**********OUTPUT**********

THESE ARE OUTPUTS WHEN TRYING TO REPLICATE WHEN BOTH HANDS COINCIDE.

12:00

```
This is hours: 0.0
This is mins: 0.0
Angle of minute hand from 12 o'clock: 0.0
Angle of hour hand from 12 o'clock: 0.0
Angle is:  0.0
Hours and minute hand coincides:
hours: 12
mins:0
```

02:11

```
This is hours: 2.0
This is mins: 11.0
Angle of minute hand from 12 o'clock: 66.0
Angle of hour hand from 12 o'clock: 65.5
Angle is:  1.0
Hours and minute hand coincides:
hours: 12
mins:0
```

03:16

```
This is hours: 3.0
This is mins: 16.0
Angle of minute hand from 12 o'clock: 96.0
Angle of hour hand from 12 o'clock: 98.0
Angle is:  2.0
Hours and minute hand coincides:
hours: 12
mins:0
```

04:22

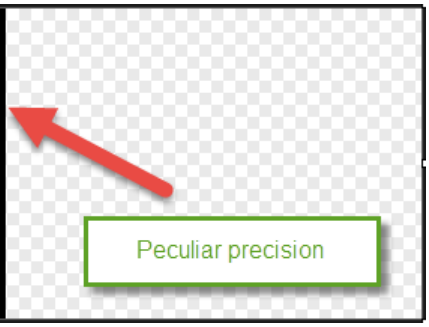
```
This is hours: 4.0
This is mins: 22.0
Angle of minute hand from 12 o'clock: 132.0
Angle of hour hand from 12 o'clock: 131.0
Angle is:  1.0
Hours and minute hand coincides:
hours: 12
mins:0
```

05:27

```
This is hours: 5.0
This is mins: 27.0
Angle of minute hand from 12 o'clock: 162.0
Angle of hour hand from 12 o'clock: 163.5
Angle is:  2.0
Hours and minute hand coincides:
hours: 12
mins:0
```

06:33

```
This is hours: 6.0
This is mins: 33.0
Angle of minute hand from 12 o'clock: 198.00000000000003
Angle of hour hand from 12 o'clock: 196.5
Angle is:  2.0
Hours and minute hand coincides:
hours: 12
mins:0
```



07:38

```
This is hours: 7.0
This is mins: 38.0
Angle of minute hand from 12 o'clock: 228.0
Angle of hour hand from 12 o'clock: 229.0
Angle is:  1.0
Hours and minute hand coincides:
hours: 12
mins:0
```

08:44

```
This is hours: 8.0
This is mins: 44.0
Angle of minute hand from 12 o'clock: 264.0
Angle of hour hand from 12 o'clock: 262.0
Angle is:  2.0
Hours and minute hand coincides:
hours: 12
mins:0
```

09:49

```
This is hours: 9.0
This is mins: 49.0
Angle of minute hand from 12 o'clock: 294.0
Angle of hour hand from 12 o'clock: 294.5
Angle is:  1.0
Hours and minute hand coincides:
hours: 12
mins:0
```

10:55

```
This is hours: 10.0
This is mins: 55.0
Angle of minute hand from 12 o'clock: 330.0
Angle of hour hand from 12 o'clock: 327.5
Angle is:  3.0
Hours and minute hand coincides:
hours: 12
mins:0
```

THIS IS THE ONLY OUTPUT SHOWING HOUR AND MINUTE HANDS COINCIDE

Hours and minute hand coincides:

hours: 12

mins:0

** Process exited - Return Code: 0 **

**********CODE**********

*MORE COMMENTS ARE KEPT IN ON THIS OCCASION

```
//**********CODE**********
import java.util.Scanner;
import java.util.Arrays;
public class Main
{
   public static void main(String[] args) {
      double hours;
      double mins;
      clock c;
//do {
Scanner reader = new Scanner(System.in); // Reading from System.in
System.out.println("Enter a number between 0-23 to denote HH   in  HH:mm 24 hour clock");
hours = reader.nextInt(); // Scans the next token of the input as an int.
System.out.println("Enter a number between 0-59 to denote MM   in  hh:MM 24 hour clock");
mins = reader.nextInt(); // Scans the next token of the input as an int.
//once finished
reader.close();


System.out.println("\n");
// THE FUNCTION HAS TO START here

c= new clock(hours,mins);
}

}
```

```
class clock
{
   double hours; //counter
   double mins; //counter
   double degrees;
   double hr24Tohr12;
   double angleHour;
   double angleMinute;

   double angleH;
   double angleM;


public clock(double hours, double mins)
{
   this.hours=hours;
   this.mins=mins;
   double temp;
   double Angle;

   if (hours>12)                    //conversion from hh:mm  to  h:mm
   {
      hours=hours-12;

   }

   System.out.println("This is hours: " + hours);
   System.out.println("This is mins: " + mins);

   if (hours==12)              //ensure  any loops can execute from 0:00  to  11:59 in forthcoming code
```

```
    {
        hours=0;
    }

    angleMinute = (mins/60)*360;
    angleHour  = ((hours/12)*360) + ((angleMinute/360)*30);



    System.out.println("Angle of minute hand from 12 o'clock: " + angleMinute);
    System.out.println("Angle of hour hand from 12 o'clock: " + angleHour);

    Angle = Math.round(Math.abs(angleHour-angleMinute));

// This is to ensure that hands can not be further than 6 o'clock apart
    if (Math.round(Math.abs(angleHour-angleMinute))>180)
    {
        Angle = 360 - Math.round(Math.abs(angleHour-angleMinute));

    }

    System.out.println("Angle is:  " +  Angle);

    // This is now checking if there are any moments when angle between minute and hour hand is
ZERO

        for (int i=0;i<12;i++)
        {
            for (int j=0;j<60;j++)
            {
                double k=i;
                double p=j;
```

```
            angleM = (p/60)*360;
            angleH = ((k/12)*360) + ((p/360)*30);

            temp=angleH-angleM;

            if (Math.abs(temp)>180)
            {
            temp = 360 - temp;
            }

            //System.out.println("This is difference: " + Math.abs(temp));

            if (Math.abs(temp)==0)
            {
               System.out.println("Hours and minute hand coincides:");
               System.out.println("hours: " + i);
               System.out.println("mins:" + j);

            }

         }
      }


}

}
```