COMPSCI 1XC3 Week 1 Tutorial Notes

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Contents

Assumptions and Comments

This tutorial note is based on COMPSCI 1XC3 lecture note contents. To view the lecture notes, please look at `https://github.com/pedrampasandide1993/Computer-Science-Practice-and-Experience-Development-Basics/blob/main/COMPSCI%201XC3%20Lectures.pdf` This includes all necessary course contents

If you see any possible problems, please contact Jingze for corrections as soon as possible.
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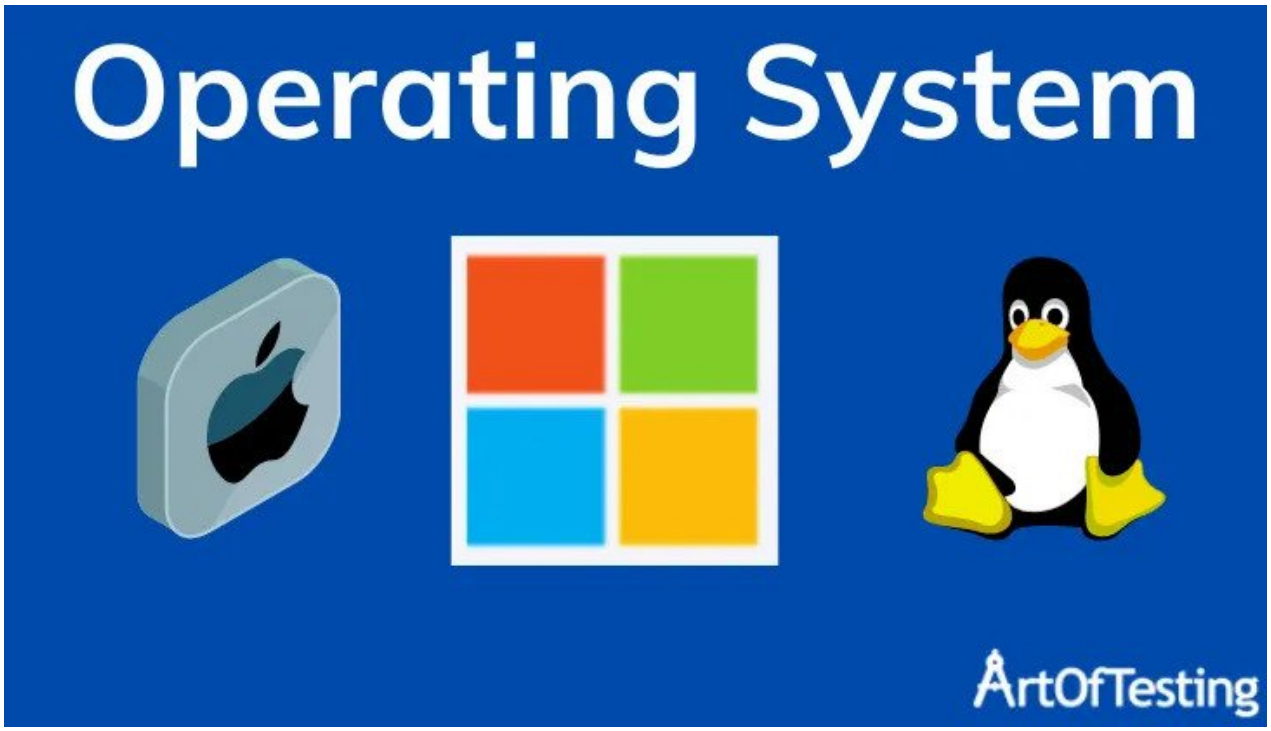


1 Installing Linux

Linux is an operating system with open-source developments and kernel components. It is secure, free, embedded, and community-developed. Its programming languages include C and assembly languages (e.g., Bash)

Compared with other operating systems, Linux advantages include:

- **Open Source**. The open source philosophy fosters a collaborative environment where developers from around the world can contribute to improving the software.
- **Safe**. Potential vulnerabilities and bugs can be identified and fixed quickly, reducing the risk of malicious exploits.
- **Stability (Reliability)**. Bugs are often addressed promptly, and updates are released regularly to ensure ongoing performance improvements and security enhancements.
- **Customization**. Users can incorporate Linux kernels with other components, so that the incorporated operating system can have extra strengths and functionalities.

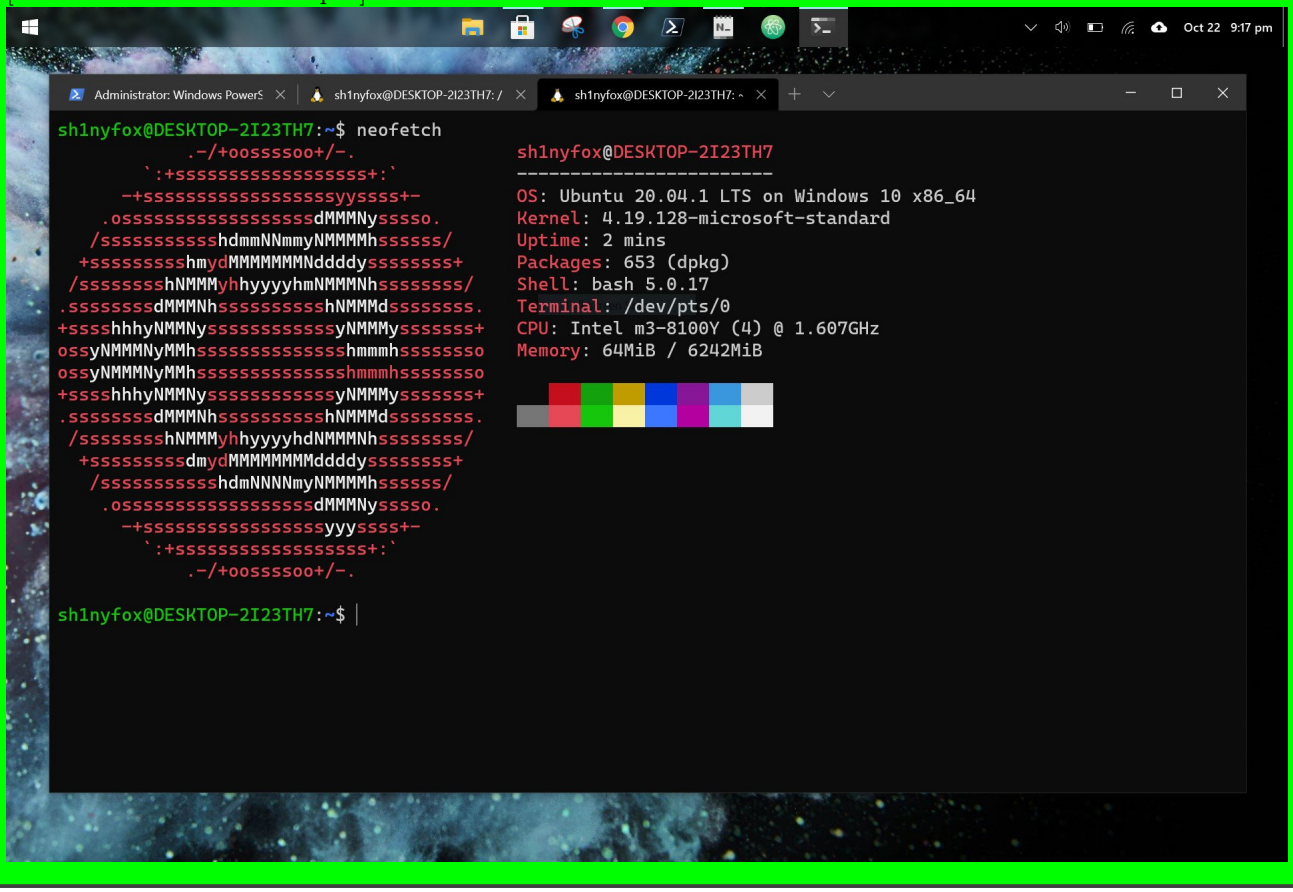
1.1 Linux for Windows Users

Students using the Windows system are required to download "Windows Subsystem for Linux"

Downloading Windows Subsystem for Linux

[Step 1] Open your computer, find and open Microsoft Store.
[Step 2] In the Microsoft Store, search "Windows Subsystem for Linux", the icon is a blue penguin, and click the download button.
[Step 3] After downloading, you can open the WSL. Sometimes you have an error message "Windows Subsystem for Linux has no installed distributions." This means you need to install Linux on your personal computer. So on your personal computer, search "command prompt" or "CMD", or search "Powershell".
[Step 4] After opening the Command prompt terminal, or your powershell. Type in the command **wsl –install** and enter, then type in the command **wsl –install -d Ubuntu** and enter. Now your WSL can work well.

[Here is the Successful Output]



1.2 Linux for MacOS or Linux Users

Students using the MacOS or Linux system are NOT required to download anything. Students with MacOS do not need to install Linux. MacOS is UNIX based system. Both Windows and MacOS have Linux user-friendly environments, let's say by clicking on a folder you can get into it.

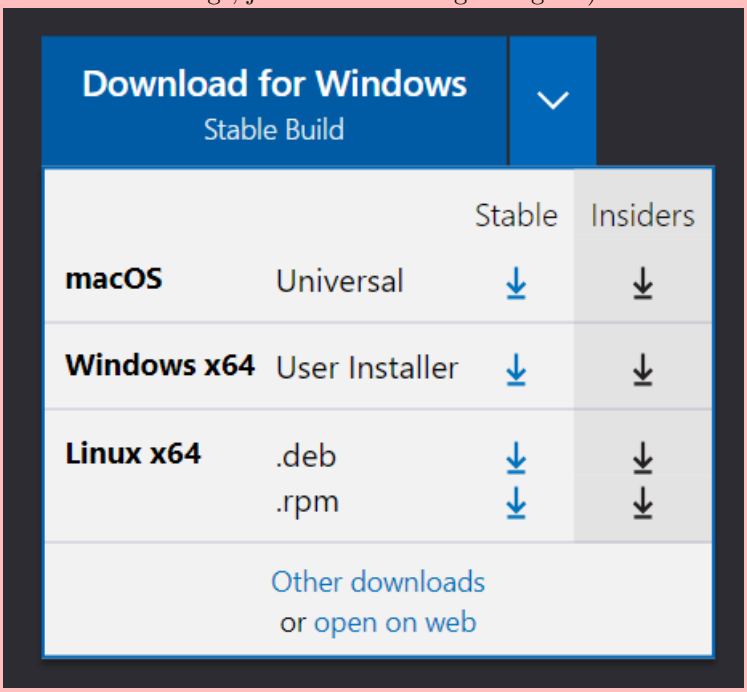
2 Installing Visual Studio Code

Visual Studio Code is a code editor redefined and optimized for building and debugging modern web and cloud applications. VS code allows using git commands to upload and download files, and it enables developers to have a more-flexible execution. VS Code User guide is here: `https://code.visualstudio.com/docs`

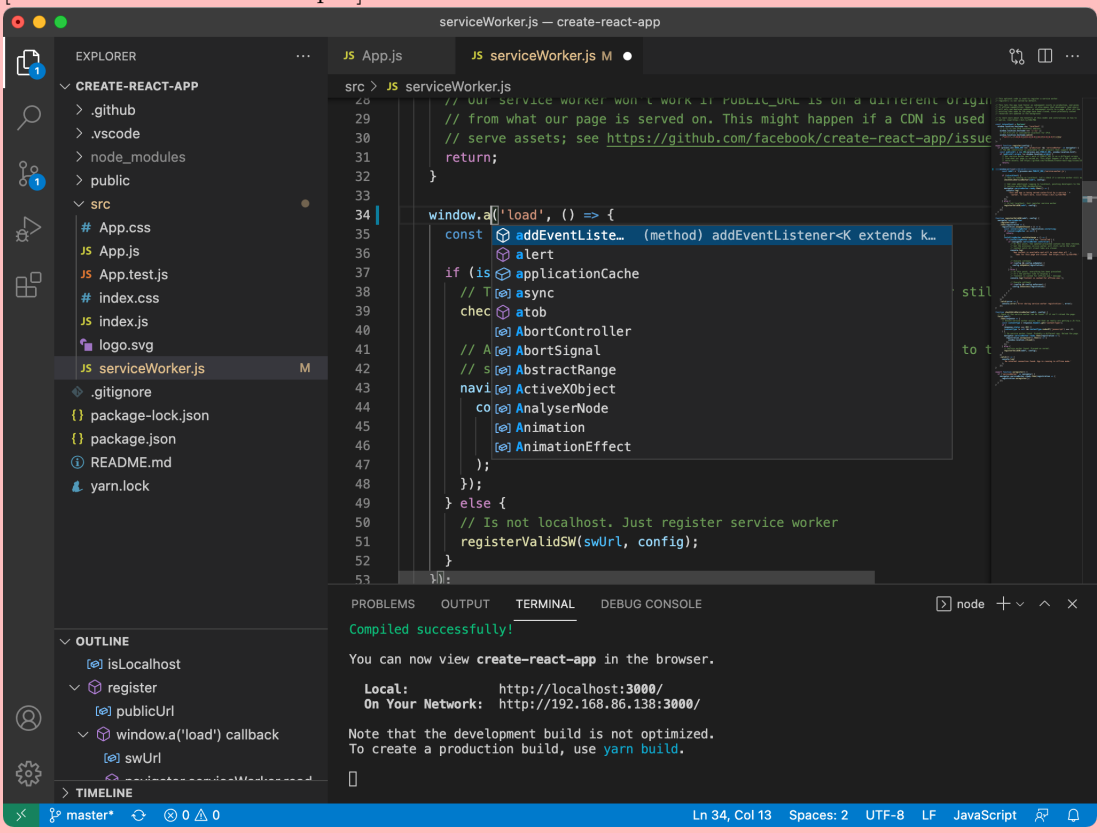
2.1 Downloading Visual Studio Code

Downloading Visual Studio Code

[Step 1] Open your computer, go to `https://code.visualstudio.com/`
[Step 2] On the left side of this page, Find and click the blue button "Download for ..." (Do not worry about installation settings, just default settings are good)



[Here is the Successful Output]

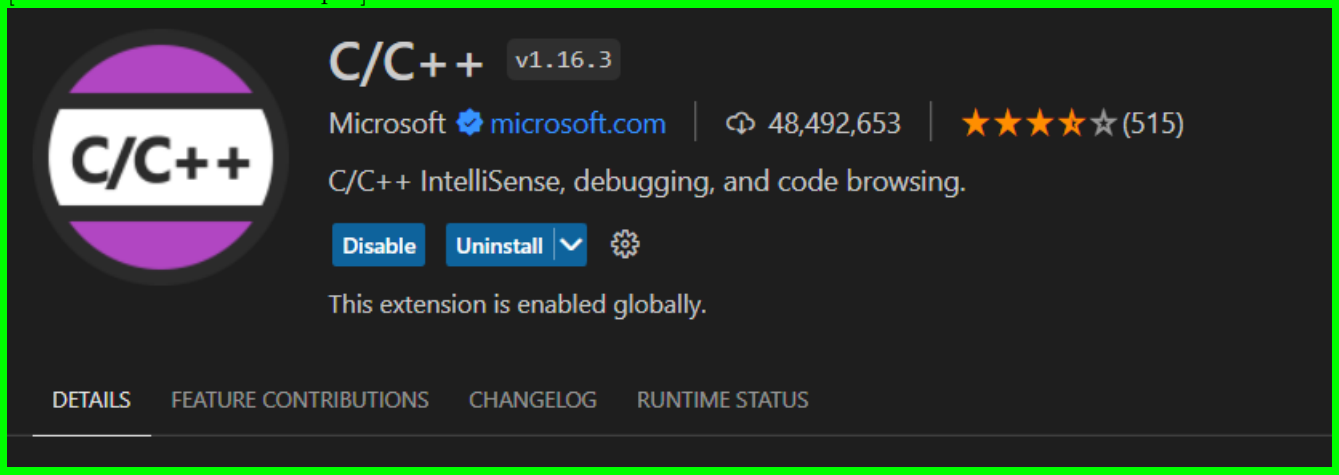


2.2 Installing C++/C Package

Installing C++/C Package

[Step 1] Open your computer, open VS Code, and find the extension section (on the left most side, choose the fifth button from the top)
[Step 2] Search "C++/C package", and click "Install"

[Here is the Successful Output]



3 The first C program

C is a prestigious programming language in software engineering, and its most popular application is in operating system programs. C is strongly associated with UNIX, as it was developed for UNIX-based operating systems.

3.1 Get Started With C

This is your first C program

```
// this code is written by Pedram
// importing header files:
#include<stdio.h>
// the main function
int main(void){
/* calling "printf" function
    the "definition" is included in "stdio" library */
    printf("Hello, McMaster!\n");
    return 0;
}
```

This program defines a main function, which prints out a message "Hello McMaster!"

3.2 Comments in C

In the above program, lines 1, 2, and 4 are single-line comments

6

```
// this code is written by Pedram
// importing header files:
// the main function
```

Additionally, lines 6 and 7 are multi-line comments

```
/* calling "printf" function
    the "definition" is included in "stdio" library */
```

4 Sample Bash Shell Commands

A bash script is a series of assembly programming commands written in a file. These are read and executed by the bash program. The program executes line by line. They can help users to have basic Linux operating system operations.

Bash Shell Script Command	What does it do (Command Behavior)
pwd	Show current directory
ls	View the lists of all files and folders in the current directory
open XXX	Open the XXX folder in the file manager
cd XXX	Move to XXX folder
cd	Move to the home directory
nano XXX	Create a file named XXX
cp XXX YYY	Copy a file named XXX to the file path YYY
cat XXX	Display content of a file named XXX
locate XXX	Find the file path of a file named XXX

A Bonus Material

Bash Shell script tutorials:
`https://www.freecodecamp.org/news/shell-scripting-crash-course-how-to-write-bash-scripts-in-linux/#:~:text=What%20is%20a%20Bash%20Script%3F,it%20using%20the%20command%20line.`

C Programming tutorials:
`https://www.w3schools.com/c/`

Complete Scientific Documentations for Programming Languages and Tools:
`https://devdocs.io/`