

Homework 6: Listings and Project

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The goal of this homework was to introduced the students on the files of the Kernel and some ideas and first steps of the project.

This assignment was splitted in two big sides, the first one about the kernel structure and the second one about the project. On the first part we had to find some files that were located in the structure of the kernel, without compiling it. To find those files was not that hard, since some linux functions helped a lot, as `find . -name ...`

Even though the linux commands helped a lot, some values, as `CONFIG_CPU_V6`, `CONFIG_CPU_V6K` and `CONFIG_CPU_V7` were a little hard to find, searching for this variables, the following values were found:

```
config CPU_V6
config CPU_V6K
    select CPU_USE_DOMAINS if CPU_V6 && MMU
    depends on CPU_ARM720T || CPU_ARM740T || CPU_ARM920T || CPU_ARM922T ||
CPU_ARM925T || CPU_ARM926T || CPU_ARM940T || CPU_ARM946E || CPU_ARM1020 ||
CPU_ARM1020E || CPU_ARM1022 || CPU_ARM1026 || CPU_XSCALE || CPU_XSC3 || CPU_MOHAWK ||
CPU_V6 || CPU_V6K || CPU_V7 || CPU_FEROCEON
    default CPU_V6 || CPU_V6K || CPU_V7
    depends on CPU_ARM1020 || CPU_V6 || CPU_V6K || CPU_MOHAWK || CPU_XSC3 || CPU_V7
|| CPU_FA526
    depends on CPU_V6K && SMP
    default y if CPU_V7 && !(CPU_V6 || CPU_V6K)
    bool "Use non-cacheable memory for DMA" if (CPU_V6 || CPU_V6K) && !CPU_V7
    default y if CPU_V6 || CPU_V6K || CPU_V7
```

```
~/Desktop/bb-kernel/KERNEL/arch/arm/mm$ cat Kconfig | grep CPU_V6K
```

```
config CPU_V6K
    depends on CPU_ARM720T || CPU_ARM740T || CPU_ARM920T || CPU_ARM922T ||
CPU_ARM925T || CPU_ARM926T || CPU_ARM940T || CPU_ARM946E || CPU_ARM1020 ||
CPU_ARM1020E || CPU_ARM1022 || CPU_ARM1026 || CPU_XSCALE || CPU_XSC3 || CPU_MOHAWK ||
CPU_V6 || CPU_V6K || CPU_V7 || CPU_FEROCEON
    default CPU_V6 || CPU_V6K || CPU_V7
    depends on CPU_ARM1020 || CPU_V6 || CPU_V6K || CPU_MOHAWK || CPU_XSC3 || CPU_V7
|| CPU_FA526
    depends on CPU_V6K && SMP
    default y if CPU_V7 && !(CPU_V6 || CPU_V6K)
    bool "Use non-cacheable memory for DMA" if (CPU_V6 || CPU_V6K) && !CPU_V7
    default y if CPU_V6 || CPU_V6K || CPU_V7
```

```
~/Desktop/bb-kernel/KERNEL/arch/arm/mm$ cat Kconfig | grep CPU_V7
select CPU_V7
select CPU_V7
config CPU_V7
    depends on CPU_ARM720T || CPU_ARM740T || CPU_ARM920T || CPU_ARM922T ||
CPU_ARM925T || CPU_ARM926T || CPU_ARM940T || CPU_ARM946E || CPU_ARM1020 ||
CPU_ARM1020E || CPU_ARM1022 || CPU_ARM1026 || CPU_XSCALE || CPU_XSC3 || CPU_MOHAWK ||
CPU_V6 || CPU_V6K || CPU_V7 || CPU_FEROCEON
    depends on CPU_V7
    depends on MMU && CPU_V7
    depends on !CPU_USE_DOMAINS && CPU_V7
    default CPU_V6 || CPU_V6K || CPU_V7
    depends on CPU_ARM1020 || CPU_V6 || CPU_V6K || CPU_MOHAWK || CPU_XSC3 || CPU_V7
|| CPU_FA526
    default y if CPU_V7 && !(CPU_V6 || CPU_V6K)
    default y if CPU_V7
    bool "Use non-cacheable memory for DMA" if (CPU_V6 || CPU_V6K) && !CPU_V7
    default y if CPU_V6 || CPU_V6K || CPU_V7
```

And the statement `b_start_kernel` was found at `/KERNEL/arch/alpha/boot/main.c` and inside the main, it was found at `void start_kernel(void)`.

About the project, the template page on the wiki was created and some information was added to it, so other students and even people from outside of Rose-Hulman could take a look and suggest ideas for it or reapply it. Since the project is on the beginning, a lot of the information on the page is missing, but this information will be added during the development of the project.

All the tasks were successfully achieved without big difficulties or problems.