PIMPRI CHINCHWAD EDUCATION TRUST's.

PIMPRI CHINCHWAD COLLEGE OF ENGINEERING

(An A[redacted]onomous Institute)

S.Y. B. TECH **Year:** 2024 – 25 **Semester:** I

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Department : Computer Engineering **Division:** B

Course : Data Structures Laboratory **Course Code:** BCE23PC02

Date: 18/10/24

Assignment – 10

- **Aim:**

  Implement a job scheduling system for a manufacturing plant using a double- ended queue. The system needs to efficiently manage the processing of jobs on various machines throughout the plant. Each job has a Job_priority. The system should support the following operations:

  a. Add Job
  b. Remove Job
  c. Display Job
  d. Search Job

- **Source Code:**

```
#include <iostream>

class Node

{
    public:
    int data;
    int priority;
    Node *next;
```

```
    Node *prev;

public: Node(int data1, int priority1)

{

        next=prev=NULL;
        data=data1;
        priority=priority1;
}

 };


 class Dequeue
 {
    Node *front,*rear; public:
    Dequeue()
{

        front=rear=NULL;

}

   public:

   void insertfromr(int data,int priority)
   {
      Node *nn=new Node(data,priority);
      if(rear==nullptr)


      {
          front=rear=nn;

      }

      else

      {

          if(nn->priority>=rear->priority)
```

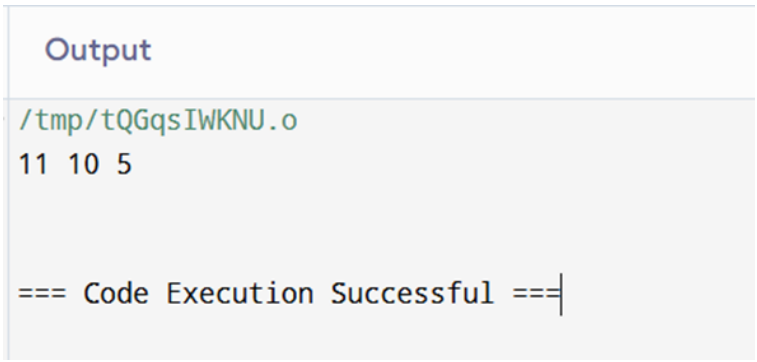
```
        {
            rear->next=nn;
            nn->prev=rear; rear=nn;
        }

        else

        {
            Node *temp=rear;

            while(temp!=nullptr && temp->priority > nn->priority)

            {
                temp=temp->prev;

            }

                if (temp == nullptr) {
                    nn->next = front;
                    front->prev = nn; front =
                    nn;
            }
            else

            {

                nn->next=temp->next;
                nn->prev=temp;
                if(temp->next!=NULL)
                {
                    temp->next->prev=nn;
                }

                temp->next=nn;

            }
        }
    }

}
```

```
void insertfromf(int data1,int priority1)
    {
       Node *nn=new Node(data1,priority1);
       if(front==nullptr)
       {

          front=rear=nn;
       }
       else
       {
          if(nn->priority<=front->priority)
          {
             nn->next = front;
             front->prev = nn; front=nn;
          }
          else
          {
             Node *temp=front;
             while(temp->next != nullptr && temp->priority < nn->priority)
             {
                temp=temp->next;
             }
             if(temp==rear)
             {
                rear->next=nn;
                nn->prev=rear; rear=nn;
             }
             else
```

```
            {
                nn->next=temp;
                nn->prev=temp->prev;
                if(temp->prev!=NULL)
                {
                    temp->prev->next = nn;
                }
                temp->prev = nn;
            }
        }
    }

void display()
{
        Node *temp = front; while (temp !=
        NULL)
        {
            std::cout << temp->data << " ";

            temp = temp->next;
        }
        std::cout << std::endl;
}
 };

 int main()
```

```
{
   Dequeue d;
   d.insertfromr(10,2);
   d.insertfromr(11,1);
   d.insertfromf(5,3); d.display();
}
```

- **Screen shots of Output:**



- **Conclusion:**

  Hence, we studied about Priority Queue and its operations.