

Introduction to Computer Engineering Lab

CSE 107

Introduction to Lab
Department of Computer Science and Engineering
Gebze Technical University

September 26, 2024

Overview

1. Lab Rules
2. Linux/Unix
3. Linux Commands, Descriptions, Examples
4. Arduino and MIPS

Lab Rules

Assistants:

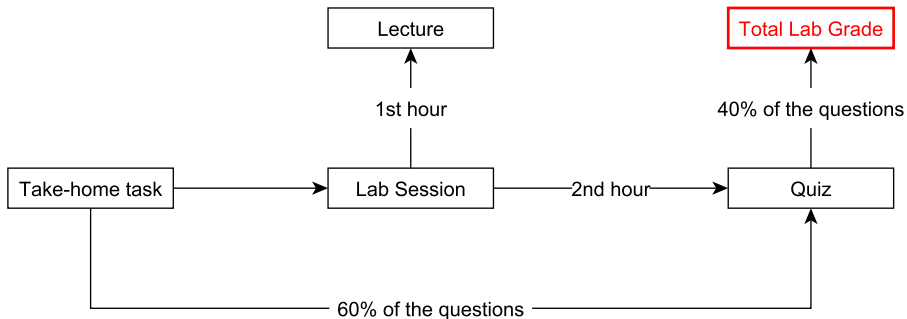
- Gizem Süngü Terci
 - gizemsungu@gtu.edu.tr
 - Tuesday 12:30-14:30, Room 234 (2nd Floor)
- İnci Karamahmutoglu
 - incikaramahmutoglu@gtu.edu.tr
 - Friday, 13:00-14:00, Room 120 (1st Floor)
- Mustafa Salih Bahar
 - mustafabahar@gtu.edu.tr
 - Wednesday, 10:00-12:00, Room 118 (1st Floor)

Lab Rules

- Make sure to attend classes on time.
- **Class Structure:**
 - The first hour of the class will cover the week's lecture topic.
 - The second hour will consist of a quiz based on the material from the previous week.
- **Pre-Lab Task:**
 - A take-home task will be assigned prior to each lab session, covering 60% of the quiz content.
 - The quiz questions will build upon this take-home task.
 - Students must bring their completed take-home task on a USB drive to use during the quiz, in order to avoid potential Internet connectivity issues.

Lab Rules

- Make sure to attend classes on time.
- General flow of CSE 107 for each week is shown:



Lab Rules

- **Attendance:**

- Students attending the first session must remain in the classroom for the entire duration of the class.
- Students attending the second session may leave once they have completed their quiz and received their grades.

- **Prohibited Activities:**

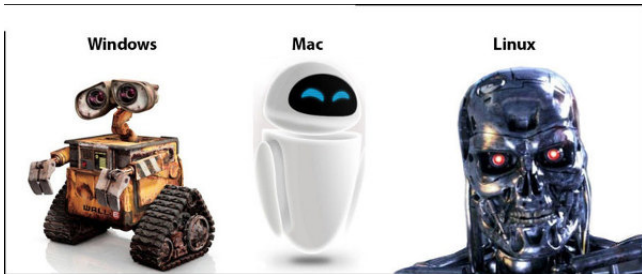
- **Mobile phones** are not allowed during the quiz.
- **Internet usage** is prohibited during the quiz unless explicitly permitted by the assistants.
- Any use of mobile phones or the internet during the quiz without permission will result in a **30-point deduction**.

- **Remedial Lab:** Participation in the remedial lab is optional, but students must meet the attendance requirement to be eligible.

- **Attendance Requirement:** An 80% attendance rate is mandatory for all students.

Linux

- Open-source and free to use and modify.
- Stability and faster performance than Windows
- Flexibility and customization
- Security
- Development-friendly



Linux

Let's explore the Linux terminal together

- Ubuntu, Fedore, Debian, Mint...
- How to download?

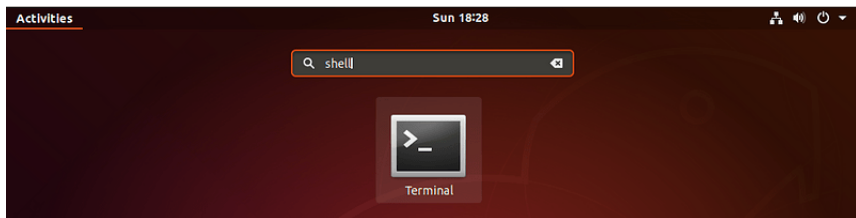


Figure: The figure is taken from¹

¹<https://ubuntu.com/tutorials/command-line-for-beginners3-opening-a-terminal>

Linux Commands, Descriptions, Examples

pwd: Display the Current Directory Path

- Open the terminal on your computer.
- Type the command `pwd` and press Enter.
- The terminal will display the full path of your current working directory.
- Note down the path that is displayed.

Linux Commands, Descriptions, Examples

cd ..: Change to the Parent Directory

- While in any directory, type `pwd` to see where you are.
- Type `cd ..` and press Enter.
- Again, type `pwd` to verify that you have moved one directory level up (closer to the root directory).
- Repeat the `cd ..` command to keep moving up the directory tree.

Linux Commands, Descriptions, Examples

`cd /directorypath`: Change to a Specific Directory

- Open the terminal and type `pwd` to check your current directory.
- Use the command `cd /` to move to the root directory.
- Type `ls` to list the contents of the root directory.
- Use `cd [directoryname]` to navigate into one of the directories listed.
- Type `pwd` to confirm the new path.

Linux Commands, Descriptions, Examples

ls [options]: List Directory Contents

- Navigate to your home directory using the `cd` command or use the command `pwd` to confirm you are in the home directory.
- Type `ls` and press Enter to list all files and directories.
- Now type `ls -l` to see a detailed list (including file permissions, ownership, file size, and modification date).
- Finally, type `ls -a` to display all files, including hidden files.

Linux Commands, Descriptions, Examples

touch [options] filename: Create a New File

- Navigate to your home directory using `cd ~`.
- Type `touch myfile.txt` and press Enter to create a new empty file named `myfile.txt`.
- Use the `ls` command to check if the file has been created.
- Use `touch -a myfile.txt` to update the access time of the file and verify it using `ls -l`.

Linux Commands, Descriptions, Examples

mkdir directory: Create a New Directory

- Navigate to your home directory using `cd ~`.
- Type `mkdir new_directory` to create a new directory named `new_directory`.
- Use `ls` to confirm that the directory has been created.
- Now navigate into the new directory using `cd new_directory` and verify it with `pwd`.

Linux Commands, Descriptions, Examples

man [command]: Display Help Information for a Command

- In the terminal, type `man ls` and press Enter.
- Read through the manual page for the `ls` command.
- Use the arrow keys to scroll through the information.
- Press `q` to exit the manual.
- Try the same with other commands like `man mkdir` or `man rm`.

Linux Commands, Descriptions, Examples

rm [options] directory: Remove Files or Directories

- Navigate to your home directory using `cd` .
- Use the `touch` command to create a file named `testfile.txt`.
- Now, type `rm testfile.txt` to remove this file.
- Confirm that the file is gone by using `ls`.
- Create a new empty directory called `testdir` using `mkdir testdir`.
- Type `rmdir testdir` to remove the empty directory.

Linux Commands, Descriptions, Examples

date [options]: Display or Set the System Date and Time

- In the terminal, type `date` and press Enter to display the current system date and time.
- Use `date +%Y-%m-%d` to display the date in the format YYYY-MM-DD.
- Use `date +%T` to display the time in the format HH:MM:SS.

Linux Commands, Descriptions, Examples

`file [options] filename:` Determine the File Type

- Create a new file using `touch myfile.txt`.
- Type `file myfile.txt` to determine the type of file.
- Create a new empty directory using `mkdir testdir` and type `file testdir` to see how it's classified.

Linux Commands, Descriptions, Examples

cat [filename]: Display File Contents

- Create a new text file by typing `echo "Hello, World!" > greetings.txt`.
- Now type `cat greetings.txt` to display the contents of the file.
- Add another line to the file using `echo "How are you?" >> greetings.txt` and again use `cat greetings.txt` to display the updated contents.

Linux Commands, Descriptions, Examples

clear: Clear the Command Line Screen

- Type multiple commands like `pwd`, `ls`, and `cd ...`
- Now, type `clear` and press Enter to clear the terminal screen.
- Verify that the screen is cleared and ready for new commands.

Arduino and MIPS

Arduino Uno:

- <https://wokwi.com/arduino>
- Get an Arduino Uno with a toolkit.
- Safety first! Protect your Arduino!

MIPS:

- MIPS Simulator: <https://pages.cs.wisc.edu/~larus/spim.html>

The End