>
#define que_size 3
int item, front=0, rear=-1, q[que_size], count=0;
void insertrear()
{
  if (count==que_size)
  {
    printf("Queue overflow\n");
    return;
  }
  rear=(rear+1)% que_size;
  q[rear]= item;
  count++;
}
int deletefront ()
{
  if (count==0) return -1;
  item= q[front];
  front = (front+1)% que_size;
  count= count-1;
  return item;
}
void displayq ()
{
  int i, f;
  if (count==0)
  {
```

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```
printf("Queue is empty \n");
 return;
}
f=front;
 printf("Contents of Queue \n");
 for (i=0; i<= count; i++)
  {
   printf("%d\n", q[f]);
   f=(f+1) % que_size;
  }
}
int main()
 {
  int choice;
  for (;;)
  {
    printf("\n1. Insert Rear\n 2. Delete front \n3.
 Display \n 4. Exit\n");
 printf(" Enter your choice : ");
 scanf("%d", &choice);
 switch (choice)
  {

case 1: printf("Enter the item to be inserted : ");
        scanf("%d", &item);
        insertrear();
        break;
```

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```
case 2: item = deletefront();
        if (item == -1)
          printf("Queue is empty\n");
        else
          printf("Item deleted is %d \n", item);
        break;
case 3: displayq();
        break;
default: exit(0);
    }
  }
}
```

OUTPUT:-

1. Insert rear
2. Delete front
3. Display
4. Exit

Enter your choice : 1

Enter the item to be inserted : 3

1. Insert rear
2. Delete front
3. Display
4. Exit

Enter your choice : 1

Enter the item to be inserted : 5

1. Insert rear

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2. Delete front
3. Display
4. Exit

Enter your choice : 1
Enter the item to be inserted : 7

1. Insert rear
2. Delete front
3. Display
4. Exit

Enter your choice : 1
Enter the item to be inserted : 9
queue overflow

1. Insert rear
2. Delete front
3. Display
4. Exit

Enter your choice : 3
Contents of queue
3
5
7
3

1. Insert rear
2. Delete front
3. Display
4. Exit

Enter your choice : 2
Item deleted is 3

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1. Insert rear
2. Delete front
3. Display
4. Exit
Enter your choice : 2
Item deleted is 5

1. Insert rear
2. Delete front
3. Display
4. Exit
Enter your choice : 2
Item deleted is 7.

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```
1.Insert rear
2.Delete front
3.Display
4.exit
 Enter the choice : 1
Enter the item to be inserted :3

1.Insert rear
2.Delete front
3.Display
4.exit
 Enter the choice : 1
Enter the item to be inserted :5

1.Insert rear
2.Delete front
3.Display
4.exit
 Enter the choice : 1
Enter the item to be inserted :7

1.Insert rear
2.Delete front
3.Display
4.exit
 Enter the choice : 1
Enter the item to be inserted :9
queue overflow
1.Insert rear
2.Delete front
3.Display
4.exit
 Enter the choice : 3
contents of queue
3
5
7
3

1.Insert rear
2.Delete front
3.Display
4.exit
 Enter the choice : 2
item deleted is 3

1.Insert rear
2.Delete front
3.Display
4.exit
 Enter the choice : 2
item deleted is 5

1.Insert rear
2.Delete front
3.Display
4.exit
 Enter the choice : 2
item deleted is 7
```

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→ Dequeue:-

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#define qsize 5
int f=0, r=-1, ch;
int item, q[10];
int isfull()
{
return (r==qsize-1)?1:0;
}
int isempty()
{
return (f>r)?1:0;
}
void insert_rear()
{
if (isfull())
{
printf("Queue overflow\n");
return;
}
r=r+1;
q[r]=item;
}
void delete_front()
{
if (isempty())
{
printf("Queue empty\n");
return;
}
```

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```
printf("item deleted is %d \n", q[(f)++]);
if (f>r)
 {
  f=0;
  r=-1;
  }
}
void insert_front()
{
 if (f!=0)
  {
   f=f-1;
   q[f]=item;
   return;
  }
 else if ((f==0) && (r==-1))
 {
  q[++(r)]=item;
  return;
 }
 else
  printf(" Insertion not possible \n");
 }
void delete_rear()
 {
  if (isempty())
  {
   printf("Queue is empty \n");
   return;
  }
 printf("Item deleted is %d \n", q[(r)--]);
 if (f>r)
 {   f=0; r=-1; } }
```

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```
void display()
{
int i;
if (isempty())
{
  printf("Queue is empty\n");
  return;
}
for (i=f; i<=r; i++)
printf("%d\n", q[i]);
}
int main()
{
  clrscr();
  for(;;)
  {
   printf("1. Insert_rear\n2. insert_front\n 3. delete
rear\n 4. delete_front\n 5. display\n 6. exit\n");
 printf("Enter choice\n");
 scanf("%d", &ch);
 switch (ch)
 {
 case1: printf("Enter the item\n");
        scanf("%d", &item);
        insert_rear();
        break;
 case2: printf("Enter the item\n");
        scanf("%d", &item);
        insert_front();
        break;
 case3: delete_rear();
```

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```
break;
case 4: delete_front();
        break;
case 5: display();
        break;
default: exit(0);
    }
  }
}
```

OUTPUT:-

1. Insert_rear
2. insert_front
3. delete_rear
4. delete_front
5. Display
6. Exit

Enter choice

1

Enter the item

1

1. Insert_rear
2. ~~Delete_f~~ Insert_front
3. Delete_rear
4. Delete_front
5. Display
6. Exit

Enter ~~the item~~ choice

1

Enter the item

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2

1. Insert_rear
2. insert_front
3. delete_rear
4. delete_front
5. display
6. Exit

5

1

2

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```
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
1
enter the item
1
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
1
enter the item
2
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
1
enter the item
3
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
1
enter the item
4
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
1
enter the item
5
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
5
1
2
3
```

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```
4
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
1
enter the item
5
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
5
1
2
3
4
5
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
3
item deleted is 5
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
4
item deleted is 1
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
5
2
3
4
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
```

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