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This week we focused on working on our final group project for the system's programming course. My team decided on making a module specifically to control the resolution of the psmouse driver. The resolution parameter sets how sensitive the mouse is to the user's touch, it's in units of DPI, which stands for dots per inch. The current value of the resolution of the psmouse driver can be viewed in the directory /sys/module/psmouse/parameters/resolution.

We first compiled our custom kernel, following the exact same steps as we did in the previous week's worksheets. Then, we brainstormed on what device we want to manipulate for this project. We did this by listing all modules currently installed in our kernel, by using the lsmod command. Then, we find which drivers can be customized, and finally decided on manipulating the psmouse driver for the mouse.

After deciding on the driver, we get the driver's specifications by typing modinfo psmouse. On the output of this command, we focus on the params section to view the capabilities of this driver. We can then change or manipulate all the parameter fields in this device driver, and that would change the value for that particular parameter field, and thus would change how the behaviour of the device. For example, when we change the resolution parameter in the psmouse driver, it would change the resolution or sensitivity of the mouse.

To change the value of the parameter fields on our device driver, there are a couple of methods we could use. The first one is to use echo and redirect the output to the parameter file. For example, since the resolution parameter is located in the directory of "/sys/module/psmouse/parameters/resolution", we can echo to that file by using "echo 2 > /sys/module/psmouse/parameters/resolution". That command would change the resolution of the mouse to 2 dpi. The second method is to use the modprobe command. First, we need to unload the module, for example by using modprobe -r psmouse. Then, we can change load the module again with the new parameter value by typing modprobe psmouse resolution=2. The two methods would end up achieving the same thing in the end.