Environment Information

OS

```
yw@yw-virtual-machine:~/hw1_2016147550/module$ cat /etc/os-release
PRETTY_NAME="Ubuntu 22.04.3 LTS"
NAME="Ubuntu"
VERSION_ID="22.04"
VERSION="22.04.3 LTS (Jammy Jellyfish)"
VERSION_CODENAME=jammy
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-poli
cy"
UBUNTU_CODENAME=jammy
```

CPU

```
yw@yw-virtual-machine:~/hw1_2016147550/module$ grep -c processor /proc/cpuinfo
2
```

CPU Details

```
processor       : 0
vendor_id       : GenuineIntel
cpu family      : 6
model           : 154
model name      : 12th Gen Intel(R) Core(TM) i7-12700H
stepping        : 3
microcode       : 0x41c
cpu MHz         : 2688.006
cache size      : 24576 KB
physical id     : 0
siblings        : 1
core id         : 0
cpu cores       : 1
apicid          : 0
initial apicid  : 0
fpu             : yes
fpu_exception   : yes
cpuid level     : 32
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
 pat pse36 clflush mmx fxsr sse sse2 ss syscall nx pdpe1gb rdtscp lm constant_tsc
 arch_perfmon rep_good nopl xtopology tsc_reliable nonstop_tsc cpuid tsc_known_f
req pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_dead
line_timer aes xsave avx f16c rdrand hypervisor lahf_lm abm 3dnowprefetch invpci
d_single ssbd ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmi1 avx2 smep b
mi2 erms invpcid rdseed adx smap clflushopt clwb sha_ni xsaveopt xsavec xgetbv1
xsaves avx_vnni arat umip pku ospke gfni vaes vpclmulqdq rdpid movdiri movdir64b
 fsrm md_clear serialize flush_l1d arch_capabilities
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs itlb_multihit e
ibrs_pbrsb
bogomips        : 5376.01
clflush size    : 64
cache_alignment : 64
address sizes   : 45 bits physical, 48 bits virtual
power management:
```

```
processor       : 1
vendor_id       : GenuineIntel
cpu family      : 6
model           : 154
model name      : 12th Gen Intel(R) Core(TM) i7-12700H
stepping        : 3
microcode       : 0x41c
cpu MHz         : 2688.006
cache size      : 24576 KB
physical id     : 2
siblings        : 1
core id         : 0
cpu cores       : 1
apicid          : 2
initial apicid  : 2
fpu             : yes
fpu_exception   : yes
cpuid level     : 32
wp              : yes
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush mmx fxsr sse sse2 ss syscall nx pdpe1gb rdtscp lm constant_tsc
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req pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_dead
line_timer aes xsave avx f16c rdrand hypervisor lahf_lm abm 3dnowprefetch invpci
d_single ssbd ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmi1 avx2 smep b
mi2 erms invpcid rdseed adx smap clflushopt clwb sha_ni xsaveopt xsavec xgetbv1
xsaves avx_vnni arat umip pku ospke gfni vaes vpclmulqdq rdpid movdiri movdir64b
 fsrm md_clear serialize flush_l1d arch_capabilities
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs itlb_multihit e
ibrs_pbrsb
bogomips        : 5376.01
clflush size    : 64
cache_alignment : 64
address sizes   : 45 bits physical, 48 bits virtual
power management:
```
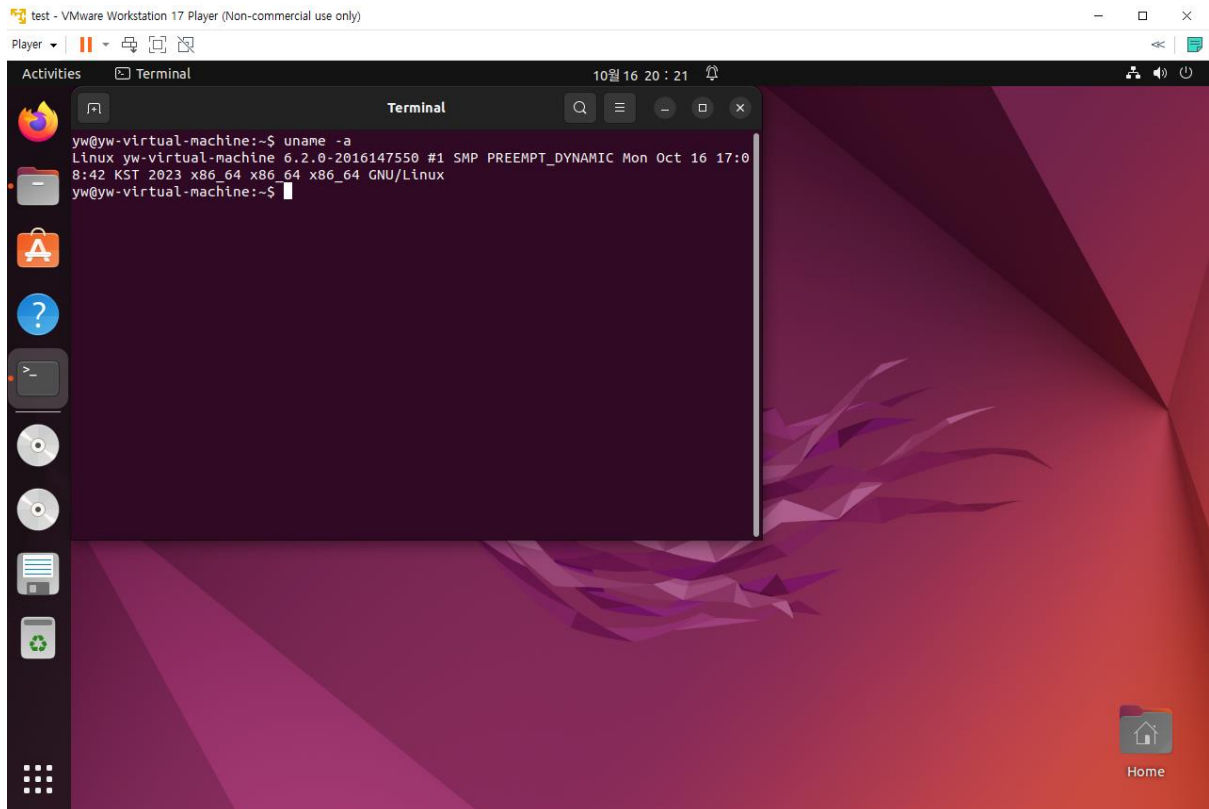
Memory

```
yw@yw-virtual-machine:~/hw1_2016147550/module$ cat /proc/meminfo
MemTotal:        3982152 kB
MemFree:          916644 kB
MemAvailable:    2578264 kB
Buffers:           77836 kB
Cached:          1768384 kB
SwapCached:            0 kB
Active:           598744 kB
Inactive:        1886044 kB
Active(anon):       2420 kB
Inactive(anon):   672528 kB
Active(file):     596324 kB
Inactive(file):  1213516 kB
Unevictable:           0 kB
Mlocked:               0 kB
SwapTotal:       3991548 kB
SwapFree:        3991548 kB
Zswap:                 0 kB
Zswapped:              0 kB
Dirty:                 0 kB
Writeback:             0 kB
AnonPages:        638584 kB
Mapped:           304944 kB
Shmem:             42804 kB
KReclaimable:     112468 kB
Slab:             213572 kB
SReclaimable:     112468 kB
SUnreclaim:       101104 kB
```

uname -a

Result

실습 과제 결과 검증 및 분석

```
schedule() trace #1 -CPU #1
Command: ibus-daemon
PID: 1421
Priority: 120
Start time (ms):11704
Scheduler: CFS
->
Command: gdbus
PID: 1459
Priority: 120
Start time (ms):11912
Scheduler: CFS
-----------------------------------------------
schedule() trace #2 -CPU #1
Command: gdbus
PID: 1459
Priority: 120
Start time (ms):11912
Scheduler: CFS
->
Command: ibus-daemon
PID: 1421
Priority: 120
Start time (ms):11704
Scheduler: CFS
-----------------------------------------------
schedule() trace #3 -CPU #1
Command: ibus-daemon
PID: 1421
Priority: 120
Start time (ms):11704
Scheduler: CFS
->
Command: gdbus
PID: 1459
Priority: 120
Start time (ms):11912
Scheduler: CFS
-----------------------------------------------
```

```
schedule() trace #4 -CPU #1
Command: gdbus
PID: 1459
Priority: 120
Start time (ms):11912
Scheduler: CFS
->
Command: ibus-daemon
PID: 1421
Priority: 120
Start time (ms):11704
Scheduler: CFS
-----------------------------------------------
schedule() trace #5 -CPU #1
Command: ibus-daemon
PID: 1421
Priority: 120
Start time (ms):11704
Scheduler: CFS
->
Command: gdbus
PID: 1459
Priority: 120
Start time (ms):11912
Scheduler: CFS
```

```
schedule() trace #6 -CPU #1
Command: gdbus
PID: 1459
Priority: 120
Start time (ms):11912
Scheduler: CFS
->
Command: ibus-daemon
PID: 1421
Priority: 120
Start time (ms):11704
Scheduler: CFS
------------------------------------------------
schedule() trace #7 -CPU #1
Command: ibus-daemon
PID: 1421
Priority: 120
Start time (ms):11704
Scheduler: CFS
->
Command: gdbus
PID: 1459
Priority: 120
Start time (ms):11912
Scheduler: CFS
------------------------------------------------
schedule() trace #8 -CPU #1
Command: gdbus
PID: 1459
Priority: 120
Start time (ms):11912
Scheduler: CFS
->
Command: swapper/1
PID: 0
Priority: 120
Start time (ms):317
Scheduler: CFS
```

```
schedule() trace #9 -CPU #0
Command: swapper/0
PID: 0
Priority: 120
Start time (ms):0
Scheduler: CFS
->
Command: gdbus
PID: 1135
Priority: 120
Start time (ms):8602
Scheduler: CFS
------------------------------------------------
schedule() trace #10 -CPU #0
Command: gdbus
PID: 1135
Priority: 120
Start time (ms):8602
Scheduler: CFS
->
Command: gnome-shell
PID: 1117
Priority: 120
Start time (ms):8160
Scheduler: CFS
------------------------------------------------
schedule() trace #11 -CPU #0
Command: gnome-shell
PID: 1117
Priority: 120
Start time (ms):8160
Scheduler: CFS
->
Command: gnome-terminal-
PID: 7956
Priority: 120
Start time (ms):4775018
Scheduler: CFS
------------------------------------------------
```

```
PID: 1117
Priority: 120
Start time (ms):8160
Scheduler: CFS
->
Command: gnome-terminal-
PID: 7956
Priority: 120
Start time (ms):4775018
Scheduler: CFS
------------------------------------------------
schedule() trace #12 -CPU #0
Command: gnome-terminal-
PID: 7956
Priority: 120
Start time (ms):4775018
Scheduler: CFS
->
Command: kworker/u256:1
PID: 9348
Priority: 120
Start time (ms):8064835
Scheduler: CFS
------------------------------------------------
schedule() trace #13 -CPU #0
Command: kworker/u256:1
PID: 9348
Priority: 120
Start time (ms):8064835
Scheduler: CFS
->
Command: bash
PID: 7974
Priority: 120
Start time (ms):4775350
Scheduler: CFS
------------------------------------------------
```

Terminal

```
schedule() trace #14 -CPU #1
Command: swapper/1
PID: 0
Priority: 120
Start time (ms):317
Scheduler: CFS
->
Command: gnome-shell
PID: 1117
Priority: 120
Start time (ms):8160
Scheduler: CFS
------------------------------------------------
schedule() trace #15 -CPU #1
Command: gnome-shell
PID: 1117
Priority: 120
Start time (ms):8160
Scheduler: CFS
->
Command: swapper/1
PID: 0
Priority: 120
Start time (ms):317
Scheduler: CFS
------------------------------------------------
schedule() trace #16 -CPU #0
Command: bash
PID: 7974
Priority: 120
Start time (ms):4775350
Scheduler: CFS
->
Command: kworker/u256:1
PID: 9348
Priority: 120
Start time (ms):8064835
Scheduler: CFS
------------------------------------------------
```

```
Command: kworker/u256:1
PID: 9348
Priority: 120
Start time (ms):8064835
Scheduler: CFS
->
Command: gnome-terminal-
PID: 7956
Priority: 120
Start time (ms):4775018
Scheduler: CFS
-------------------------------------------------
schedule() trace #18 -CPU #1
Command: swapper/1
PID: 0
Priority: 120
Start time (ms):317
Scheduler: CFS
->
Command: cat
PID: 11053
Priority: 120
Start time (ms):14269286
Scheduler: CFS
-------------------------------------------------
schedule() trace #19 -CPU #0
Command: gnome-terminal-
PID: 7956
Priority: 120
Start time (ms):4775018
Scheduler: CFS
->
Command: swapper/0
PID: 0
Priority: 120
Start time (ms):0
Scheduler: CFS
-------------------------------------------------
yw@yw-virtual-machine:~/hw1_2016147550/module$
```