ROSE-HULMAN INSTITUTE OF TECHNOLOGY

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Subject: Week 6 Memo

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1 Homework 6 Summary

Definitions for CONFIG_CPU_V6, CONFIG_CPU_V6K, and CONFIG_CPU_V7 can be found in `.../arch/arm/mm/Kconfig` and look something like this:

```
 # ARMv7
config CPU_V7
bool "Support ARM V7 processor" if ARCH_INTEGRATOR || MACH_REALVIEW_EB
|| MACH_REALVIEW_PBX
select CPU_32v6K
select CPU_32v7
select CPU_ABRT_EV7
select CPU_CACHE_V7
select CPU_CACHE_VIPT
select CPU_COPY_V6 if MMU
select CPU_CP15_MMU if MMU
select CPU_CP15_MPU if !MMU
select CPU_HAS_ASID if MMU
select CPU_PABRT_V7
select CPU_TLB_V7 if MMU
```

This basically creates a dependency tree of necessary components that must be initialized for this processor. The actual selection of which definition we use occurs in `KERNEL/.config`, which looks like this:

```
#
# Processor Type
#
CONFIG_CPU_V7=y
CONFIG_CPU_32v6K=y
CONFIG_CPU_32v7=y
CONFIG_CPU_ABRT_EV7=y
CONFIG_CPU_PABRT_V7=y
CONFIG_CPU_CACHE_V7=y
CONFIG_CPU_CACHE_VIPT=y
CONFIG_CPU_COPY_V6=y
CONFIG_CPU_TLB_V7=y
CONFIG_CPU_HAS_ASID=y
CONFIG_CPU_CP15=y
CONFIG_CPU_CP15_MMU=y
```

The command `b start_kernel` can be found at line 104 in the file `KERNEL/arch/arm/kernel/head-common.S`, which is included at the bottom of `KERNEL/arch/arm/kernel/head.S`. This calls the `start_kernel()` function in main.c, which is located in `KERNEL/init/main.c`, located at line 473.

2 Exercise Summary

Objective	Exercise	Status	Notes
Boot sequence	Exercise 21a	Completed	The FAT partition seemed to already be loaded in `/media/BEAGLEBONE`
Systemd	Exercise 21b	Completed	The exercise reminded me that I need to learn JavaScript.

The main points I took away from these exercises were the following:

- The kernel is incredibly complex, and contains many files that have the same name, but are located in different paths, which leads to some serious confusion.