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Tugas 2

Praktikum SKJ

Assignment 3.1

1. uname

```
radit@radit-virtual-machine:~$ uname
Linux
```

2. df

```
radit@radit-virtual-machine:~$ df
Filesystem     1K-blocks     Used Available Use% Mounted on
tmpfs             588232     1444    586788   1% /run
/dev/sda3       40453376 13638708  24727552  36% /
tmpfs            2941148        0   2941148   0% /dev/shm
tmpfs               5120        4      5116   1% /run/lock
/dev/sda2         524252     6220    518032   2% /boot/efi
tmpfs             588228      100    588128   1% /run/user/1000
/dev/sr0         2995344  2995344         0 100% /media/radit/Linux Mint 21.3 Cinnamon 64-bit
```

3. hostname

```
radit@radit-virtual-machine:~$ hostname
radit-virtual-machine
```

4. hostname -i

```
radit@radit-virtual-machine:~/Documents/Coding$ hostname -i
127.0.1.1
```

Assignment 3.2

1. save the trace for echo hello to the file titled echo.log

```
radit@radit-virtual-machine:~/Documents/Coding$ strace -o echo.log echo hello
hello
radit@radit-virtual-machine:~/Documents/Coding$ cat echo.log
execve("/usr/bin/echo", ["echo", "hello"], 0x7ffdbc30e118 /* 55 vars */) = 0
brk(NULL)                               = 0x55dbe81e7000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffc00810220) = -1 EINVAL (Invalid argument)
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f9453bc0000
access("/etc/ld.so.preload", R_OK)      = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=66587, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 66587, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f9453baf000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 3
read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0"..., 832) = 832
pread64(3, "\6\0\0\0\4\0\0\0@\0\0\0\0\0\0\0@\0\0\0\0\0\0\0@\0\0\0\0\0\0\0"..., 784, 64) = 784
pread64(3, "\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48, 848) = 48
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0I\17\357\204\3$\f\221\2039x\324\224\323\236S"..., 68, 896) = 68
newfstatat(3, "", {st_mode=S_IFREG|0755, st_size=2220400, ...}, AT_EMPTY_PATH) = 0
pread64(3, "\6\0\0\0\4\0\0\0@\0\0\0\0\0\0\0@\0\0\0\0\0\0\0@\0\0\0\0\0\0\0"..., 784, 64) = 784
mmap(NULL, 2264656, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f9453986000
mprotect(0x7f94539ae000, 2023424, PROT_NONE) = 0
mmap(0x7f94539ae000, 1658880, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x28000) = 0x7f94539ae000
mmap(0x7f9453b43000, 360448, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1bd000) = 0x7f9453b43000
mmap(0x7f9453b9c000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x215000) = 0x7f9453b9c000
mmap(0x7f9453ba2000, 52816, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f9453ba2000
close(3)                                = 0
mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f9453983000
arch_prctl(ARCH_SET_FS, 0x7f9453983740) = 0
set_tid_address(0x7f9453983a10)         = 3207
set_robust_list(0x7f9453983a20, 24)     = 0
rseq(0x7f94539840e0, 0x20, 0, 0x53053053) = 0
mprotect(0x7f9453b9c000, 16384, PROT_READ) = 0
mprotect(0x55dbe7e37000, 4096, PROT_READ) = 0
mprotect(0x7f9453bfa000, 8192, PROT_READ) = 0
prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0
munmap(0x7f9453baf000, 66587)           = 0
getrandom("\xac\x5d\x9f\x72\x95\x56\xdb\x20", 8, GRND_NONBLOCK) = 8
brk(NULL)                               = 0x55dbe81e7000
brk(0x55dbe8208000)                     = 0x55dbe8208000
openat(AT_FDCWD, "/usr/lib/locale/locale-archive", O_RDONLY|O_CLOEXEC) = 3
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=5716448, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 5716448, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f945340f000
close(3)                                = 0
newfstatat(1, "", {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}, AT_EMPTY_PATH) = 0
write(1, "hello\n", 6)                  = 6
close(1)                                = 0
close(2)                                = 0
exit_group(0)                           = ?
+++ exited with 0 +++
```

2. Filter the echo.log file to find text “hello” being mentioned

```
radit@radit-virtual-machine:~/Documents/Coding$ grep hello echo.log
execve("/usr/bin/echo", ["echo", "hello"], 0x7ffdbc30e118 /* 55 vars */) = 0
write(1, "hello\n", 6)                  = 6
```

3. Explain what system call related to text in question number 2 is doing based on the manual page of the system call

   Answer :

   ```
   execve("/usr/bin/echo", ["echo", "hello"], 0x7ffdbc30e118 /* 55 vars */) = 0
   ```

   This line is using **execve** system call. The excve system call is used to execute a program. It is replacing the current process image with a new image. Also, there are some arguments like “usr/bin/echo” which is the path to the echo executed, ‘[“echo”, “hello”]’ the first element is the command name and the second element is the argument, and also there is a pointer and return value (0).

This line is using **write** system call. The write system call is used to write data to file descriptor. And there are some arguments like “hello\n” which the string being stdout and “6” is indicating number bytes to write because “hello\n” is 6 bytes long, 5 char plus newline. Also it has return value 6 indicates 6 bytes successfully written to stdout.