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Lab 1

Part 1

I followed this tutorial on how to write and insert a basic module into the kernel. I first installed the required packages needed for kernel development. I then learned that you need to write your kernel init and exit functions and tell the kernel which functions to call when loading or unloading the kernel using the module_init and module_exit functions. The init and exit functions simply used printk() to print "Hello World" and "Goodbye World" respectively. The most difficult part was getting the module to compile, as I didn't realize that it wouldn't compile unless module documentation is added. After I compiled and successfully inserted the module into the kernel, the kernel reported that it was "tainted". Upon further research I found that it is just a warning message saying non-vendor approved software had been inserted into the kernel module.

Source code used in part 1:

I used the following source code from Rober Oliver's "Writing a Simple Kernel Module" tutorial:

```
#include <linux/init.h>
#include <linux/module.h>
#include <linux/kernel.h>


MODULE_LICENSE(“GPL”);
MODULE_AUTHOR(“Robert W. Oliver II”);
MODULE_DESCRIPTION(“A simple example Linux module.”);
MODULE_VERSION(“0.01”);


static int __init lkm_example_init(void) {
 printk(KERN_INFO “Hello, World!\n”);
 return 0;
}


static void __exit lkm_example_exit(void) {
 printk(KERN_INFO “Goodbye, World!\n”);
}


module_init(lkm_example_init);
module_exit(lkm_example_exit);
```

I changed the name of the init and exit functions from lkm_example_init and lkm_example_exit to helloWord and goodbyeWorld. I also changed the module description, author, and version.

I also used the makefile from the same tutorial:

```
obj-m += lkm_example.o

all:
 make -C /lib/modules/$(shell uname -r)/build M=$(PWD) modules

clean:
 make -C /lib/modules/$(shell uname -r)/build M=$(PWD) clean
```

I only changed the name of the module from lkm_example to hello.