

##lab0.5

1: GDB

ENTRY.S INIT.C

qemu gdb , gdb QEMU RISC-V 0x80200000
RISC-V

lab0 lab0 make debug make gdb

x/10i \$pc 10

```
(gdb) x/10i $pc
=> 0x1000: auipc t0,0x0
    0x1004: addi a1,t0,32
    0x1008: csrr a0,mhartid
    0x100c: ld t0,24(t0)
    0x1010: jr t0
    0x1014: unimp
    0x1016: unimp
    0x1018: unimp
    0x101a: 0x8000
    0x101c: unimp
```

0x1010: jr t0 0x80000000 x/10i 0x80000000 0x80000000 10
0x80000000 bootloader

break 0x80200000 0x80200000 kern_entry kern_entry

Breakpoint 1 at 0x80200000: file kern/init/entry.S, line 7.

kernel_entry

- la sp, bootstacktop bootstacktop sp
- tail kern_init kern_init

bootstacktop kernel_entry kern_init

debug

OpenSBI v0.4 (Jul 2 2019 11:53:53)

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Platform Name : QEMU Virt Machine
Platform HART Features : RV64ACDFIMSU
Platform Max HARTs : 8
Current Hart : 0
Firmware Base : 0x80000000

Firmware Size : 112 KB

Runtime SBI Version : 0.1

PMP0: 0x0000000080000000-0x000000008001ffff (A)

PMP1: 0x0000000000000000-0xffffffffffffffff (A,R,W,X)

continue debug

(THU.CST) os is loading ...

- 0x1000 -> 0x80000000 OpenSBI -> 0x80200000
kern_entry (kern/init/entry.S)-> kern_init() (kern_init/init.c)->
cprintf() ->
- kernel.ld
- entry.S