Lab 1: Introduction to Linux, Python Setup, and Your First Python Program

Objectives

- Learn basic Linux terminal commands
- Set up Python3 on your local system
- Write and run your first Python program

Setup (To be done in class)

Before we begin with the lab assignment, make sure you have the following setups done with the help of your TAs:

- Proxy login for internet access
- Getting to know VPL (Virtual Programming Lab) environment

Part 1: Basic Linux Terminal Commands

1. **Open the Terminal**
    - **Windows**: Use Windows Subsystem for Linux (WSL) or Git Bash.
    - **macOS**: Open Terminal from Applications > Utilities.
    - **Linux**: Open Terminal from your applications menu.
2. **Basic Commands**
    - `pwd`: Print Working Directory

      ```
      pwd
      ```

      Outputs the current directory you are in.
    - `ls`: List Directory Contents

      ```
      ls
      ```

      Lists files and directories in the current directory.
    - `cd`: Change Directory

      ```
      cd /path/to/directory
      ```

      Changes the current directory to the specified path.
    - `mkdir`: Make Directory

      ```
      mkdir my_directory
      ```

      Creates a new directory named `my_directory`.
    - `touch`: Create a New File

      ```
      touch myfile.txt
      ```

      Creates a new empty file named `myfile.txt`.
    - `rm`: Remove File

      ```
      rm myfile.txt
      ```

      Deletes the file named `myfile.txt`.
    - `rmdir`: Remove Directory

      ```
      rmdir my_directory
      ```

      Deletes the directory named `my_directory` (must be empty).
    - `cp`: Copy Files or Directories

      ```
      cp source_file destination_file
      ```

Copies `source_file` to `destination_file`.

- `mv`: Move or Rename Files or Directories

  ```
  mv old_name new_name
  ```

  Renames `old_name` to `new_name` or moves `old_name` to `new_name` if it is a path.

3. **Exercise**:

   - Create a directory named `<YourEntryNumber>_COL100` (Eg `2024CS10001_COL100`).
   - Inside `<YourEntryNumber>_COL100`, create a file named `hello.txt`.
   - List the contents of `cs_intro` to verify the file exists.
   - Rename `hello.txt` to `welcome.txt`.
   - Delete `welcome.txt`.

Part 2: Setting Up Python3

1. **Check if Python is Installed**

   ```
   python3 --version
   ```

   If Python is installed, it will display the version number.

2. **Installing Python3**

   - **Windows**:
     - Download the Python installer from python.org.
     - Run the installer and follow the instructions (ensure "Add Python to PATH" is checked).
   - **macOS**:
     - Python3 usually comes pre-installed. Use `python3 --version` to check.
     - If not, install it using Homebrew:

       ```
       /bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"
       brew install python3
       ```

   - **Linux**:
     - Install Python3 using your package manager:
       - Debian/Ubuntu:

         ```
         sudo apt update
         sudo apt install python3
         ```

       - Fedora:

         ```
         sudo dnf install python3
         ```

3. **Verify the Installation**

   ```
   python3 --version
   ```

   You should see the version number of Python3.

Part 3: Writing and Running Your First Python Program

1. **Create a New Python File**

   - Navigate to your `cs_intro` directory:

     ```
     cd cs_intro
     ```

   - Create a new file named `hello.py`:

     ```
     touch hello.py
     ```

2. **Write Your First Python Program**

   - Open `hello.py` in a text editor (nano, vim, VS Code, etc.):

     ```
     nano hello.py
     ```

   - Add the following code to `hello.py`:

     ```
     print("Hello, world!")
     ```

   - Save and exit the editor (in nano, press `CTRL + X`, then `Y`, then `Enter`).

3. **Run Your Python Program**

```
python3 hello.py
```

You should see the output:

```
Hello, world!
```

Additional Resources

- Linux Command Line Cheat Sheet
- Python Official Documentation