Assignment 1- Preemption

12212222 姜博宇

1. 作业概述

本次作业的目标是修改操作系统内核代码，实现对内核线程的抢占调度。在每个时钟中断时调用 `yield`，使当前进程放弃 CPU 并回到 `scheduler`。经过实现三个checkpoint，现在的操作系统可以实现多CPU下的线程抢占调度。

2. 运行截图

Checkpoint 1

Mar 30 15:02

File   Edit   Selection   ...   ←   →   🔍 bssignment1-Preemption (1)

oslab@oslab-2025S: ~/bssignment1-Preemption (1)

```
[INFO  0,4] worker: thread 4: count 75000, sleeping
[sched 0,4] sched: switch to scheduler pid(4)
[sched 0,-1] scheduler: switch to proc pid(5)
[INFO  0,5] worker: thread 5: count 76000, sleeping
[sched 0,5] sched: switch to scheduler pid(5)
[sched 0,-1] scheduler: switch to proc pid(6)
[INFO  0,6] worker: thread 6: count 77000, sleeping
[sched 0,6] sched: switch to scheduler pid(6)
[sched 0,-1] scheduler: switch to proc pid(7)
[INFO  0,7] worker: thread 7: count 78000, sleeping
[sched 0,7] sched: switch to scheduler pid(7)
[sched 0,-1] scheduler: switch to proc pid(8)
[INFO  0,8] worker: thread 8: count 79000, sleeping
[sched 0,8] sched: switch to scheduler pid(8)
[sched 0,-1] scheduler: switch to proc pid(9)
[INFO  0,9] worker: thread 9: count 80000, sleeping
[sched 0,9] sched: switch to scheduler pid(9)
[sched 0,-1] scheduler: switch to proc pid(2)
[WARN  0,2] worker: thread 2: exiting
[sched 0,2] sched: switch to scheduler pid(2)
[sched 0,-1] scheduler: switch to proc pid(3)
[ERROR 0,3] kernel_trap: kerneltrap: not from supervisor mode
[ERROR 0,3] kernel_trap: =========== Kernel Panic ===========
sstatus : 0x8000000200006020
- SUM:0, SPP:U, SPIE:1, SIE: 0
scause  : 0x0000000000000002
- Interrupt:0, Code:2
sepc    : 0x000000008020197c
stval   : 0x00000000100024f3
sip     : 0x0000000000000000
- Pending: Software:0, Timer:0, External:0
sie     : 0x0000000000000220
- Enabled: Software:0, Timer:1, External:1
satp    : 0x0000000000000000
kernel trapframe at 0x000000008023ce60
ra: 0x0000000080202364   sp: 0x000000008023ce60   gp: 0x0000000000000000   tp: 0x00000000000000
00
t0: 0x0000000000000000   t1: 0x000000008023cf48   t2: 0x0000000000001000   s0: 0x000000008023cf
80
s1: 0x0000000000000000   a0: 0x00000000000001f4   a1: 0x000000000000000a   a2: 0x00000000000000
05
a3: 0x00000000004c4b40   a4: 0x000000000b1ddf84   a5: 0x0000000080202364   a6: 0x00000000802062
c0
a7: 0x0000000000000000   s2: 0x0000000000000000   s3: 0x00000000000003e8   s4: 0x00000000000000
03
s5: 0x0000000080205ad8   s6: 0x00000000802054b0   s7: 0x0000000080206300   s8: 0x00000000000000
00
s9: 0x0000000080238d98   s10: 0x0000000000000000   s11: 0x0000000000000000   t3: 0x00000000000000
10
t4: 0x0000000080046dda   t5: 0x000000000000000f   t6: 0x0000000000000027

[PANIC 0,3] os/trap.c:92: kernel panic
```

Checkpoint 2

Checkpoint 3

3. 时间统计

本次作业共计花费 **4.5** 小时完成，其中**2**小时学习知识，**2**小时写代码，**0.5**小时写报告。