CP2.1

ECE391: Computer Systems Engineering **Spring 2025**
Machine Problem 3 **Checkpoint 1: Mon April 7 18:00 CDT**
Checkpoint 2: Fri April 18 18:00 CDT

MP3 Student Rubric

Checkpoint 1 (0-30pts)

1. Cache (6pts)
    - Cache is empty on OS startup
    - Starting with an empty cache, can induce 64 misses on different blocks and then 64 read hits on those same blocks with a total of 64 requests made to the backing device
    - Must not generate a request to the backing device on a read hit
    - No evictions unless `cache_get_block` is called again
2. KTFS (10pts)
    - Open/Close
    - Readat
    - Ioctl (GETEND)
3. Vioblk (7pts)
    - Open/Close
    - Readat
    - Writeat
    - Ioctls (GETEND, GETBLKSZ)
4. ELF Loader (4pts)
    - Load a valid ELF file into appropriate memory and return the entry point
    - Reject invalid ELFs with an error code (magic bytes, class, endianness, version, type, architecture, etc.)
5. Memio (2pt)
    - Readat
    - Writeat
    - Ioctls (GETEND, GETBLKSZ, SETEND)
6. Locks (1pt)

Penalties

1. Unable to check out `main` branch (-30pts)
2. Unable to compile `main` branch (-30pts)
3. Compiler warnings when compiling `kernel.elf` (-5pts)

Checkpoint 2 (0-40pts)

1. Virtual Memory (10pts)
    - Able to correctly map pages with the associated flags
    - Able to correctly map ranges with the associated flags
    - Able to correctly unmap ranges with the associated flags
    - Functional lazy allocation
2. System Calls (20pts)
    - sysexit
    - sysprint
    - sysdevopen, will be tested indirectly through the usage of read/write syscalls
    - sysfsopen, will be tested indirectly through the uasge of read/write syscalls
    - sysclose
    - sysread
    - syswrite
    - sysioctl
    - sysexec
    - sysusleep
    - sysfscreate
    - sysfsdelete
3. KTFS (10pts)
    - Writeat
    - Create
    - Delete

Penalties

1. Unable to check out `main` branch (-40pts)
2. Unable to compile `main` branch (-40pts)
3. Unable to run the provided `main.c` template (-40pts)
4. Compiler warnings when compiling `kernel.elf` (-5pts)

Checkpoint 3 (0-30pts)

TBD