Lecture 5:

## How to Install in Windows

1. Visit winlibs.com

2. Download the ucrt zip file (32/64 bit) based on your system version.

3. To check your system version:

- Go to Control Panel -> System -> Check for 32/64 bit version.

4. Download the zip file.

5. Extract the zip file.

6. Copy the extracted folder to the root of the C directory.

7. Rename the folder to MinGW and move it to C drive.

Directory Structure:

- C:\MinGW\bin\gcc.exe (This is the C compiler)

- C:\Windows\System32\notepad.exe

Example Program Directory:

- C:\ceg\eg1.c

Steps to Open Command Line:

1. Open Command Line.

2. It will open at `C:\Users\username>`

3. Navigate to root directory:

- `C:\Users\> cd ..`

- `C:\> md ceg` (Make directory)

- `C:\> cd ceg` (Change directory)

- `C:\ceg> notepad eg1.c`

Commands:

- `md` - Make directory

- `cd` - Change directory

Compiling Code:

1. Navigate to your program directory:

- `C:\ceg> gcc eg1.c`

2. If you get an error:

- `gcc is not an internal or external command`

Setting Path Environment Variable:

1. If you execute `gcc eg1.c`, it will search in the current directory first.

2. If not found, it will search the path in Windows environment.

Setting Path for GCC:

1. Open Windows Environment:

- Path: `C:\Windows; C:\Windows\System32;` (These are already set)

2. Add at the end of the path:

- Path: `C:\Windows; C:\Windows\System32; C:\MinGW\bin;`

Manual Path Setting (Temporary):

1. Open Command Line.

2. Navigate to your program directory:

- `C:\ceg> path=C:\Windows;C:\Windows\System32;C:\MinGW\bin;` (Set path)

- `C:\ceg> notepad eg1.c` (Write your program)

- Example program:

```c

int main() {

int x, y, z;

x = 10;

y = 20;

z = x + y;

return 0;

}

```

3. Compile the code:

- `C:\ceg> gcc eg1.c -o eg1.exe` (This will compile the code and create an executable file)

Running the Executable:

1. Execute the file:

- `C:\ceg> eg1` (This will execute the .exe file)

Command Syntax:

- `gcc sourceCodeFile -o outputFile`

Setting Path Permanently:

1. Go to Control Panel -> System -> Environment Variables.

2. Under both User and System variables, search for Path.

- If found, edit and add the path at the end.

- If not found, create a new Path variable and set its value to `C:\MinGW\bin;`

Practicals on Ubuntu (Linux)

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1. In Windows: (How to install ubuntu)

- Download Rufus Software.

- Download Ubuntu ISO file.

- Install Rufus.

2. How to Make USB Bootable:

- Open Rufus.

- Select device (you can rename it if desired).

- Select boot file (Ubuntu ISO).

- Click "Start".

- Write in ISO image mode.

- Wait until the process finishes.

3. Restart and Change Boot Order:

- Restart your computer.

- Press F12 (or the relevant key) to open boot options.

- Select USB.

4. Installing Ubuntu:

- When Ubuntu opens for the first time, it will prompt for installation.

- Follow the setup instructions and restart.

- Change configurations as needed.

5. Open Terminal:

```sh

user@ubuntu23:~$ gcc

command gcc not found

user@ubuntu23:~$ sudo apt update

user@ubuntu23:~$ sudo apt install build-essential

* Confirm by typing 'yes' when prompted.

Verify GCC Installation:  
sh  
Copy code  
user@ubuntu23:~$ gcc --version

* + This will display the GCC description.

For Multiple Systems:  
sh  
Copy code  
user@ubuntu23:~$ sudo apt install xrdp

* + Confirm by typing 'yes'.
  + This allows sharing via IP address to open the window on another local system.

sh  
Copy code  
user@ubuntu23:~$ ip addr show

* + This will display the local IP address.

Install Vim and Gedit:  
sh  
Copy code  
sudo apt install vim

sudo apt install gedit

Create and Navigate to Directory:  
sh  
Copy code  
mkdir ceg

cd ceg

vim abc.c

1. Using Vim:
   * By default, Vim opens in command mode.
   * To write something, press i to switch to insert mode.
   * Type your program.
   * To return to command mode, press Esc.

To save and quit:  
sh  
Copy code  
:w (save)

:wq (save and quit)

Compile and Execute Program:  
sh  
Copy code  
gcc abc.c -o abc.out

./abc.out

1. Vim Command Mode Shortcuts:
   * To delete a character: place the cursor on the character and press x.
   * To delete 4 characters: press 4x.
   * To delete a full line: press dd.
   * To delete 2 lines: press 2dd.
2. Vim Copy and Paste:
   * To copy a line: press yy.
   * To paste: press Shift + P.
   * To start selection mode: press V (uppercase).
   * To copy selected text: press y once.
   * To paste: press Shift + P.
3. If Not Comfortable with Vim:

Use Gedit:  
  
gedit eg1.c

This will open a software similar to Notepad.

You can copy and paste this text into a Microsoft Word document. The formatting will be preserved, making it easy to read and understand.

5.3: Practicals on Ubuntu VM on Windows

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If we want to use Windows, we can use VirtualBox.

1. Download and Install VirtualBox:

- Go to virtualbox.org.

- Download VirtualBox for Windows host.

- Download Ubuntu (legacy desktop install).

2. Install VirtualBox:

- Open VirtualBox and run as administrator.

- Follow the installation instructions.

3. Set Up a New Virtual Machine:

- Open VirtualBox.

- Click on "New".

- Give the VM a name (e.g., VirtualUbuntu1).

- Select the Ubuntu ISO file.

- Click "Next".

4. Configure the VM:

- Set username.

- Set password.

- Set memory to 4096 MB (4 GB).

- Set processor to 1 CPU.

- Create Virtual HDD.

- Select HDD size (choose based on your convenience).

- Click "Next" and then "Finish".

5. Initial Setup:

- Wait for the VM to open.

- Start the setup.

- Select timezone.

- Set name, username, ID, and password.

- Finish installation.

6. Starting the VM:

- Close and reopen VirtualBox.

- Click on the VirtualUbuntu VM and start it.

- Select "Normal Start".

- Install and set up Ubuntu.

- Restart the VM when prompted.

7. Install Necessary Packages:

```sh

user@ubuntu23:~$ sudo apt install build-essential

user@ubuntu23:~$ sudo apt install vim

user@ubuntu23:~$ sudo apt install gedit

This will ensure that you have all the essential tools and text editors installed on your Ubuntu VM.