For this project, I stuck with examining and testing my gaming consoles to gain a better understanding of hardware and software. This time instead of my PS4 I decided to look at software modifying my PS2 and PS3. Now, there is a way to modify game consoles by modifying the hardware of the system. Usually, a person solders a mod chip onto the console that allows for either homebrew applications, custom firmware, and the ability to play backups of games from either a burned disc or from an internal HDD. However, these hardware modifications require the person to be knowledgeable in soldering, computer components, and some electrical engineering. If you're not knowledgeable in these skills, then paying someone else to do this type of work can be expensive. This is where software modification comes into play.

Software modification is like hardware modification in that it allows a person to possess a console that is capable of homebrew applications, custom firmware, and the ability to play backups, but instead of applying a hardware modification one is modifying the software of the system. Now to do a software modification it takes a developer time and energy to write the necessary code. The hard part about software modification is taking the time and energy to develop code, which might take some developer years to create. Luckily, by this point, the PS2 and PS3 systems have been out for at least 10 plus years, meaning some developers have taken the time and energy to write code which makes software modification possible on both systems.

For the PS2, software modification is the easiest to perform. Hardware modification is possible but is a lot more difficult than trying to software modify the system. So, back in 2008 developers created a software called FreeMcboot, which is software that modifies the PS2, allowing for homebrew applications and the ability to play backup games from backup disc or Internal HDD. The software modification is implanted on a memory card of the PS2 that begins when you power on the system. The only hard parts of this software modification are copying the FreeMcboot software from a USB to your PS2 memory card, which isn't hard if you understand how to add files to the root of your USB, and the other hard part of this modification is figuring out if the console version of your PS2 is capable of being software modified.

Anyway, I decided the software modify my old phat PS2 after checking to see if the console version worked. (This software modification works with all phat PS2 models, but it only works for some slim models). I went online, downloaded the FreeMcboot software, and then transferred the FreeMcboot to a USB. I then got a blank DVD, inserted it into my PC, and then burned an image of wlaunchelf (which is software that modifies the PS2 to boot up a homebrew directory). With wlaunchelf, we can use the PS2's directory to copy the FreeMcboot on the USB over to a memory card in slot 1. Then once this is done we are done with the software modification. You only need to keep the memory card with the FreeMcboot in either slot on boot up for the software modification to take place. We then can buy an internal HDD, use some specific software programs to install ISOs of games onto the HDD. For ISOs, all I had to do is use an image burning software to burn backups of games I own onto the HDD. Success.

After software modifying my PS2, I thought that a PS3 with modifications would be great and another great way to learn about software. I looked up if it was possible to software modify a PS3 and it was possible to modify a PS3 with just software. However, the software

modification for the PS3 is a lot harder than the PS2. Instead of copying modified files over to an external drive, a memory storage, or a disc one is flashing either the NAND or NOR motherboard chips with a custom firmware, which is a lot harder to do and is a lot easier to mess up. With the PS2 softmod, the user didn't run the risk of bricking (destroying) the software of the console; however, with the PS3 softmod, the user runs a high risk of bricking the software on the system, making the system useless and unplayable. It comes down to luck, the console version, and the console firmware.

So, for the PS3 modification, I made sure that I had the proper console version, the proper firmware to flash the system, and I made sure to figure out if my console had NAND or NOR chips on the motherboard. Once done with this, I made sure to read everything on the software modification, as well as watch videos on the modification itself. The modification itself relies on a hosted server with both the flash writer and dumper on the said hosted server. The user uses the internet browser on the PS3 to visit this hosted server to dump the original flash of the console as a backup incase the console has a soft-brick. The user then writes a flash from the USB, which is the software files necessary to allow CFW (Custom Firmware) onto the PS3. Once the flash is written, the user then restarts the console in safe mode, using a USB with a CFW to install the CFW from a USB. Once the CFW is installed, the console will restart with the new CFW intact. This process took my about thirty minutes to do and I was able to install Rebug 4.82.2 CFW onto my new softmodded PS3. Success.