

OOSD: Practice Problems 11

1. Write a *complete* Java program that creates and starts a thread that prints the string "Herky" repeatedly, forever. The main method of your program should produce no output on its own.
2. Write a *complete* Java program that creates ten threads, each of which holds one of the ten digits from 0 to 9. Each thread prints its digit 100 times, delaying for one tenth of a second after each output of a digit. Start the threads running after they have been created.
3. Write a *complete* Java program that puts a JPanel onto a JFrame that is displayed on the screen. Your program has a thread that causes the string "Herky" to be drawn on the screen with a san serif font that changes from 10 point to 160 point by increments and decrements of 2 every 50 milliseconds.
4. Download the Producer-Consumer (version 4, Main4.java) program from the ftp site and run it with 4 producers and 1 consumer and with 1 producer and 4 consumers. See if you can make it work incorrectly by adding *yield* and *sleep* commands.
5. Rewrite the EchoServer program in the lecture notes so that the server i) runs forever, accepting connections and ii) can handle more than one client at the same time.

6. Consider the execution of this Java program.

```

public class Simp extends Thread
{
    private int num;

    public Simp (int k)
    {
        num = k; System.out.println("Creating " + num);
    }

    public void run()
    {
        for (int count=3; count>0; count--)
            System.out.println("Thread " + num + ": Value = " + count);
    }

    public static void main(String [] a)
    {
        for (int k=1; k<=4; k++)
        {
            Simp st = new Simp(k); st.start();
            System.out.println("All Threads Started");
        }
    }
}

```

Which of the following output listings is possible?
Write "Yes" or "No" next to each one.

Creating 1 Creating 2 Creating 3 Creating 4 All Threads Started Thread 1: Value = 3 Thread 2: Value = 3 Thread 3: Value = 3 Thread 4: Value = 3 Thread 1: Value = 2 Thread 2: Value = 2 Thread 3: Value = 2 Thread 4: Value = 2 Thread 1: Value = 1 Thread 2: Value = 1 Thread 3: Value = 1 Thread 4: Value = 1	Creating 1 Thread 1: Value = 3 Thread 1: Value = 2 Thread 1: Value = 1 Creating 2 Thread 2: Value = 3 Thread 2: Value = 2 Thread 2: Value = 1 Creating 3 Thread 3: Value = 3 Thread 3: Value = 2 Thread 3: Value = 1 Creating 4 Thread 4: Value = 3 Thread 4: Value = 2 Thread 4: Value = 1 All Threads Started	Creating 1 Creating 2 Thread 1: Value = 3 Thread 1: Value = 2 Creating 3 Thread 2: Value = 3 Thread 1: Value = 1 Thread 2: Value = 2 Creating 4 Thread 3: Value = 3 Thread 2: Value = 1 Thread 3: Value = 2 Thread 3: Value = 1 Thread 4: Value = 2 Thread 4: Value = 1
Creating 1 Creating 2 Creating 3 Thread 1: Value = 3 Thread 1: Value = 2 Thread 1: Value = 1 Creating 4 Thread 2: Value = 3 Thread 2: Value = 2 Thread 2: Value = 1 All Threads Started Thread 3: Value = 3 Thread 3: Value = 2 Thread 3: Value = 1 Thread 4: Value = 3 Thread 4: Value = 2 Thread 4: Value = 1	Creating 1 Thread 1: Value = 3 Creating 2 Thread 1: Value = 2 Thread 2: Value = 3 Creating 3 Thread 1: Value = 1 Thread 2: Value = 2 Thread 3: Value = 3 Creating 4 Thread 2: Value = 1 Thread 3: Value = 2 Thread 4: Value = 3 All Threads Started Thread 3: Value = 1 Thread 4: Value = 2 Thread 4: Value = 1	Creating 1 Creating 2 Thread 1: Value = 3 Creating 3 Thread 1: Value = 2 Thread 2: Value = 3 Thread 1: Value = 1 Creating 4 Thread 2: Value = 2 Thread 3: Value = 3 Thread 2: Value = 1 All Threads Started Thread 3: Value = 2 Thread 4: Value = 3 Thread 3: Value = 1 Thread 4: Value = 2 Thread 4: Value = 1