# Lab – Writing a simple module with parameters

The files for this lab are located in
~/examples/kernelspace/mod1

- Update the Makefile with the correct kernel directory
  ~/armsystem/kernel/linux-4.9.30

- Build the module , copy to the target directory and test it

  - make
  - cp ./simple.ko ~/armsystem/outfs

- Add the following parameters to the module:

  - name – string
  - irq – int
  - debug – int
  - addr – array of up to 4 integers

Example usage:

# insmod ./simple.ko name=mydev irq=20 debug=1 addr=0x1000,0x2000

- On module load, print the parameters

**Part 2**

The RTC is located in physical address 0x1c170000 with the following registers:

| Address | Reg |
|---|---|
| 0x1c170000 | Data read register |
| 0x1c170004 | Match register |
| 0x1c170008 | Data load register |
| 0x1c17000c | Control register |
| 0x1c170010 | Interrupt mask and set register |
| 0x1c170014 | Raw interrupt status register |
| 0x1c170018 | Masked interrupt status register |
| 0x1c17001c | Interrupt clear register |

Map the RTC registers to kernel address space using ioremap and display the current RTC value on module load

**Part 3**

Create a proc device - /proc/mydev with read operation – display the parameters and RTC values on read:

Example:

# insmod ./simple.ko name=mydev irq=20 debug=1 addr=0x1000,0x2000

# cat /proc/mydev
name=mydev
irq=20
debug=1
addr=0x1000,0x2000
RTC=0xA123B456

Add write operation to set a new value to RTC for example:

# echo “0x1000” > /proc/mydev
# cat /proc/mydev
name=mydev
irq=20
debug=1
addr=0x1000,0x2000
RTC=0x1000