LAB EXAM DATA STRUCTURE

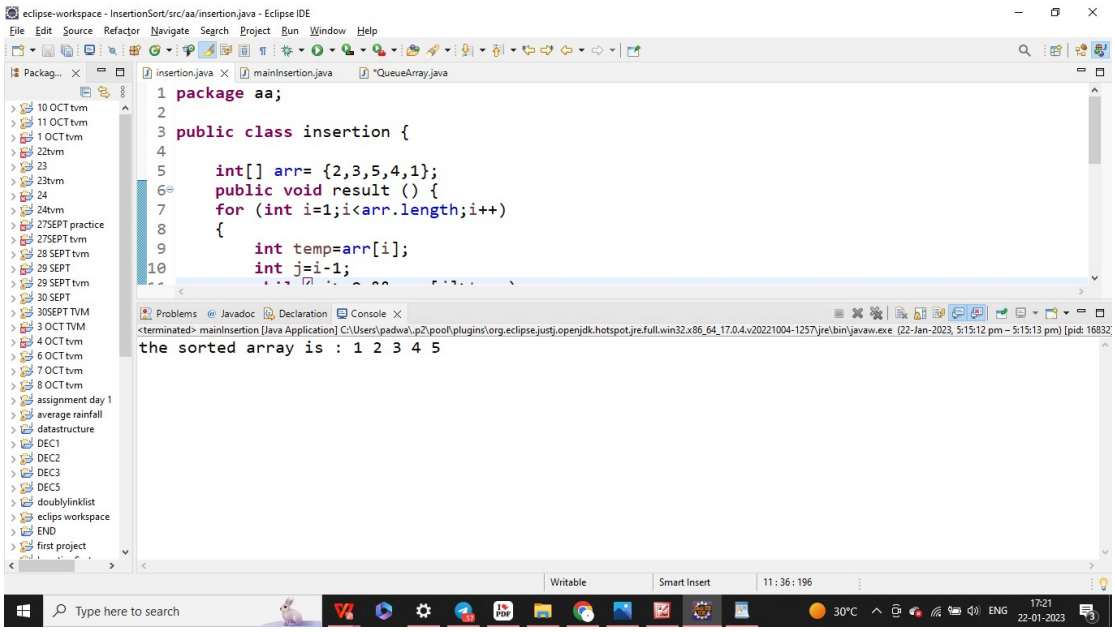
1. Write a Java program to

a. Perform insertion sort

ANS :

```
package aa;

public class mainInsertion {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        insertion s = new insertion();
        s.result();

    }

}
package aa;

public class insertion {

    int[] arr= {2,3,5,4,1};
    public void result () {
    for (int i=1;i<arr.length;i++)
```

```
    {
        int temp=arr[i];
        int j=i-1;
        while( j>=0 && arr[j]>temp)
        {
            arr[j+1]=arr[j];
            j--;
        }
        arr[j+1]=temp;

    }
    System.out.print("the sorted array is :");
    for(int a=0 ;a<arr.length;a++)
    {
        System.out.print(" "+arr[a]);
    }
    }

};
```



b. Implement queue using array

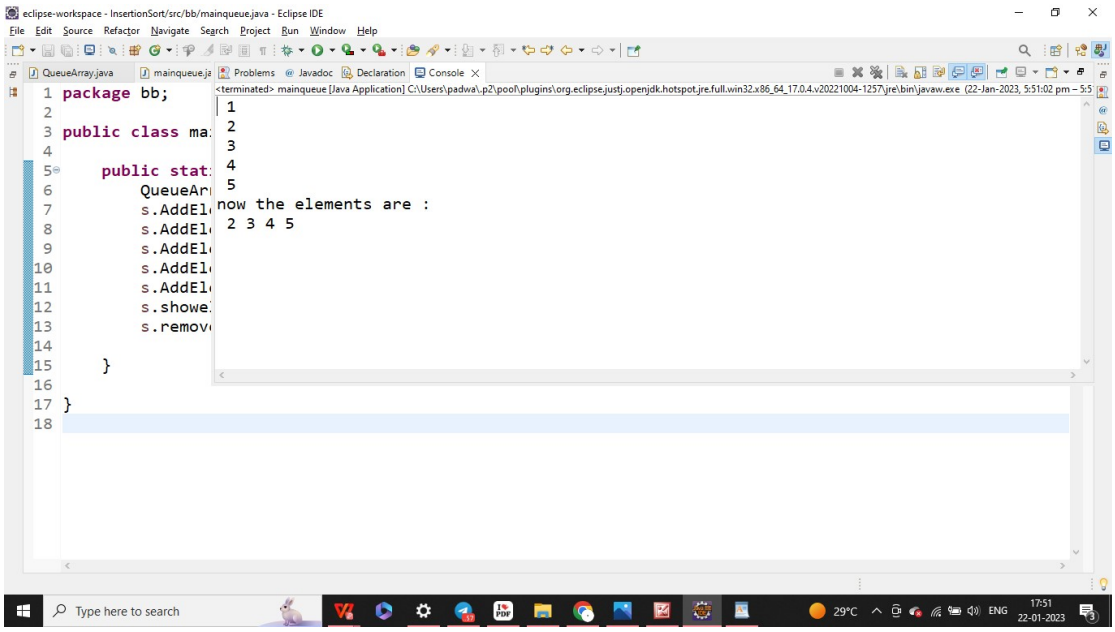
ANS :

```
package bb;


public class mainqueue {


    public static void main(String[] args) {
        QueueArray s =new QueueArray(5);
        s.AddElement(1);
        s.AddElement(2);
        s.AddElement(3);
        s.AddElement(4);
        s.AddElement(5);
        s.showelements();
```

```
            s.removeelements();

        }

}
package bb;

public class QueueArray {

    private int front ;
    private int rear;
    private int []arr;
    public QueueArray(int size) {

        arr=new int[size];
        front=-1;
        rear=-1;
    }
    public void AddElement(int element)
    {
        if(checkqueuefull())
        {
            System.out.println("the queue is
full");
```

```
        }
        if(front==-1 && rear==-1)
        {
            front=0;rear=0;
            arr[rear]=element;
            return;
        }
        rear=rear+1;
        arr[rear]=element;
    }
    public boolean checkqueuefull()
    {
        if(rear==(arr.length-1))
        {
            return true;
        }
        return false;
    }
    public void showelements()
    {
        for(int a=front;a<=rear;a++)
        {
            System.out.println(" "+arr[a]);
```

```
        }
    }
    public void removeelements()
    {
        if(front>rear || (rear==-1))
        {
            System.out.println("no element
present");
            return;
        }
        else {
        front=front+1;
        System.out.println("now the elements
are :");
        for(int a=front;a<=rear;a++)
        {
            System.out.print(" "+arr[a]);
        }
        }
    }


}
```


eclipse-workspace - InsertionSort/src/bb/mainqueue.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
QueueArray.java
mainqueue.ja
Problems
Javadoc
Declaration
Console
<terminated> mainqueue [Java Application] C:\Users\padwa\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.4.v20221004-1257\jre\bin\javaw.exe (22-Jan-2023, 5:51:02 pm – 5:5
1
2
3
4
5
now the elements are :
2 3 4 5
package bb;
public class ma
public stat
QueueAr
s.AddEl
s.AddEl
s.AddEl
s.AddEl
s.AddEl
s.showe
s.remov
}
}
Type here to search
29°C
ENG
17:51
22-01-2023