

## 02、死锁检测

# 死锁

### 1、代码

```

package com.vrv.tune;

import java.util.concurrent.ExecutorService;
import java.util.concurrent.Executors;

class TestTask implements Runnable {
    private Object obj1;
    private Object obj2;
    private int order;

    public TestTask(int order, Object obj1, Object obj2) {
        this.order = order;
        this.obj1 = obj1;
        this.obj2 = obj2;
    }

    public void test1() throws InterruptedException {
        synchronized (obj1) {
            //建议线程调度器切换到其它线程运行
            Thread.yield();
            synchronized (obj2) {
                System.out.println("test. . .");
            }
        }
    }

    public void test2() throws InterruptedException {
        synchronized (obj2) {
            Thread.yield();
            synchronized (obj1) {
                System.out.println("test. . .");
            }
        }
    }

    @Override
    public void run() {

        while (true) {
            try {
                if(this.order == 1){
                    this.test1();
                }else{
                    this.test2();
                }
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }

    public class FindLocked {
        public static void main(String[] args) throws InterruptedException {
            Object obj1 = new Object();
            Object obj2 = new Object();

            ExecutorService ex = Executors.newFixedThreadPool(10);
            // 起10个线程
            for (int i = 0; i < 10; i++) {
                int order = i%2==0 ? 1 : 0;
                ex.execute(new TestTask(order, obj1, obj2));
            }
        }
    }
}

```

2、打包运行通过jps找到pid

java -jar jstacklocked.jar

jps

找到pid

16375

3、jstack找到死锁

jstack -l 16375

```
which is held by "pool-1-thread-2"

Java stack information for the threads listed above:
=====
"pool-1-thread-10":
  at com.vrv.tune.TestTask.test2(FindLocked.java:29)
  - waiting to lock <0x00000000608456450> (a java.lang.Object)
  at com.vrv.tune.TestTask.run(FindLocked.java:45)
  at java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1145)
  at java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:615)
  at java.lang.Thread.run(Thread.java:745)
"pool-1-thread-2":
  at com.vrv.tune.TestTask.test2(FindLocked.java:31)
  - waiting to lock <0x00000000608456440> (a java.lang.Object)
  - locked <0x00000000608456450> (a java.lang.Object)
  at com.vrv.tune.TestTask.run(FindLocked.java:45)
  at java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1145)
  at java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:615)
  at java.lang.Thread.run(Thread.java:745)
"pool-1-thread-1":
  at com.vrv.tune.TestTask.test1(FindLocked.java:22)
  - waiting to lock <0x00000000608456450> (a java.lang.Object)
  - locked <0x00000000608456440> (a java.lang.Object)
  at com.vrv.tune.TestTask.run(FindLocked.java:43)
  at java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1145)
  at java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:615)
  at java.lang.Thread.run(Thread.java:745)

Found 1 deadlock.
```