In this assignment, I developed a Linux Kernel module with a supporting client program. I started with declaring and setting both parameters num1 and num2 as a module parameters of type int and with “integer” as a description. I then added, device_open, device_release and device ioctl functions followed by a definition for all HELLO, GOODBYE, PRINT_1, PRINT_2, MY_READ, MY_WRITE messages. In addition, I set the device owner, open function, release function and unlocked ioctl function. In my initialisation function I set minor of the device, give the device the name my_device, set fop, set mod for permissions and register the device getting the result. In device_ioctl function, I responded to all the previous messages. Finally, I made sure that my kernel module has appropriate information added including license, description, author and setting both initialisation and exit functions. I also had a MakeFile and a user_program file, that have the definition of all messages, opens the device in 0_RDWR mode, ask for input of a command and then close the device. Lastly, regarding the application we use on the terminal:

1- Make sure the first line of Makefile is obj-m += coursework1
2- Build kernel module using make
3- Install the kernel module using  sudo insmod coursework1.ko int_param1=1 int_param2=2
4- Compile user program using gcc user_program.c -o user_program
5- Run user program using ./user_program
6- Input a command should be 1,2,3,4  otherwise an error message will be printed.
7- Uninstall the kernel module using sudo rmmod coursework1
8- Get the kernel log messages using sudo dmesg