JAVA LAB EX 7
-19BCE1709 AISHWARYA S

1.
CODE:

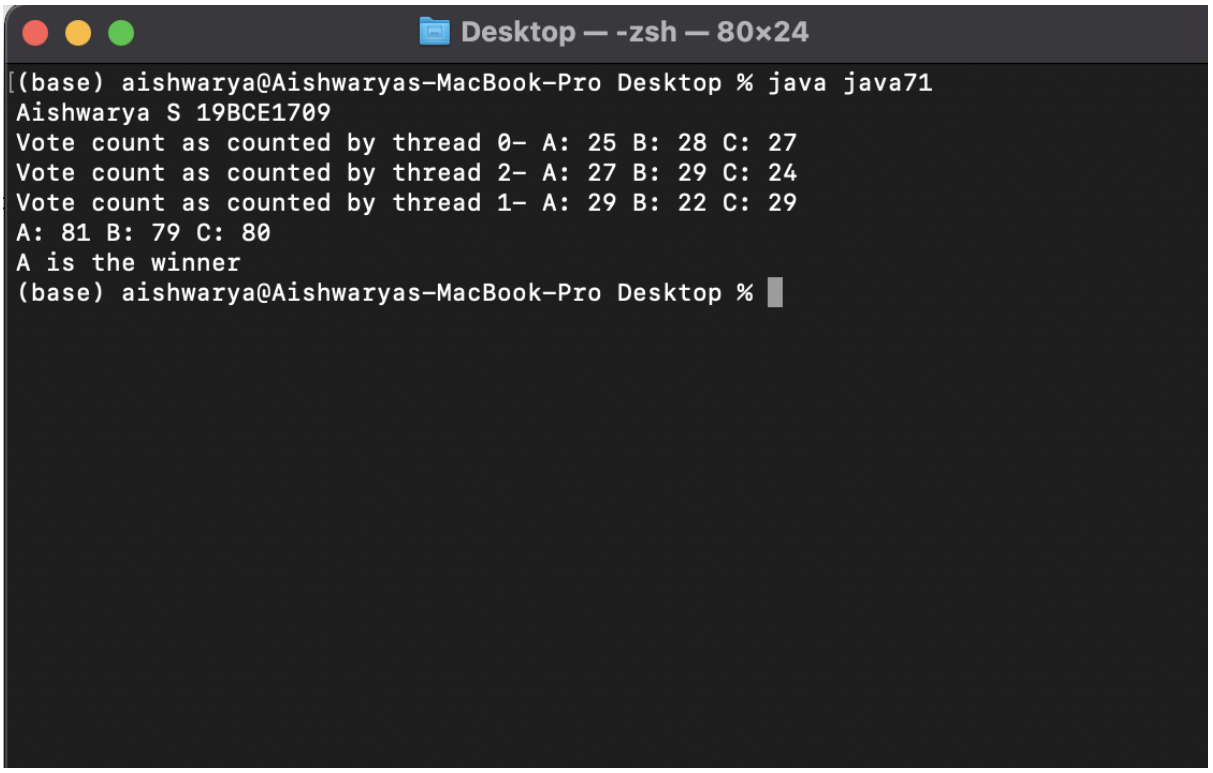
```
import java.util.*;
import java.lang.*;

class add
{
    static int a=0;
  static int b=0;
  static int c=0;
  static int[] votes= new int[240];
  add()
  {
      a=0;
      b=0;
      c=0;
  }
synchronized void addv(int st,int en, String name,int a1, int b1, int c1)
{
   for(int i=st;i<en;i++)
    { if(votes[i]==1)
        {a=a+1;
        a1=a1+1;

        }

      else if (votes[i]==2)
         {b=b+1;
         b1=b1+1;
        }
       else
         {
          c=c+1;
          c1=c1+1;
         }
    }
    System.out.print("Vote count as counted by thread " + name +"- A: "+a1+" B:
"+b1+" C: "+c1+"\n");


}
synchronized void res()
```

```
 {System.out.print("A: "+a+" B: "+b+" C: "+c+"\n");
      if(a>b&&a>c)
       System.out.print("A is the winner\n");
   else if(b>a&&b>c)
     System.out.print("B is the winner\n");
   else if(c>a&&c>b)
        System.out.print("C is the winner\n");
   else if(a==c&&a>b)
         System.out.print("Tie between A and C\n");
   else if(a==b&&a>c)
     System.out.print("Tie between A and B\n");
   else if(b==c&&c>a)
       System.out.print("Tie between B and C\n");
   else
      System.out.print("Tie between A, B, and C\n");
 }
  void randgen()
{  int l;
    Random rand= new Random();
    for(int i=0;i<240;i++)
      {  l=rand.nextInt(3)+1;
          votes[i]=l;


      }

}

}

class cthread extends Thread
{   int st, en,a1,b1,c1;
   String name;
   add a;

  cthread(String name,int st, add a)
 {   super();
    this.a1=this.c1=this.b1=0;
     this.st=st;
     this.en=this.st+80;
     this.name=name;
      this.a=a;
 }
 public void run()
 {   a.addv(st,en,name,a1,b1,c1);
```

```
 }
}

class maint extends Thread
{
   add a;
   maint(add a)
   {
       this.a=a;
   }

   public void run()
   {
       a.res();
   }
}

public class java71
{

public static void main(String args[])

   {  System.out.print("Aishwarya S 19BCE1709\n");


       add aa= new add();
       aa.randgen();
       cthread t[]= new cthread[3];
       int k=0;
       String j;

 for(int i=0;i<3;i++)
    {   k=i*80;

        t[i] = new cthread(Integer.toString(i),k,aa);
    }
     for(int i=0;i<3;i++)
         t[i].start();
      for(int i=0;i<3;i++)
      {  try{
          t[i].join();
      }catch( InterruptedException e)
        {
            System.out.print("no");
```

```
        }

      }


      aa.res();


   }

}
```

OUTPUT:



2.

CODE:

```
import java.util.*;
import java.lang.*;
class  d_base
{
static boolean w=false ;
synchronized void read(int i)
{
    if(w)
```

```
    {
    try {

      wait();
       }
catch(InterruptedException e) { System.out.println(e);

}

 }

System.out.print("Reader "+i+" starts reading\n");
System.out.print("Reader "+i+" stops reading\n");
notify();

 }


synchronized void write(int i)
{
    if(w)
  {
      try {

      wait();
       }
catch(InterruptedException e) { System.out.println(e);

}


  }
 w=true;
System.out.print("Writer "+i+" starts writing \n");
   System.out.print("Writer "+i+" stops writing\n");
w=false;

notifyAll();

}

}

class rthread extends Thread
{   d_base db;
```

```
    int i;
  rthread( d_base db, int i)
    {
        this.db=db;
        this.i=i;
    }
public void run()
 {  for(int i=0;i<3;i++)
     {
         db.read(i);
         try{
         Thread.sleep(10);



         }
         catch(InterruptedException e)
           {
               System.out.println(e);
           }


     }



 }
}


class wthread extends Thread
{    d_base db;
    int i;
  wthread( d_base db, int i)
    {
        this.db=db;
        this.i=i;
    }
public void run()
{   for(int i=0;i<3;i++)
   {
    db.write(i);
   }
}
}
```

```
public class java72
{
   public static void main(String args[])
     {    d_base db= new  d_base();
          System.out.print("Aishwarya S 19BCE1709\n");
          rthread rt[]= new rthread[20];
          wthread wt[]=new wthread[20];


 for(int i=0;i<3;i++)
    {  rt[i]= new rthread(db, i);
       wt[i]= new wthread(db, i);

    }

 for(int i=0;i<3;i++)
    {  rt[i].start();
     wt[i].start();

     }


}
}
```

OUTPUT:

```
(base) aishwarya@Aishwaryas-MacBook-Pro Desktop % javac java72.java
(base) aishwarya@Aishwaryas-MacBook-Pro Desktop % java java72
Aishwarya S 19BCE1709
Reader 0 starts reading
Reader 0 stops reading
Writer 0 starts writing
Writer 0 stops writing
Writer 1 starts writing
Writer 1 stops writing
Writer 2 starts writing
Writer 2 stops writing
Reader 0 starts reading
Reader 0 stops reading
Writer 0 starts writing
Writer 0 stops writing
Writer 1 starts writing
Writer 1 stops writing
Writer 2 starts writing
Writer 2 stops writing
Reader 0 starts reading
Reader 0 stops reading
Writer 0 starts writing
Writer 0 stops writing
Writer 1 starts writing
Writer 1 stops writing
Writer 2 starts writing
Writer 2 stops writing
Reader 1 starts reading
Reader 1 stops reading
Reader 1 starts reading
Reader 1 stops reading
Reader 1 starts reading
Reader 1 stops reading
Reader 2 starts reading
Reader 2 stops reading
Reader 2 starts reading
Reader 2 stops reading
Reader 2 starts reading
Reader 2 stops reading
(base) aishwarya@Aishwaryas-MacBook-Pro Desktop %
```