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Class: SE_B Roll No: 75

Subject: Fundamental of Data structure Lab

LAB Assignment: 12

- Problem statement:

Pizza parlour accepting maximum M orders. Order are served in 1st come first served basis. Order once placed cannot be cancelled.
Write C++ program to simuldte the system using circular queue using array.

- Time Complexity:

(Array based Queue & linked list bared Queue)

i) Insert : O(1)
ii) Get_front : O(1)
iii) Delete : O(1)

- Program, test cases and practice problem attached below.

```
/*Name: Gauri Kailas Bankar                        Class: SE-B
Roll No.: 75                                       Practical No.: 12

Problem Statement:
Pizza parlor accepting maximum M orders. Orders are served in first come first served basis.
Order once placed cannot be cancelled. Write C++ program to simulate the system using circular
queue using array
*/

#include<iostream>
using namespace std;
const int MAX=5;
int id=0;
class PizzaParlour
{
    int front,rear;
    int orders[MAX];
    public:
        PizzaParlour()
        {
            front=rear=-1;
        }
        bool addOrder(int data)
        {
         if(rear==-1)
       {
           front=rear=0;
           orders[rear]=id;
           return true;
       }
       else
       {
           int pos=(rear+1)%MAX;
           if(pos==front)
           {
               cout<<"\nCafe is Full.Please wait.\n";
               return false;
           }
           else
           {
               rear=pos;
               orders[rear]=id;
               return true;
           }
       }
```

```
                }
                void serveOrder()
                {
                  if(front==-1)
             {
                     cout<<"\n No Orders in Cafe.[Cafe is Empty)\n";
                     return;
             }
             else
             {
                     cout<<"\n Order No. "<<orders[front]<<" is processed.\n";
                     if(front==rear) //only one order
                     {
                             front=rear=-1;
                     }
                     else
                     {
                             front=(front+1)%MAX;
                     }
             }
                }
                void display()
                {
                  int i=0;
             if(front==-1)
             {
                     cout<<"\nCafe is Empty.No orders.\n";
                     return;
             }
             else
             {
                     cout<<"Order Id's: \n";
                     cout<<"\n---------------------\n";
                     for(i=front;i!=rear;i=((i+1)%MAX))
                     {
                             cout<<"|"<<orders[i]<<" | ";
                     }
                     cout<<orders[rear]<<" | ";
                     cout<<"\n--------------------";
             }
                }
};

int main()
{
        int ch;
        PizzaParlour P;

        do
        {
                cout<<"\n--------------------";
      cout<<"\nPizza Parlour System";
                cout<<"\n--------------------";
                cout<<"\n****Menu*****\n";
                cout<<"1. Accept order\n";
                cout<<"2. Serve order\n";
                cout<<"3. Display orders\n";
                cout<<"4. Exit";

                cout<<"\nChoice: ";
                cin>>ch;

                switch(ch)
                {
                        case 1:
                           cout<<"Enter Order ID: ";
                           cin>>id;
                                if(P.addOrder(id))
                                {
                                        cout<<"Thank you for order.Order id is : "<<id;
                                }
                                else
                                {
                                        id--;
                                }
                                break;

                        case 2: P.serveOrder();
                                  break;

                        case 3: P.display();
                                  break;
                }
        }while(ch!=4);
        cout<<"\nThank You.Keep Visiting.";
 }

/*Output:

--------------------
```

```
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 1 2

 No Orders in Cafe.[Cafe is Empty)

---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 1
Enter Order ID: 10
Thank you for order.Order id is : 10
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 1
Enter Order ID: 20
Thank you for order.Order id is : 20
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 2

 Order No. 10 is processed.
```

```
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 1
Enter Order ID: 40  30
Thank you for order.Order id is : 30
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 1
Enter Order ID: 40
Thank you for order.Order id is : 40
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 1
Enter Order ID: 50
Thank you for order.Order id is : 50
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 1
Enter Order ID: 60
Thank you for order.Order id is : 60
---------------------
```

```
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 3
Order Id's:

---------------------
|20 | |30 | |40 | |50 | 60 |
---------------------
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 3
Order Id's:

---------------------
|20 | |30 | |40 | |50 | 60 |
---------------------
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 3
Order Id's:

---------------------
|20 | |30 | |40 | |50 | 60 |
---------------------
---------------------
Pizza Parlour System
---------------------
****Menu*****
```

```
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 3
Order Id's:

---------------------
|20 | |30 | |40 | |50 | 60 |
---------------------
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 1
Enter Order ID: 70

Cafe is Full.Please wait.
---------------------
Pizza Parlour System
---------------------
****Menu*****
1. Accept order
2. Serve order
3. Display orders
4. Exit
Choice: 4

Thank You.Keep Visiting.

*/
```