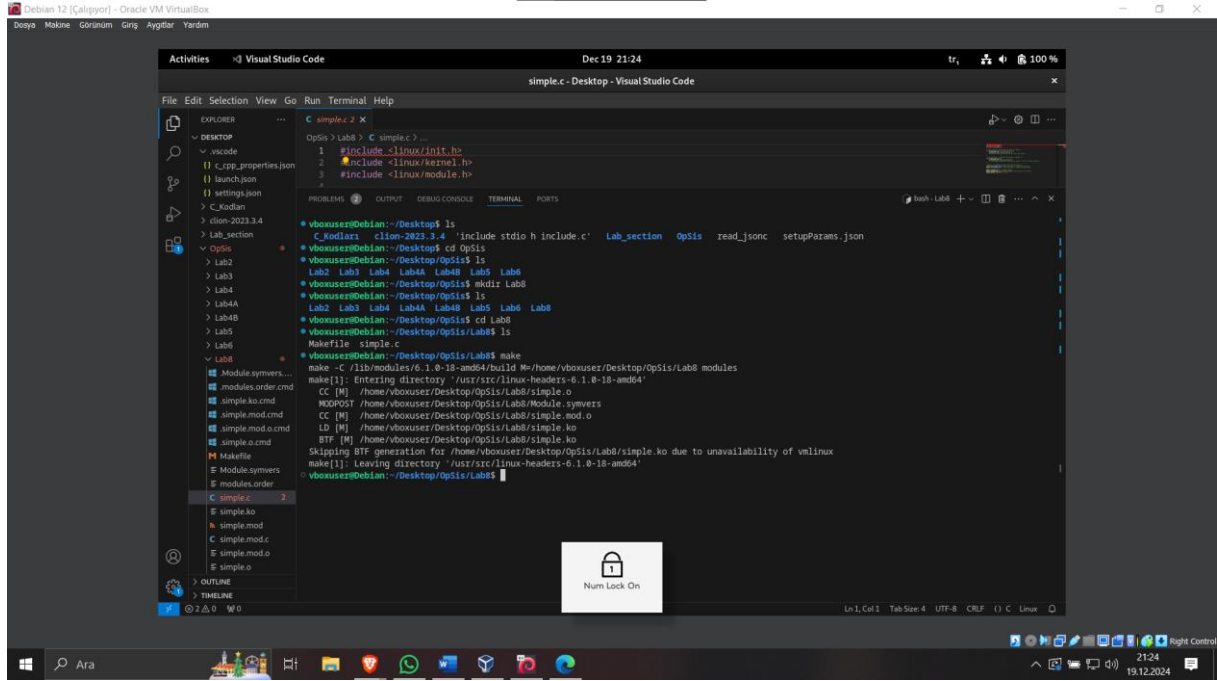


# 2021510010 – Çağrı AYDIN – LAB 08



The screenshot shows a terminal window with the following commands and output:

```
Opsis> Lab8 > C simple.c > ...
1 #include <linux/init.h>
2 #include <linux/kernel.h>
3 #include <linux/module.h>
4

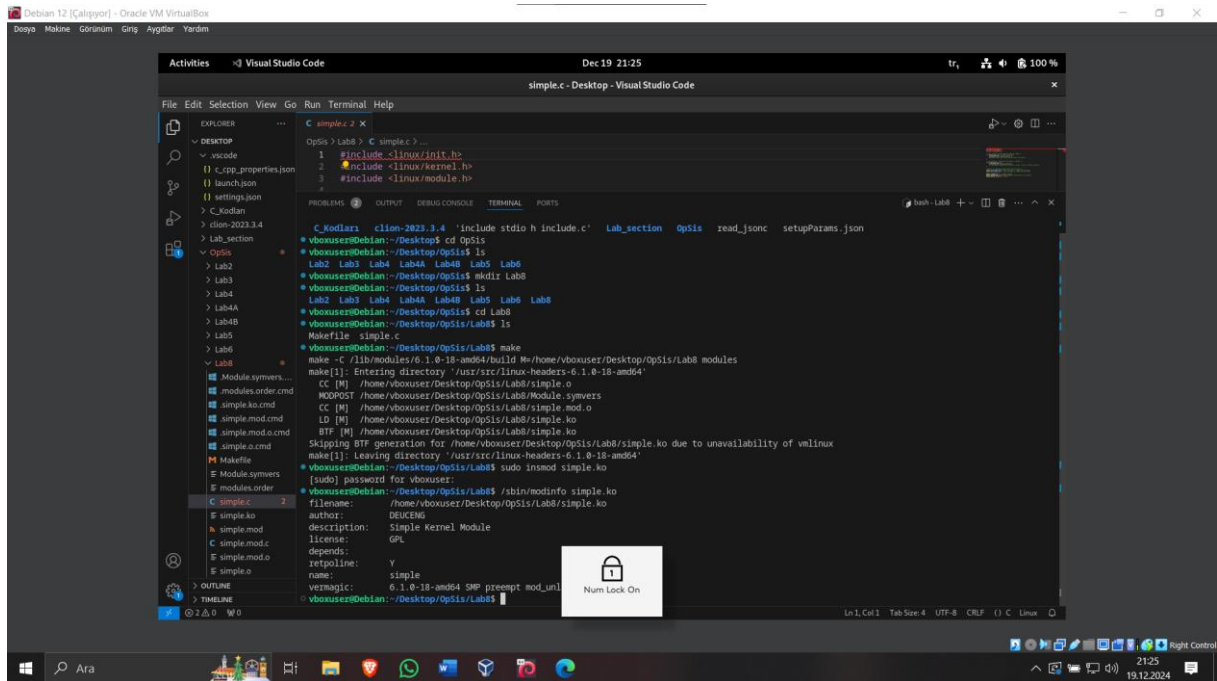
vboxuser@Debian:~/Desktop$ ls
C_kodlari clion-2023.3.4 'include stdio.h include.c' Lab_section OpSis read_jsonc setupParams.json

vboxuser@Debian:~/Desktop$ cd OpSis
vboxuser@Debian:~/Desktop/OpSis$ ls
Lab2 Lab3 Lab4 Lab4A Lab4B Lab5 Lab6

vboxuser@Debian:~/Desktop/OpSis$ ls
Lab2 Lab3 Lab4 Lab4A Lab4B Lab5 Lab6

vboxuser@Debian:~/Desktop/OpSis$ cd Lab8
vboxuser@Debian:~/Desktop/OpSis/Lab8$ ls
Makefile simple.c

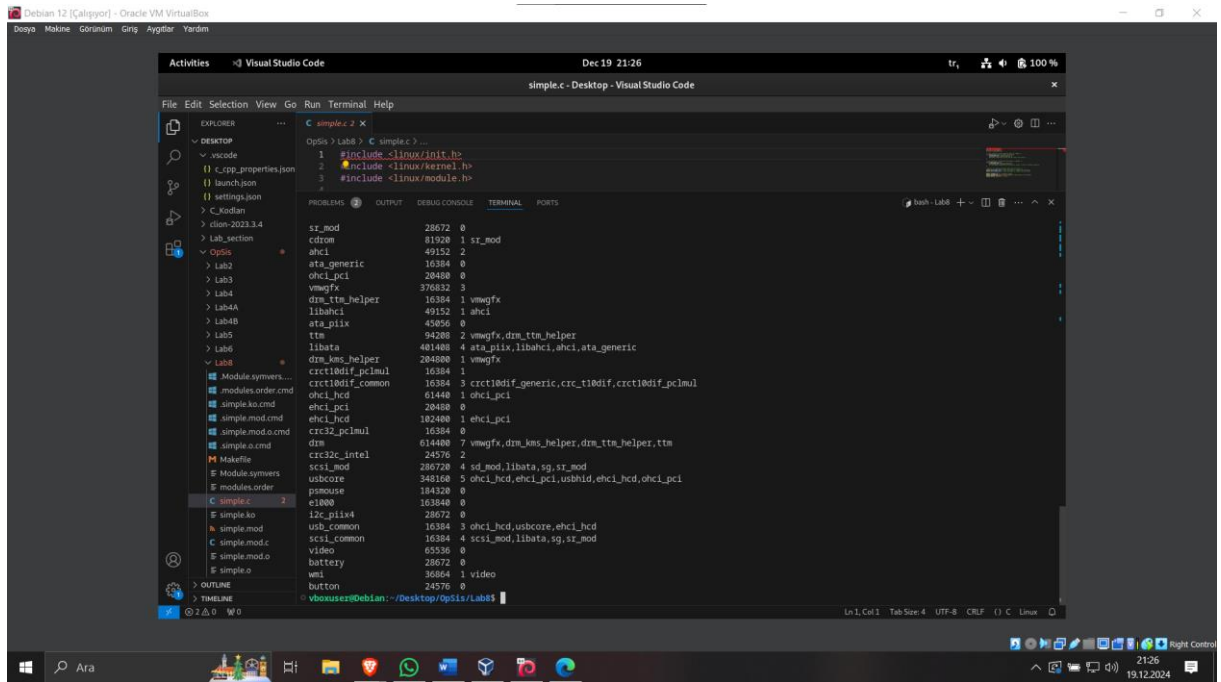
vboxuser@Debian:~/Desktop/OpSis/Lab8$ make
make -C /lib/modules/6.1.0-18-amd64/build M=/home/vboxuser/Desktop/OpSis/Lab8 modules
make[1]: Entering directory '/usr/src/linux-headers-6.1.0-18-amd64'
CC [M] /home/vboxuser/Desktop/OpSis/Lab8/simple.o
MODPOST /home/vboxuser/Desktop/OpSis/Lab8/Module.symvers
CC [M] /home/vboxuser/Desktop/OpSis/Lab8/simple.mod.o
LD [M] /home/vboxuser/Desktop/OpSis/Lab8/simple.ko
Skipping BTF generation for /home/vboxuser/Desktop/OpSis/Lab8/simple.ko due to unavailability of vmlinux
make[1]: Leaving directory '/usr/src/linux-headers-6.1.0-18-amd64'
vboxuser@Debian:~/Desktop/OpSis/Lab8$
```



The screenshot shows a terminal window with the following commands and output:

```
vboxuser@Debian:~/Desktop/OpSis/Lab8$ sudo insmod simple.ko
[sudo] password for vboxuser:
vboxuser@Debian:~/Desktop/OpSis/Lab8$ /sbin/modinfo simple.ko
filename: /home/vboxuser/Desktop/OpSis/Lab8/simple.ko
author:
Description: Simple Kernel Module
license: GPL
depends:
retpoline: Y
name: simple
vermagic: 6.1.0-18-amd64 SMP preempt mod_uni

vboxuser@Debian:~/Desktop/OpSis/Lab8$
```



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

[ 5.566742] audit: type=1400 audit(1734632240.584:8): apparmor="STATUS" operation="profile_load" profile="unconfined" name="man_filter" pid=349
comm="apparmor_parser"
[ 5.566744] audit: type=1400 audit(1734632240.584:9): apparmor="STATUS" operation="profile_load" profile="unconfined" name="man_groff" pid=349 c
omm="apparmor_parser"
[ 5.566833] audit: type=1400 audit(1734632240.588:10): apparmor="STATUS" operation="profile_load" profile="unconfined" name="libreoffice-xpdfimp
ort" pid=353 comm="apparmor_parser"
[ 5.570681] audit: type=1400 audit(1734632240.588:11): apparmor="STATUS" operation="profile_load" profile="unconfined" name="/usr/sbin/cups-brow
sed" pid=354 comm="apparmor_parser"
[ 5.648267] input: PC Speaker as /devices/platform/pcspkr/input/input7
[ 5.655298] cryptd: max_cpu_qlen set to 1000
[ 5.666048] ACPI: AC: AC Adapter [AC] (on-line)
[ 5.666073] AVX2 version of gcm_enc/dec engaged.
[ 5.667033] AES CTR mode by8 optimization enabled
[ 5.668036] vboxguest: host-version: 7.0.20163906 @x86_64
[ 5.668277] vlog_heartbeat_init: Setting up heartbeat to trigger every 2000 milliseconds
[ 5.669273] input: VirtualBox mouse integration as /devices/pci0000:00/0000:00:04.0/input/input8
[ 5.678811] sr 1:0:0:0: Attached scsi generic sg0 type 5
[ 5.694353] sd 2:0:0:0: Attached scsi generic sg1 type 0
[ 5.764881] intel_rapl_common: Found RAPL domain package
[ 5.764884] intel_rapl_common: Found RAPL domain core
[ 5.774822] Adding 998396K swap on /dev/sda5. Priority:2 extents:1 across:998396K FS
[ 6.009168] snd_intel8x0 0000:00:05:0: allow list rate for 1028:0177 is 48000
[ 6.060723] NET: Registered PF_OSPF/CRTA protocol family
[ 8.015343] e1000: enp0s3 NIC link is up 1000 Mbps Full Duplex, Flow Control: RX
[ 8.015589] IPv6: ADDRCONF(NETDEV_CHANGE): enp0s3: link becomes ready
[ 10.085700] rfkill: input handler disabled
[ 15.795849] rfkill: input handler enabled
[ 17.047223] rfkill: input handler disabled
[ 456.974979] simple: loading out-of-tree module taints kernel.
[ 456.975033] simple: module verification failed: signature and/or required key missing - tainting kernel
[ 456.975249] Loading Module
vboxuser@Debian: ~/Desktop/opsis/Lab$
```

➔ This setup demonstrates how to build and manage a Linux Kernel Module (LKM), which extends the functionality of the Linux kernel dynamically, without requiring a system reboot.