كلية: الحاسبات والمعلومات

الفرقة:الثالثة

"Operating System "

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How To Add Your System Call The Linux OS Kernel.

- **Description of our system like CPU cores, RAM capacity, Kernel version.**

  - CPU cores is 4.

  -RAM is 4G.

  -Capacity is 60G.

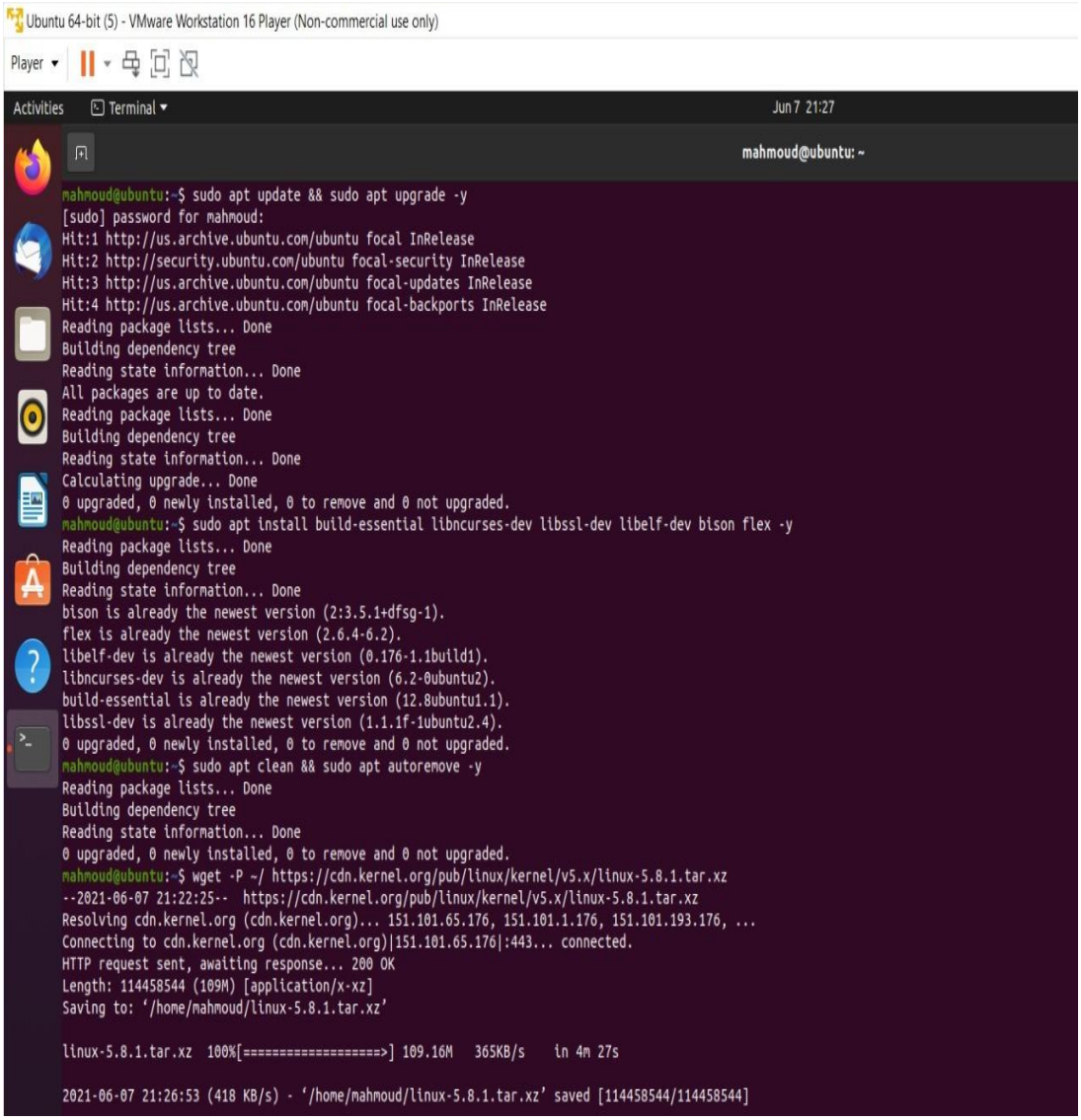
  -Kernel version is 5.12.9

- ***Steps of how adding the system call.***

Step 1 – Preparation

- In this section, we will download all necessary tools to add a basic system call to the Linux kernel and run it. This is the only part of the entire process where network connectivity is necessary:-

  - Fully update our operating system.
  - Download and install the essential packages to compile kernels.
  - Clean up our installed packages.
  - Download the source code of the latest stable version of the Linux kernel to our home folder.
  - Unpack the tarball you just downloaded to your home folder.
  - Reboot your computer.

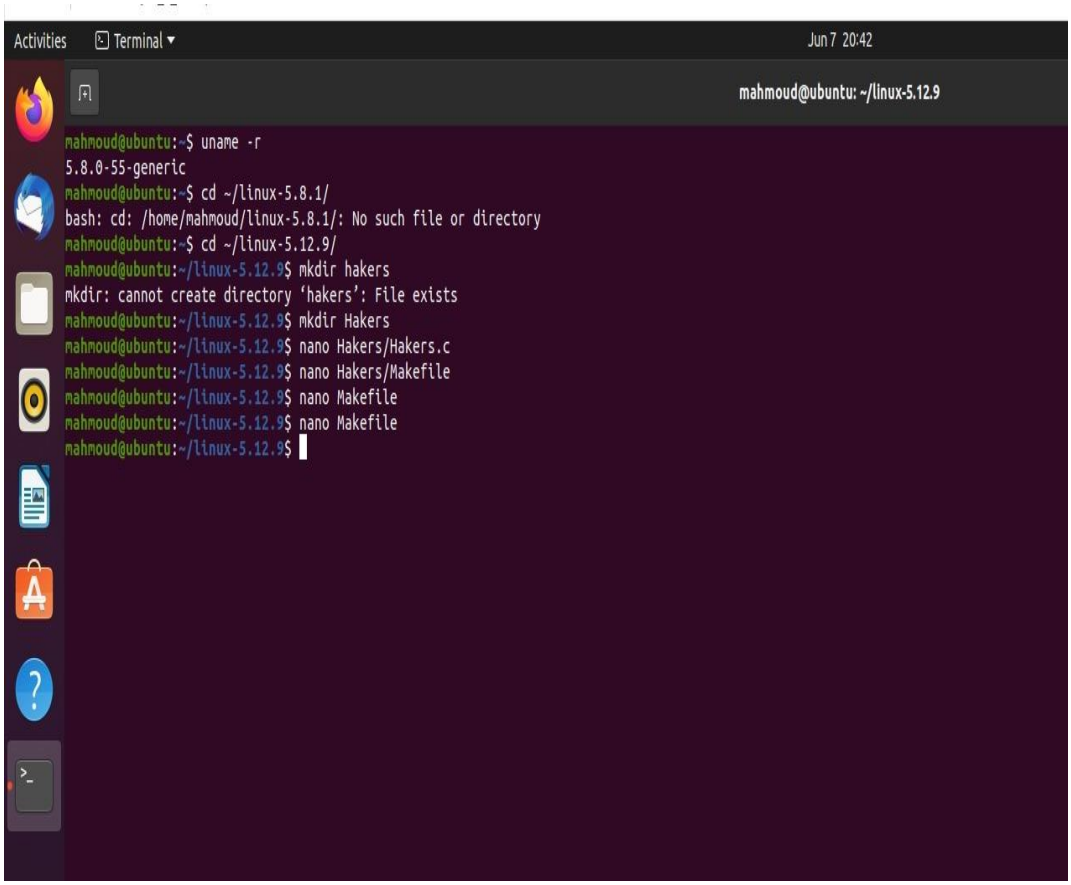


Step 2 - Creation

In this section, we will write a basic system call in C and integrate it into the new kernel:-

- Check the version of our current kernel.
- Change our working directory to the root directory of the recently unpacked source code.
- Create the home directory of our system call.
- Create a C file for our system call.
- Create a Make file for our system call.

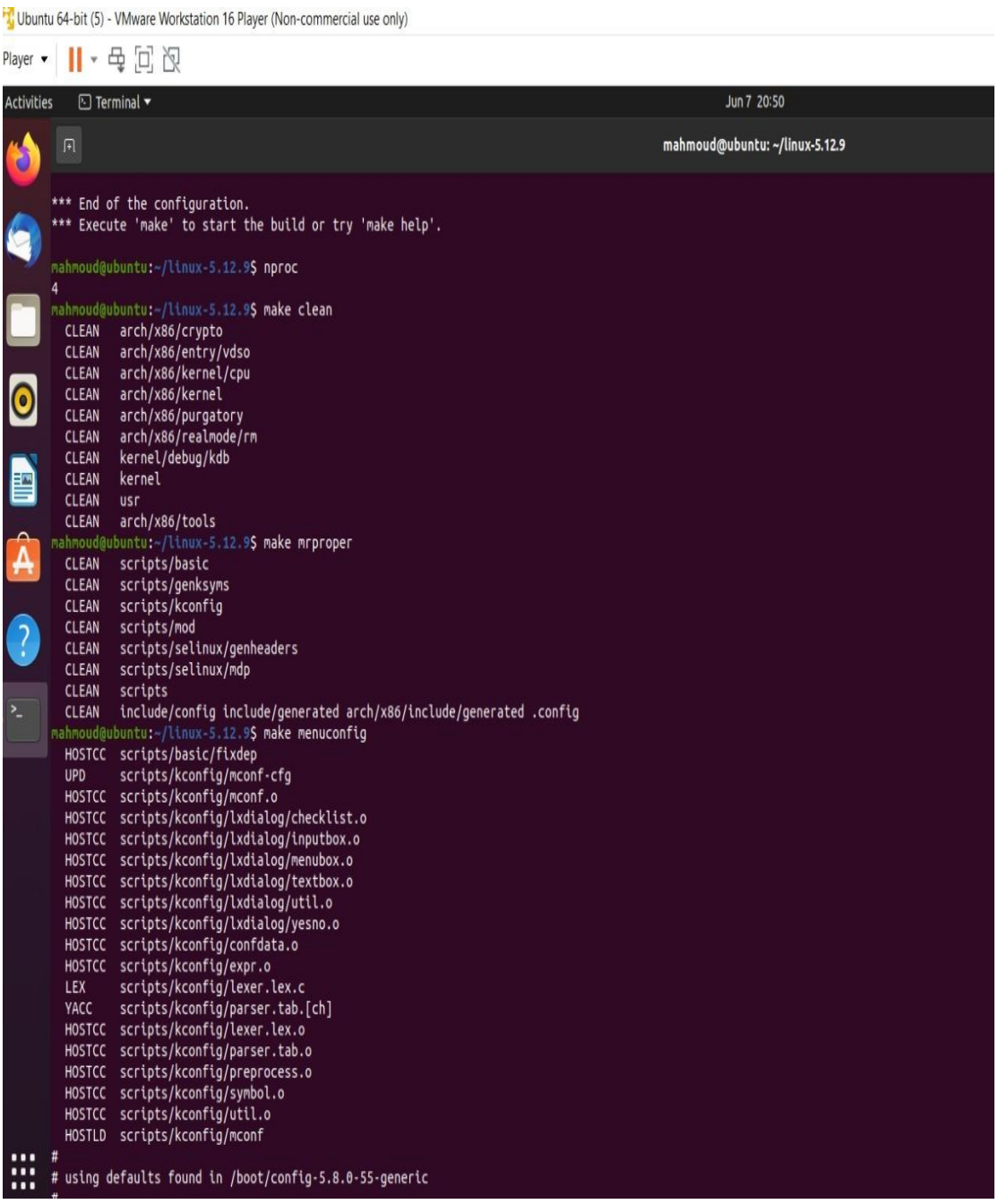
- Add the home directory of your system call to the main Make file of the kernel.
- Add a corresponding function prototype for our system call to the header file of system calls.
- Add our system call to the kernel's system call table.

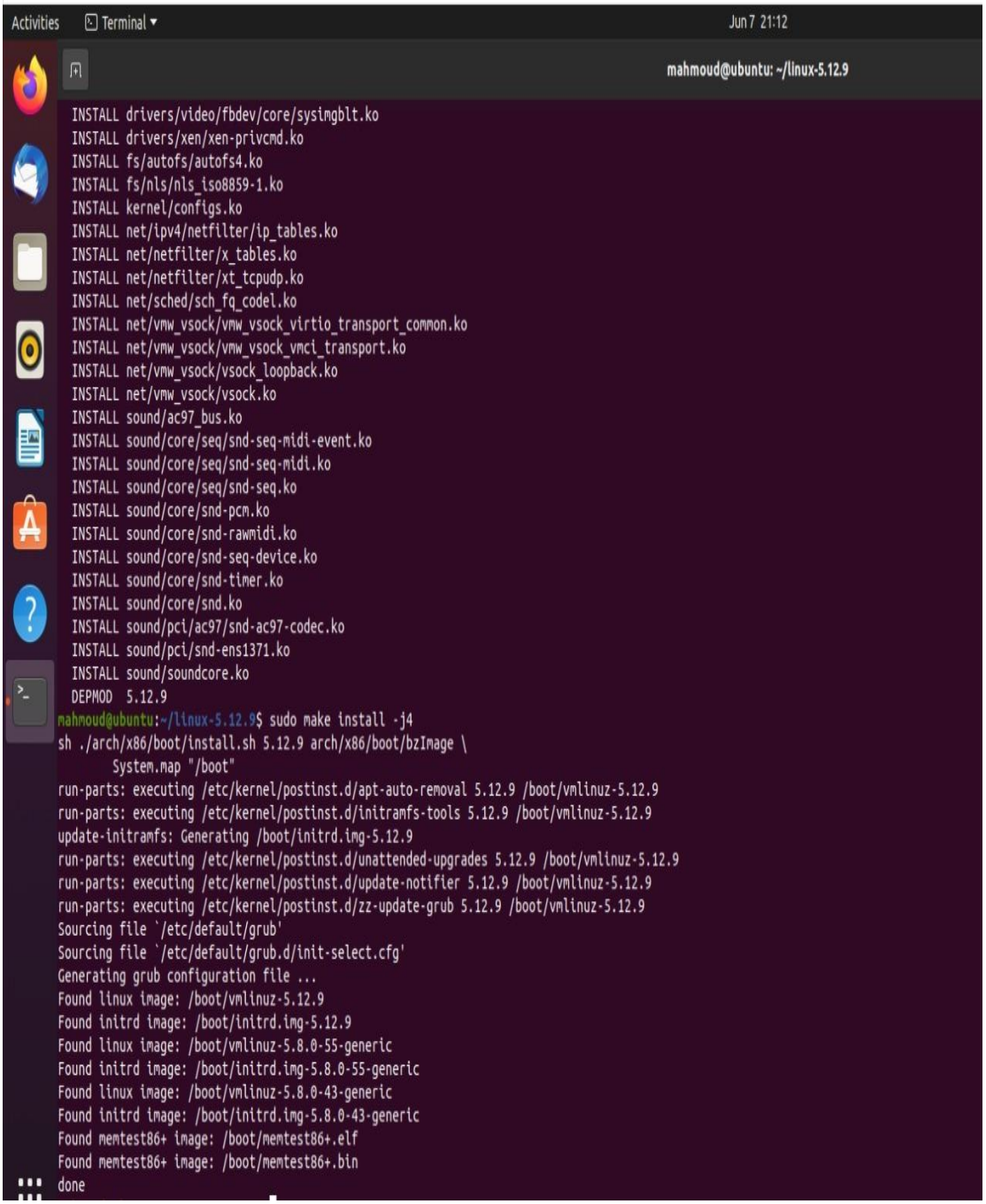


Step 3 - Installation

In this section, you will install the new kernel and prepare your operating system to boot into it:-

- Configure the kernel.
- Find out how many logical cores you have.
- Compile the kernel's source code.
- Prepare the installer of the kernel.
- Install the kernel.
- Update the bootloader of the operating system with the new kernel.
- Reboot your computer.



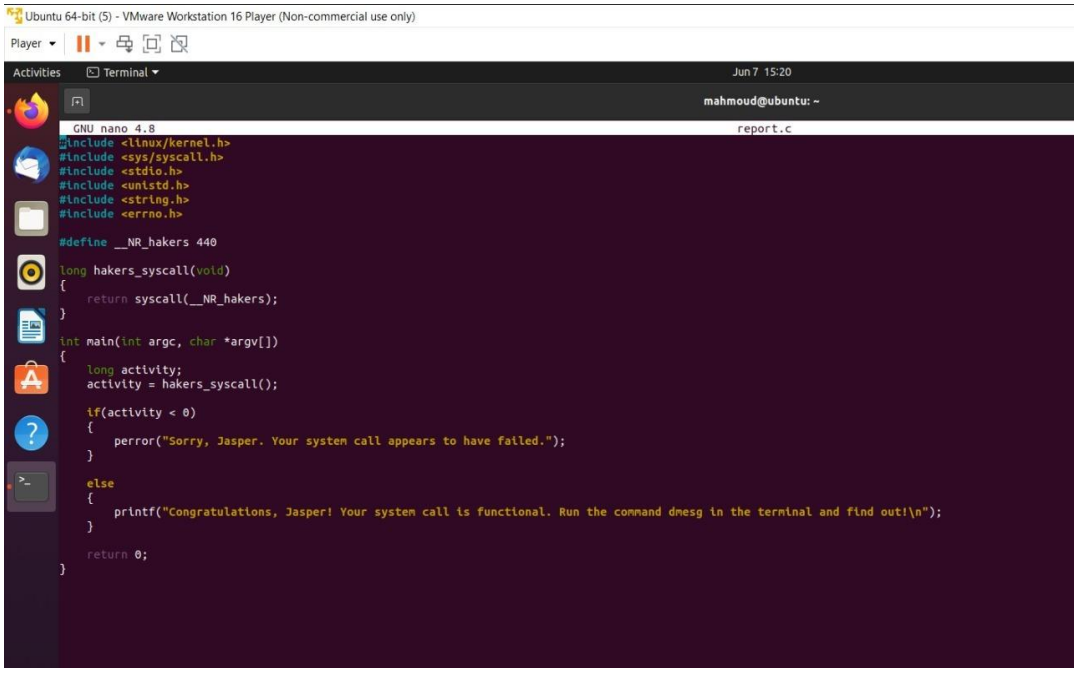


Step 4 - Result

In this section, you will write a C program to check whether your system call works or not. After that, you will see your system call in action:-

- Check the version of your current kernel.

- Change your working directory to your home directory.
- Create a C file to generate a report of the success or failure of your system call.
- Compile the C file you just created.
- Run the C file you just compiled.
- Check the last line of the output.



-References that help you.

- **DEV Community**
- ***https://www.tutorialspoint.com/***