Mayflash Gamecube Controller Adaptor

Linux Device Driver

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Background on Linux USB Device Drivers

- To understand the functionality of the created driver, and how it interacts with the physical adaptor one must:
  - Understand how Linux device drivers work, what level they work on
    - Transmitting/receiving data through messages
    - The different steps in creating a device driver:
      - Assigning a major device driver, Creating a class, Registering the driver
  - Understand how USB device drivers work, what they interact with
    - Transmitting/receiving data through a wired connection
  - Understand what a gamecube controller is and which buttons do what
    - Video games

http://opensourceforu.com/2010/11/understanding-linux-device-drivers/

Goals and Expected Results

- On the Linux side
  - Create a functioning driver that accepts inputs through the USB port
- In the Device Driver
  - Interpret messages/signals from the external Mayflash Adaptor
- For the Functionality
  - Accept inputs from a Gamecube controller connected to the Mayflash adaptor and convert them to functionality; eg. Associate button presses with different utilities/features (ie. Mouseclicks, gameplay, etc.)

Evaluation/Quality Assurance

- Testing can be done with:
  - Simple print statements to determine what messages are being sent
  - Proving the controller works through demonstration
  - Provide a test file that runs through different functions of the controller and checks their accuracy

- Quality Assurance can be done through:
  - Rigorous testing
    - Checking for memory leaks
    - Checking for errors and security flaws
    - Testing usability by taking on external testers

Execution Plan

- Personal Background:
  - Further understand the concepts and how they are implemented in our OS
  - Discuss which features are most important and adapt them into the project
  - Understand the adaptor at a mechanical/physical level; to a degree
- Creating Functionality
  - Develop a USB device driver
  - Adapt the device driver to work with the Mayflash adaptor
  - Implement features that allow for UI improvement, or at least development

Alignment

- Course Relevance:
  - Showcase an understanding of the different levels of the OS
  - Provide an example of a device driver using lessons learned in the course
    - interrupts
  - Expand upon the intricacies of these two concepts in a practical way

- Location of the Driver:
  - The driver will be part of a kernel module, loaded in the OS