Lab02 - application

1. Create linked_list_module

```
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ ls
linked_list_module.c  Makefile
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ make
make -C /lib/modules/6.5.0-35-generic/build M=/home/slimane/Desktop/RTOS/tp3 modules
make[1]: Entering directory '/usr/src/linux-headers-6.5.0-35-generic'
warning: the compiler differs from the one used to build the kernel
  The kernel was built by: x86_64-linux-gnu-gcc-12 (Ubuntu 12.3.0-1ubuntu1~22.04) 12.3.0
  You are using:           gcc-12 (Ubuntu 12.3.0-1ubuntu1~22.04) 12.3.0
  CC [M]  /home/slimane/Desktop/RTOS/tp3/linked_list_module.o
/home/slimane/Desktop/RTOS/tp3/linked_list_module.c: In function 'proc_write':
/home/slimane/Desktop/RTOS/tp3/linked_list_module.c:74:10: warning: unused variable 'command' [-Wunused-variable]
   74 |     char command[BUFFER_SIZE];
      |          ^~~~~~~
  MODPOST /home/slimane/Desktop/RTOS/tp3/Module.symvers
  CC [M]  /home/slimane/Desktop/RTOS/tp3/linked_list_module.mod.o
  LD [M]  /home/slimane/Desktop/RTOS/tp3/linked_list_module.ko
  BTF [M] /home/slimane/Desktop/RTOS/tp3/linked_list_module.ko
Skipping BTF generation for /home/slimane/Desktop/RTOS/tp3/linked_list_module.ko due to unavailability of vmlinux
make[1]: Leaving directory '/usr/src/linux-headers-6.5.0-35-generic'
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ ls
linked_list_module.c    linked_list_module.mod     linked_list_module.mod.o  Makefile        Module.symvers
linked_list_module.ko   linked_list_module.mod.c   linked_list_module.o       modules.order
```

2. Load the module with Parameters : node_count

```
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ sudo insmod linked_list_module.ko node_count=5
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ sudo dmesg | tail
[ 2704.199852] Linked List Module - Initializing
[ 2704.199864] Linked List Module - Proc file created: /proc/linked_list_control
[ 2704.199866] Linked List Module - Node added with data: 10
[ 2704.199868] Linked List Module - Node added with data: 20
[ 2704.199870] Linked List Module - Node added with data: 30
[ 2704.199871] Linked List Module - Node added with data: 40
```

3. **Add, remove Nodes and** view Linked List:

```
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ echo "add 50" > /proc/linked_list_control
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ cat /proc/linked_list_control
Linked List Nodes:
  Data: 10
  Data: 20
  Data: 30
  Data: 40
  Data: 50
  Data: 50
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ echo "add 60" > /proc/linked_list_control
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ cat /proc/linked_list_control
Linked List Nodes:
  Data: 10
  Data: 20
  Data: 30
  Data: 40
  Data: 50
  Data: 50
  Data: 60
```

```
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ echo "remove" > /proc/linked_list_control
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ cat /proc/linked_list_control
Linked List Nodes:
  Data: 10
  Data: 20
  Data: 30
  Data: 40
  Data: 50
  Data: 50
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ sudo dmesg | tail
[ 2704.199852] Linked List Module - Initializing
[ 2704.199864] Linked List Module - Proc file created: /proc/linked_list_control
[ 2704.199866] Linked List Module - Node added with data: 10
[ 2704.199868] Linked List Module - Node added with data: 20
[ 2704.199870] Linked List Module - Node added with data: 30
[ 2704.199871] Linked List Module - Node added with data: 40
[ 2704.199872] Linked List Module - Node added with data: 50
[ 2766.601405] Linked List Module - Node added with data: 50
[ 2796.172897] Linked List Module - Node added with data: 60
[ 2857.011594] Linked List Module - Removing node with data: 60
```

4. Unload the Module

```
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ sudo rmmod linked_list_module
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ sudo dmesg | tail
[ 2796.172897] Linked List Module - Node added with data: 60
[ 2857.011594] Linked List Module - Removing node with data: 60
[ 2933.905487] Linked List Module - Cleaning up
[ 2933.905491] Linked List Module - Deleting node with data: 10
[ 2933.905493] Linked List Module - Deleting node with data: 20
[ 2933.905494] Linked List Module - Deleting node with data: 30
[ 2933.905496] Linked List Module - Deleting node with data: 40
[ 2933.905497] Linked List Module - Deleting node with data: 50
[ 2933.905497] Linked List Module - Deleting node with data: 50
[ 2933.905501] Linked List Module - Proc file removed
slimane@slimane-virtual-machine:~/Desktop/RTOS/tp3$ make clean
```