

alarm-single 和 alarm-multiple 的标准输出与 task1 的说明

关于 task1, 只有这两个测试点。

不过要注意的是, 仅仅 pass 掉测试点是不够的, 这仅仅能说明各个进程之间能正常运行, 而我们的目标是将忙等待改为闲等待。

对于 alarm-single, 期望的输出为:

```
Boot complete.
Executing 'alarm-single':
(alarm-single) Creating 5 threads to sleep 1 times each.
(alarm-single) Thread 0 sleeps 10 ticks each time,
(alarm-single) thread 1 sleeps 20 ticks each time, and so on.
(alarm-single) If successful, product of iteration count and
(alarm-single) sleep duration will appear in nondescending order.
(alarm-single) thread 0: duration=10, iteration=1, product=10
(alarm-single) thread 1: duration=20, iteration=1, product=20
(alarm-single) thread 2: duration=30, iteration=1, product=30
(alarm-single) thread 3: duration=40, iteration=1, product=40
(alarm-single) thread 4: duration=50, iteration=1, product=50
Execution of 'alarm-single' complete.
Timer: 355 ticks
Thread: 253 idle ticks, 104 kernel ticks, 0 user ticks
Console: 944 characters output
Keyboard: 0 keys pressed
cs302@ubuntu:~/pintos/pintos/src/threads/build/tests/threads$ cat alarm-
output
```

alarm-multiple 期望的输出为:

```
(alarm-multiple) thread 2: duration=30, iteration=5, product=150
(alarm-multiple) thread 4: duration=50, iteration=3, product=150
(alarm-multiple) thread 3: duration=40, iteration=4, product=160
(alarm-multiple) thread 2: duration=30, iteration=6, product=180
(alarm-multiple) thread 3: duration=40, iteration=5, product=200
(alarm-multiple) thread 4: duration=50, iteration=4, product=200
(alarm-multiple) thread 2: duration=30, iteration=7, product=210
(alarm-multiple) thread 3: duration=40, iteration=6, product=240
(alarm-multiple) thread 4: duration=50, iteration=5, product=250
(alarm-multiple) thread 3: duration=40, iteration=7, product=280
(alarm-multiple) thread 4: duration=50, iteration=6, product=300
(alarm-multiple) thread 4: duration=50, iteration=7, product=350
Execution of 'alarm-multiple' complete.
Timer: 884 ticks
Thread: 598 idle ticks, 289 kernel ticks, 0 user ticks
Console: 2908 characters output
Keyboard: 0 keys pressed
Powering off..cs302@ubuntu:~/pintos/pintos/src/threads/build/tests/t
```

以后者为例, 程序总共运行了 884ticks, 其中有 598 个 ticks 是 idle (空), 也就是等待的时候并未占用 CPU 资源, 而忙等待同样运行 884ticks, 输出同样的结果, idle ticks 数目会少很多甚至没有。

这些数字都不是固定的, 大致类似即可。