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SE-C Comp, Viit, Pune

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**Problem Statement-** *Implement a Pizza Order System using a Queue DS.*

**CODE:**

```
#include<iostream>
#include<exception>
using namespace std;
class FullQueueException:public exception{
    public:
        const char* what()const throw(){
            return "FullQueueException";
        }
};
class EmptyQueueException:public exception{
    public:
        const char*what()const throw(){
            return "EmptyQueueException";
        }
};
#define DEFAULT_QUEUE_SIZE 5
class Queue{
    private:
        int *arr;
        int elements,queue_size,head,tail;
    public:
        Queue(int size=DEFAULT_QUEUE_SIZE){
            if(size<0)
                throw std::bad_array_new_length();
            arr=new int[size];
            queue_size=size;
            elements=0;
            head=tail=0;
        }~Queue(){
            delete []arr;arr=NULL;
            cout<<"Queue Destructed\n";
        }
        bool isEmpty(){
            return elements==0;
        }
        bool isFull(){
            return elements==queue_size;
        }
        int deQueue();
        void enQueue(int element);
        void printQueue();
};
void Queue::enQueue(int element){
    if(!isFull()){
        arr[tail]=element;
        tail=(tail+1)%queue_size;
        elements++;
    }
```

```

        }else throw FullQueueException();
    }
    int Queue::deQueue(){
        if(!isEmpty()){
            int element=arr[head];
            head=(head+1)%queue_size;
            elements--;
            return element;
        }else throw EmptyQueueException();
    }
    void Queue::printQueue(){
        int printer=head,iterations=elements;
        if(iterations!=0)
            while(iterations--){
                cout<<arr[printer]<<" ";
                printer=(printer+1)%queue_size;
            }
        else cout<<"Empty Queue";
        cout<<endl;
    }
    void printMenu(){
        cout<<"1)Place Order\t";
        cout<<"2)Deliver Order\t";
        cout<<"3)Print Pending Orders\t";
        cout<<"4)Close for the Day!\nChoice : ";
    }
    int main(){
        int orderSize,choice,element;
        cout<<"Enter Max Orders for the Day\t";cin>>orderSize;
        try{
            Queue pizzaStore(orderSize);printMenu();
            do{
                cin>>choice;
                switch(choice){
                    case 1:{
                        cout<<"Enter Order No ";cin>>element;
                        try{
                            pizzaStore.enqueue(element);
                        }catch(FullQueueException& e){
                            cout<<e.what()<<" was thrown\n";
                        }
                        break;
                    }
                    case 2:{
                        try{
                            element = pizzaStore.deQueue();
                            cout<<"Order "<<element<<" was Delivered\n";
                        }catch(EmptyQueueException& e){
                            cout<<e.what()<<" was thrown\n";
                        }
                        break;
                    }
                    case 3:{
                        pizzaStore.printQueue();break;
                    }
                }
            }while(choice!=4);
        }catch(FullQueueException& e){
            cout<<e.what()<<" was thrown\n";
        }
    }
}

```

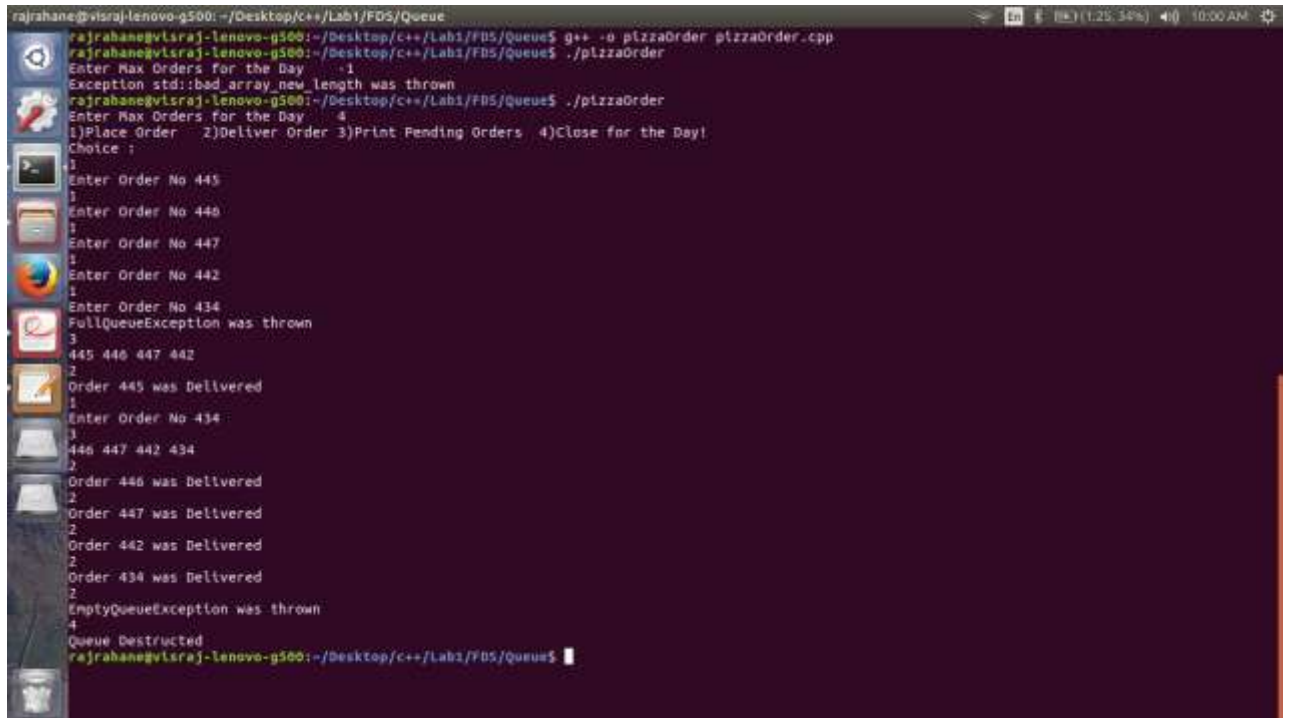
```

        case 4:{break;}
    }
    }while(choice!=4);
}catch(exception &e){
    cout<<"Exception "<<e.what()<<" was thrown"<<endl;
}
return 0;
}

```

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### **Output:**



```

rajrahane@visraj-lenovo-g500: ~/Desktop/c++/Lab1/FDS/Queue
rajrahane@visraj-lenovo-g500:~/Desktop/c++/Lab1/FDS/Queue$ g++ -o pizzaOrder pizzaOrder.cpp
rajrahane@visraj-lenovo-g500:~/Desktop/c++/Lab1/FDS/Queue$ ./pizzaOrder
Enter Max Orders for the Day 1
Exception std::bad_array_new_length was thrown
rajrahane@visraj-lenovo-g500:~/Desktop/c++/Lab1/FDS/Queue$ ./pizzaOrder
Enter Max Orders for the Day 4
1)Place Order 2)Deliver Order 3)Print Pending Orders 4)Close for the Day!
Choice :
1
Enter Order No 445
1
Enter Order No 446
1
Enter Order No 447
1
Enter Order No 442
1
Enter Order No 434
FullQueueException was thrown
3
445 446 447 442
2
Order 445 was Delivered
1
Enter Order No 434
1
446 447 442 434
2
Order 446 was Delivered
1
Order 447 was Delivered
2
Order 442 was Delivered
2
Order 434 was Delivered
EmptyQueueException was thrown
4
Queue Destructed
rajrahane@visraj-lenovo-g500:~/Desktop/c++/Lab1/FDS/Queue$

```