

```

import java.io.*;
import java.lang.*;
class lock{}
class rwmonitor extends Thread
{
    public static lock l=new lock();
    public static boolean writing=false;
    public int thread_id;
    public static int data=0;
    public static int reader_num=0;
    String type;

    rwmonitor(int i,String s)
    {
        thread_id=i;
        type=s;
    }
    public void run()
    {
        if(type.equals("reader"))
        {
            keepreading();
        }
        else
        {
            keepwriting();
        }
    }
    public void keepreading()
    {
        acquirereadlock();
        System.out.println(type+" "+thread_id+" reads "+data);
        releasedreadlock();
    }
    public void keepwriting()
    {
        acquirewritelock();
        data++;
        System.out.println(type+" "+thread_id+" writes "+data);
        releasedwritelock();
    }
    public void acquirereadlock()
    {
        synchronized(l)
        {
            while(writing)
            {
                try
                {
                    System.out.println(type+" "+thread_id+"waiting");
                    l.wait();
                }
                catch(InterruptedException e){}
            }
            reader_num++;
        }
    }
}

```

```

public void acquirewritelock()
{
    synchronized(l)
    {
        while(writing||reader_num>0)
        {
            try
            {
                System.out.println(type+" "+thread_id+"waiting");
                l.wait();
            }
            catch(InterruptedException e){}
        }
        writing=true;
    }
}

public void releasedreadlock()
{
    synchronized(l)
    {
        --reader_num;
        System.out.println("reader"+thread_id+" complete");
        if(reader_num==0)
        {
            l.notifyAll();
        }
    }
}

public void releasedwritelock()
{
    synchronized(l)
    {
        writing=false;
        System.out.println("writer"+thread_id+" complete");
        l.notifyAll();
    }
}

}

class rw
{
    public static void main(String args[])throws IOException
    {
        int i;
        rwmonitor a[ ]=new rwmonitor[6];
        for(i=0;i<3;i++)
            a[i]=new rwmonitor(i,"reader");
        for(i=3;i<6;i++)
            a[i]=new rwmonitor(i,"writer");
        for(i=5;i>=0;i--)
            a[i].start();
    }
}

```

## Output

writer 5 writes 1  
writer 4 waiting  
reader 1 waiting  
writer 5 complete  
reader 1 waiting  
writer 3 writes 2  
writer 4 waiting  
reader 0 waiting  
reader 2 waiting  
writer 3 complete  
reader 2 reads 2  
reader 2 complete  
reader 0 reads 2  
writer 4 waiting  
reader 0 complete  
reader 1 reads 2  
reader 1 complete  
writer 4 writes 3  
writer 4 complete