Group_6_proposal

Team Member: ZHOU Sicheng 周思呈 (12110644) , CAO Zhezhen 曹哲振 (12110529) , QIN Yuzhou 秦禹洲 (12110601)

1 Topic selection

proj199-Linux-0.11-arm .
The goal is to port Linux 0.11 to the ARM platform.

2 Basic idea

Linux0.11 is a very old kernel version which only support x86 architecture. In order to port it to ARM architecture, we need to do the following.

1. Choose target ARM architecture and understand it. We should understand the features and instruction set of the ARM architecture. It is also necessary to understand the hardware features of the architecture such as memory mapping mode, interrupt controller, and clock controller.
2. Modified Linux0.11 source code. Specific modifications include adding support for the target processor, modifying hardware-related code such as interrupt and clock controllers, and modifying compiler options.
3. Compile the modified source code into an executable kernel image file.
4. Porting boot code. Booting the kernel on ARM architecture requires some boot code support, such as bootloader and device tree file. QEMU can be used to emulate a variety of processor architectures, including ARM architectures, which can be used in this step.

3 Completion plan

After some survey, we have decided to port Linux0.11 to ARMv7.
The start time of this project is week10 and the end time will be week15. We have plans as follows for these six weeks.

- Week10: Decide the target ARM architecture version and learn this ISA, making vital preparation for future porting phase.
- Week11-12: Modify original code in Linux0.11.
- Week13-15: Compile the original code into executable kernel image file and run this image file on QEMU.