sdmay19-25: Handheld Emulation Station
Week 4 Report
10/1 - 10/5

Team Members

Jacob Nachman — *Meeting Facilitator*
Nick Lang — *Meeting Scribe*
Nic Losby — *Chief Engineer*
Sean Hinchee — *Test Engineer*
Matthew Kirpes — *Report Manager*

Summary of Progress this Report

Finalizing the research phase and moving into practice/prep phase for the prototype, as well as starting to blueprint the prototype in the near future. We have a CAD software picked out for case design and are debating between USB-C and HDMI/DisplayPort for video output to external peripherals.

Pending Issues

Determining if we can send video through USB-C on our dock, or if we need to add a displayport/HDMI port to our PCB design. We are hoping we can just do it all through USB-C for simplicity sake. Battery life estimates are still a work in progress so those need to get done, as well as start designing our PCB after figuring out what devices we want on it.

Plans for Upcoming Reporting Period

- Jacob Nachman: Finalize the battery spec chart as well as familiarize myself with various PCB designs to prep for our own design.
- Sean Hinchee: Upcoming presentation on low level C debugging tool for the Linux Club and learn more about emulation design.
- Nick Lang: Start a rough draft on a case for our emulator using TinkerCAD.
- Matthew Kirpes: Read into emulation design and learn about how it works.
- Nic Losby: Working on porting an existing emulator to a different platform to get experience with emulator design.

Past Week Accomplishment

- Jacob Nachman: Rough draft of battery specification charts based on power draw of components and battery life.
- Sean Hinchee: Demonstrative kernel module for the team.
- Nick Lang: Successfully learned TinkerCAD well enough to start a rough draft of a design.
- Matthew Kirpes: Learned how PCBs are design and what to think about when designing them.
- Nic Losby: Heavily research power circuit and implemented a prototype over discharge circuit

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Jacob Nachman	● Determining whether or not we can do video transfer natively over USB-C or if we need DisplayPort/HDMI to do it, natively would allow for lets GPIO pins to be used on our PCB. ● Starting to design a rough battery budget with Matt for our device, can figure out which unknowns can make our break our battery life.	8	23.5
Nick Lang	● Decided to use TinkerCAD for 3D Modeling of the Case. Started to learn about the tool and make sure it meets requirements for our project. ● Following practice tutorials and tools in order to learn the tool. Can teach others and start first iteration case design in the near future.	9	24
Nic Losby	● Researched and designed a power circuit with general protections against over discharge and over current for LiPo battery charging.	9	23
Sean Hinchee	● Started to work on a demonstrative kernel module. Can teach others the basics of linux kernel design and have sample code for them to use. ● Starting to learn about native debugging tools such as valgrind and gdb in order to better prepare myself for kernel development. ● Started learning about USB implementations and how they work in a kernel module.	8	23.5
Matthew Kirpes	● Worked with Jacob on the battery stats chart so we had a better understanding of the impact our hardware/software will have on our device. ● Researched more PCB design in order to better understand what our device needs.	8	23

Gitlab Activity Summary

Nothing to report.