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Roll No: 53

Subject: DSA

LAB ASSIGNMENT NO. 03

```
#include<iostream>
#define max 5 using
namespace std; class
queue
{
 int a[max];
int front, rear;
public :
queue()
 {
 front=-1; rear=-
1;
 }
int isempty()
 {
 if(rear==-1 || front==-
1) return 1; else
return 0;
 } int
isfull()
 {
 if((rear+1)%max==front) //changed.....
 return 1;
else return
0; }
```

```
void enqueue(int value); //function declare
void dequeue();
void display();
};
int main()
{
 int value,
choice;  queue q;
do
 {
 cout<<"Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4.
Exit\n";  cin>>choice;  switch(choice)
 {
 case 1: cout<<"Enter value to be inserted into queue\n" ;
cin>>value;
 q.enqueue(value); //function call
break;  case 2:q.dequeue();
break;  case 3:q.display();  break;
case 4:cout<<"Exit\n";  break;
default: cout<<"Wrong
choice\n";  break;
}
 }while(choice !=4);
}
void queue :: enqueue(int value)
{  int x;  x=isfull();  if(x==1)  cout<<"Queue is already
full..cannot insert more elements\n";
 else  if(front==-1 &&
rear==-1)
 {
```

```
 front=0;
rear=0;
 }
 else
 if(rear==max-1 &&
front!=0)  rear=0;  else
 {
 rear=(rear+1)%max; //changed....
 }
 a[rear]=value;
}
void queue :: dequeue()
{
int x; x=isempty(); //calling isempty() function
if(x==1) cout<<"Queue is empty...Cannot delete
element\n";
else
if(front==rear)
{
cout<<"Deleted element is="<<a[front]<<"\n";
front=-1;
rear=-1;
}
else  if(front ==
max -1)
 {
 cout<<"Deleted element is="<<a[front]<<"\n";
 front = 0;
 }
else
{
```

```
cout<<"Deleted element is="<<a[front]<<"\n";
front++; //changed...
}
}
void queue :: display()
{ int
i;
if(front==-1)
cout<<"Queue is
empty\n";

else
{
i=front;
while(i!=rear)
{
cout<<a[i]<<"\t";
i=(i+1)%max;
}
}
}
```

**********OUTPUT**********

```
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
1
Enter value to be inserted into queue
12
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
1
Enter value to be inserted into queue
23
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
1
Enter value to be inserted into queue
43
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
```

```
1
Enter value to be inserted into queue
56
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
1
Enter value to be inserted into queue
45
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
1
Enter value to be inserted into queue
23
Queue is already full..cannot insert more elements
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
2
Deleted element is=12
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
Deleted element is=23
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
Deleted element is=43
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
2
Deleted element is=56
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
2
Deleted element is=23
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
2
Queue is empty...Cannot delete element
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
1
Enter value to be inserted into queue
3
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
2
Deleted element is=3
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
3
Queue is empty
Select any one operation: 1. Enqueue 2. Dequeue 3. Display 4. Exit
4
Exit
```