Affinity Locking

Setting Affinity

COMSATS University Islamabad
Sahiwal Campus

Usama Sarwar

FA17-BS(CS)-090-B

Mr Umer

Operating System

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Allocating Threads and Cores

Allocating threads and cores

Intel i7 with four cores and hyper-threading. "reader" and "writer" to be on the same core. "engine" to be on a core of its own.

	Thread 0	Thread 1
Core 0	CPU 0 General Use	CPU 4 General Use
Core 1	CPU 1 General Use	CPU 5 General Use
Core 2	CPU 2 writer thread	CPU 6 reader thread
Core 3	CPU 3 engine thread	CPU 7 engine thread*

1. Output

```
Assigning cpu 7 to Thread[main,5,main]
Assigning cpu 6 to Thread[reader,5,main]
Assigning cpu 2 to Thread[writer,5,main]
Releasing cpu 7 from Thread[main,5,main]
Assigning core 3: cpus 3, 7 to Thread[engine,5,main]
The assignment of CPUs is
0: General use CPU
1: General use CPU
2: Thread[writer,5,main] alive=true
3: Thread[engine,5,main] alive=true
4: General use CPU
5: General use CPU
6: Thread[reader,5,main] alive=true
7: Thread[engine,5,main] alive=true
Releasing cpu 6 from Thread[reader,5,main]
Releasing cpu 2 from Thread[writer,5,main]
```

```
Releasing cpu 3 from Thread[engine,5,main]
Releasing cpu 7 from Thread[engine,5,main]
```

2. Code

```
public static void main(String... args) throws InterruptedException {
AffinityLock al = AffinityLock.acquireLock();
try {
// find a cpu on a different socket, otherwise a different core.
AffinityLock readerLock = al.acquireLock(DIFFERENT_SOCKET,
DIFFERENT_CORE);
new Thread(new SleepRunnable(readerLock, false), "reader").start();
// find a cpu on the same core, or the same socket, or any free cpu.
AffinityLock writerLock = readerLock.acquireLock(SAME_CORE,
SAME_SOCKET, ANY);
new Thread(new SleepRunnable(writerLock, false), "writer").start();
Thread.sleep(200);
} finally {
al.release();
}
// allocate a whole core to the engine so it doesn't have to compete for resources.
al = AffinityLock.acquireCore(false);
new Thread(new SleepRunnable(al, true), "engine").start();
Thread.sleep(200);
System.out.println("\nThe assignment of CPUs is\n" + AffinityLock.dumpLocks());
}
```