Lab 0

Ubuntu
실습환경 구축

시스템 프로그래밍 (system programming)

김덕수

Ubuntu 실습 환경 구축

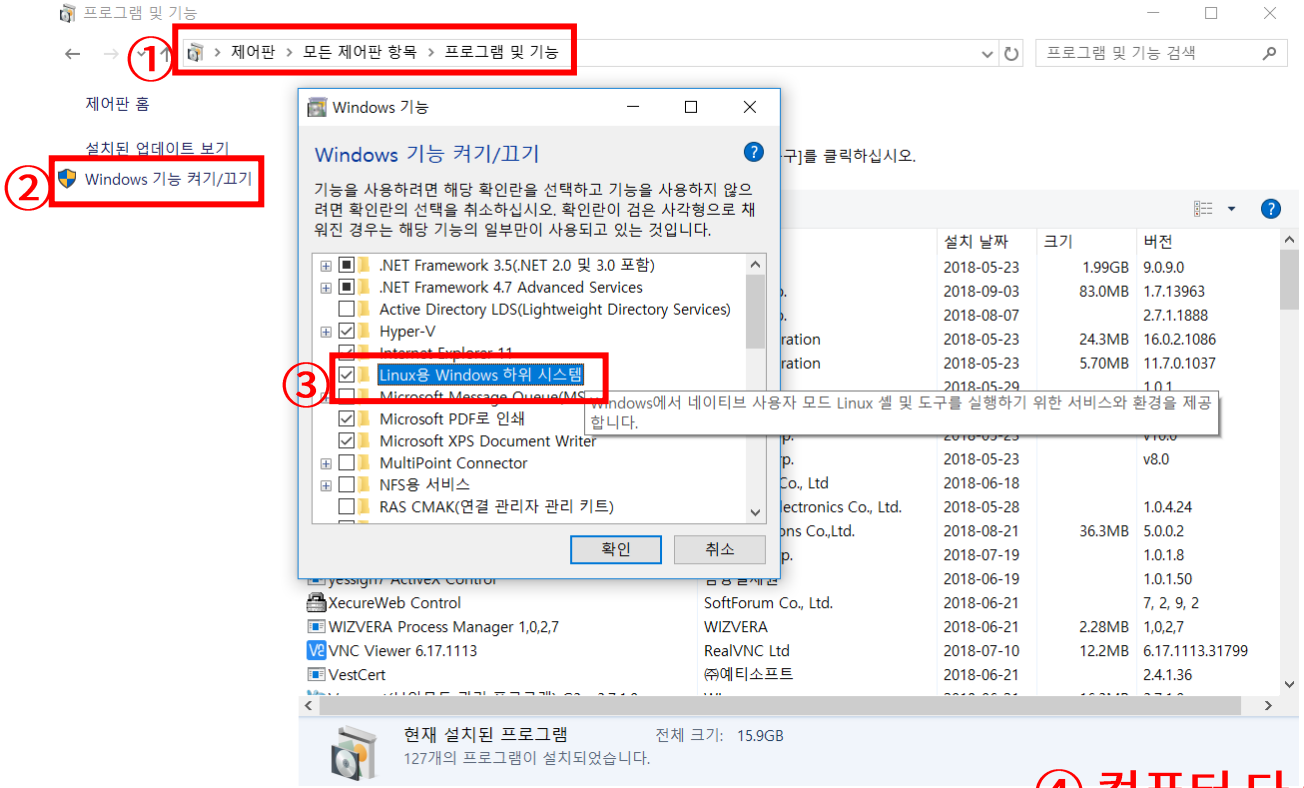
- **Ubuntu PC**
  - 버전 무관
- **Windows 10**
  - Windows Subsystem for Linux (WSL) 사용 (권장)
- **Windows 8 이하 및 기타 OS**
  - 가상화 SW 사용
    - **Virtual Box (무료)**
      - Goooogling!
    - Vmware (상용)
      - Goooogling!

Lab 0-1

Ubuntu 설치

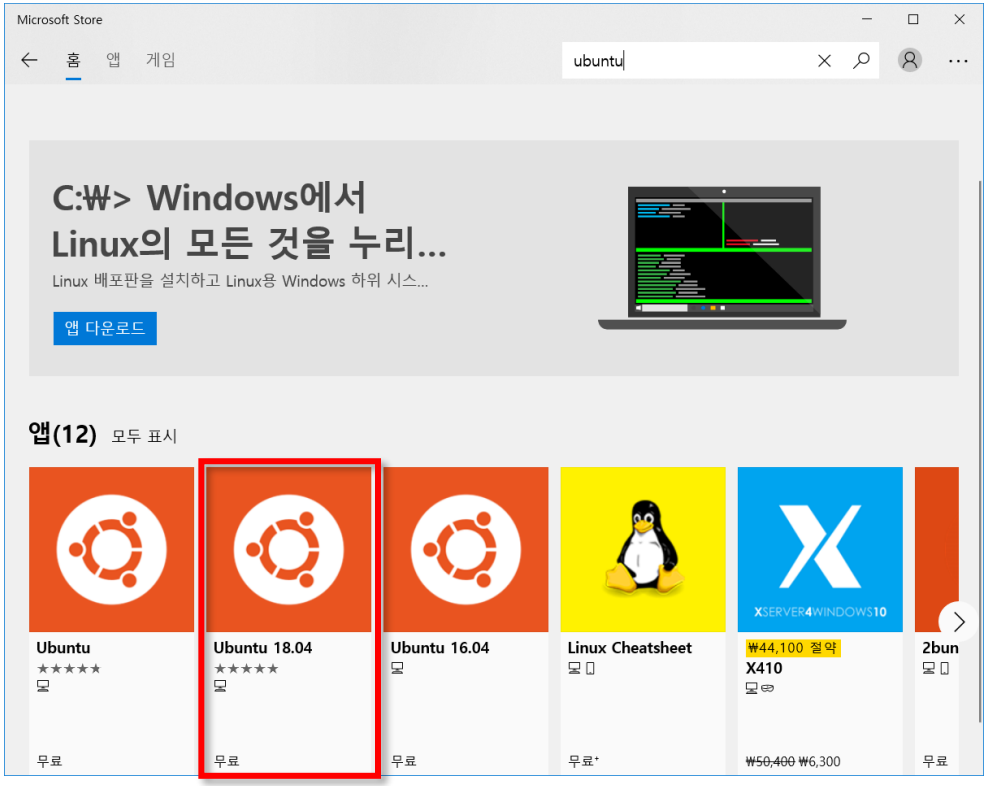
Windows Subsystem for Linux (WSL)

Enabling Linux sub-system

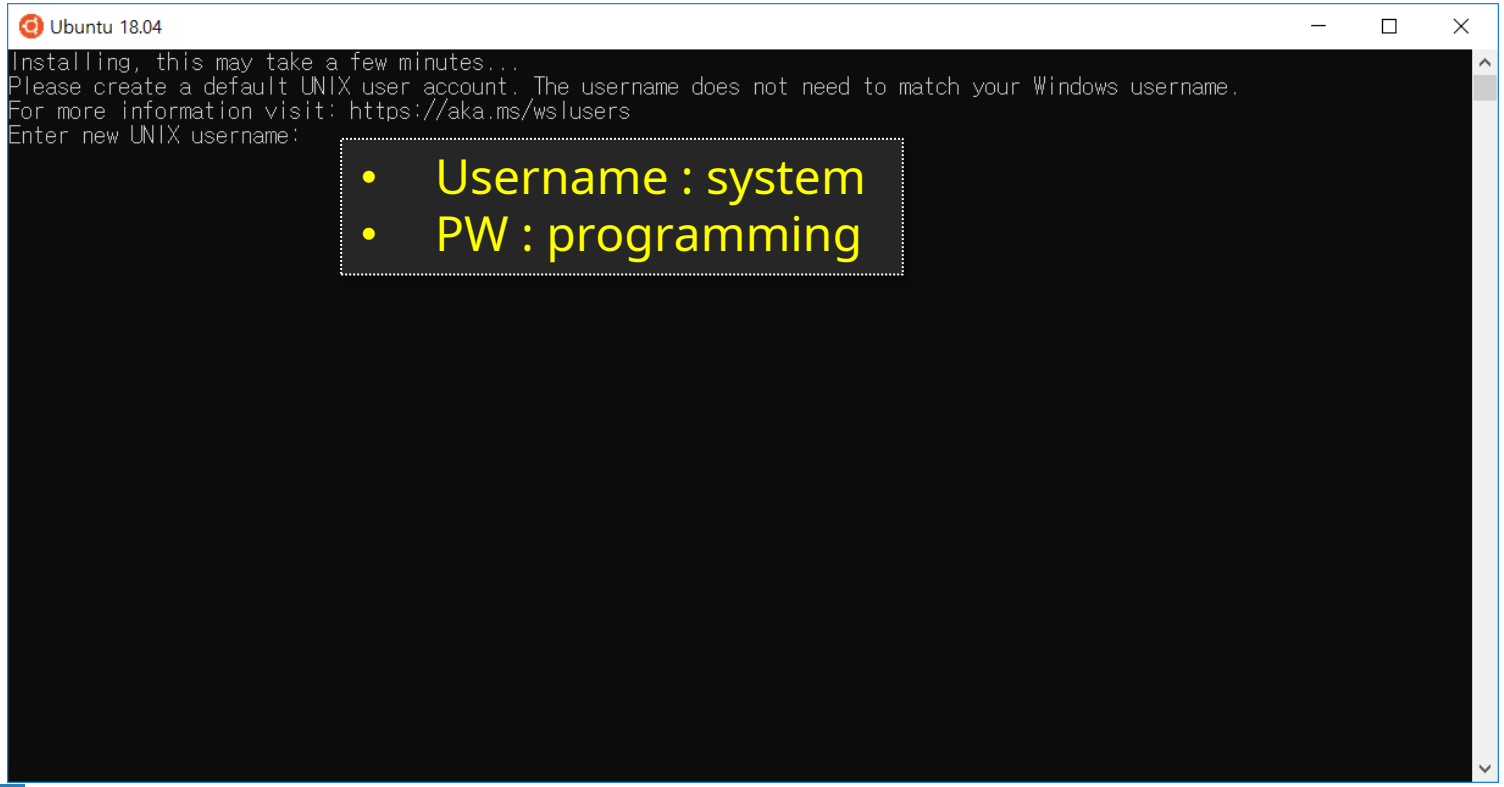


④ 컴퓨터 다시 시작

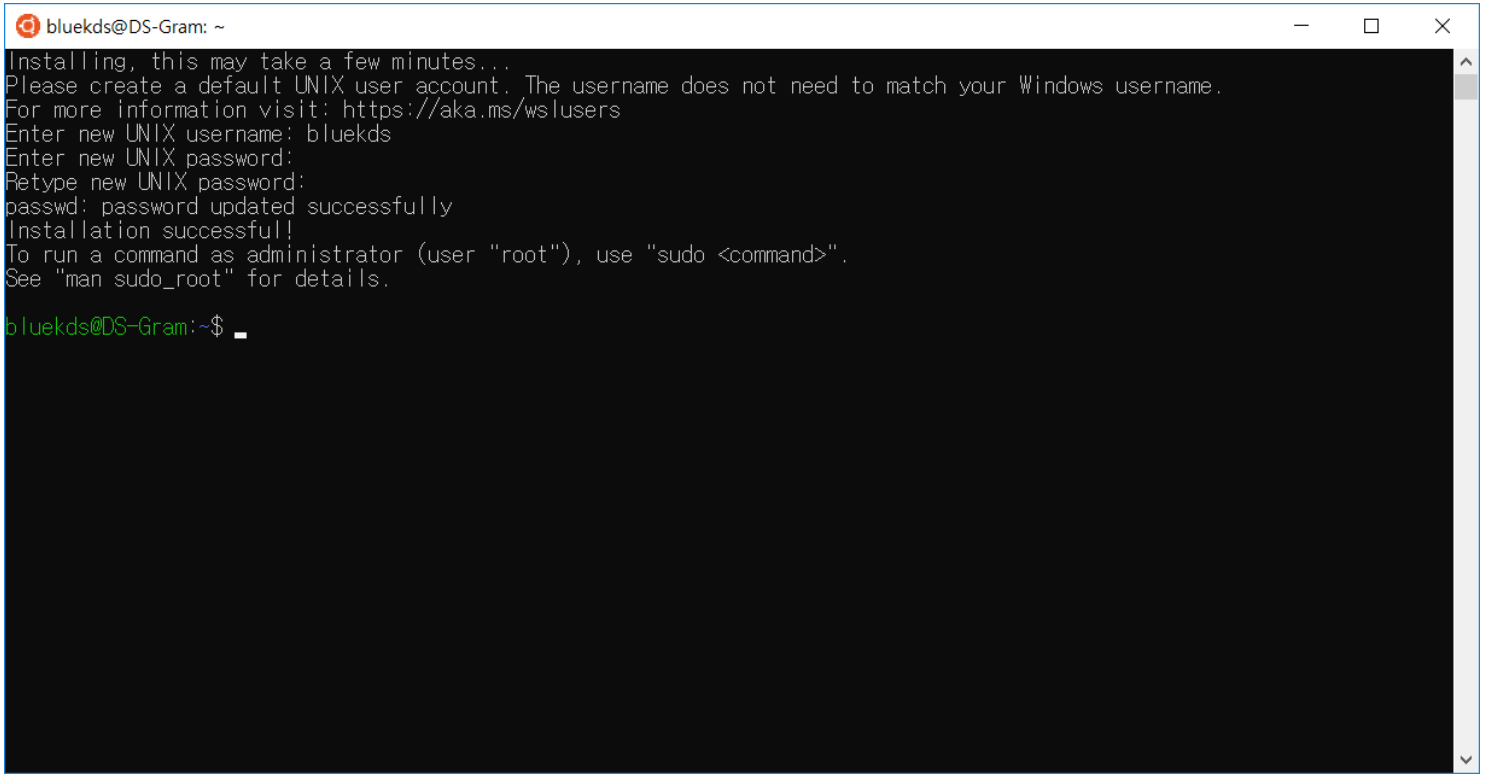
Windows 10 – Microsoft store



Set username and PW



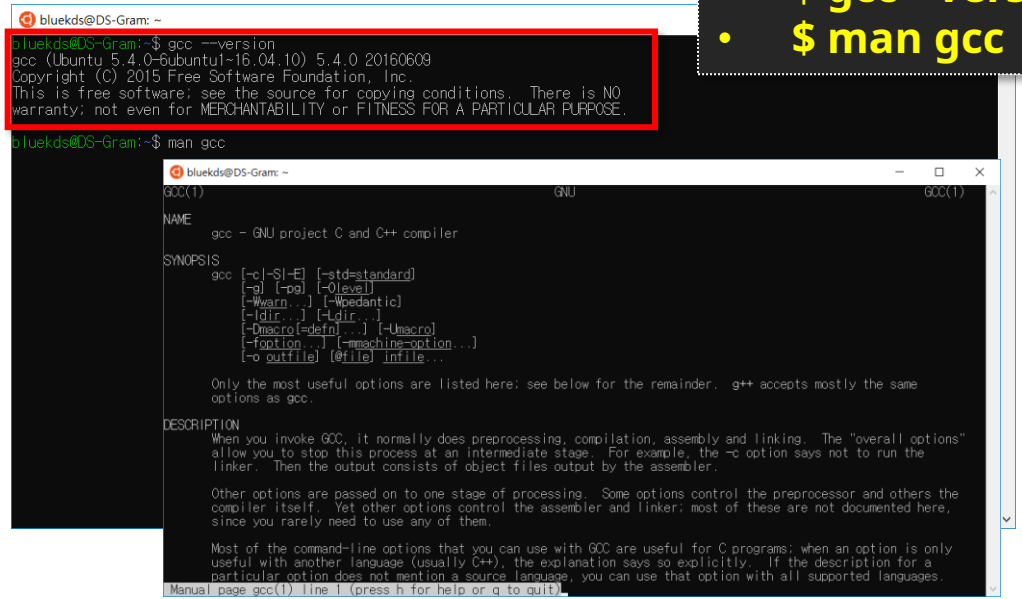
Set username and PW



Install GCC compiler

- $sudo apt-get install gcc
- $sudo apt-get install g++

- $ gcc --version
- $ man gcc



Lab 0-2

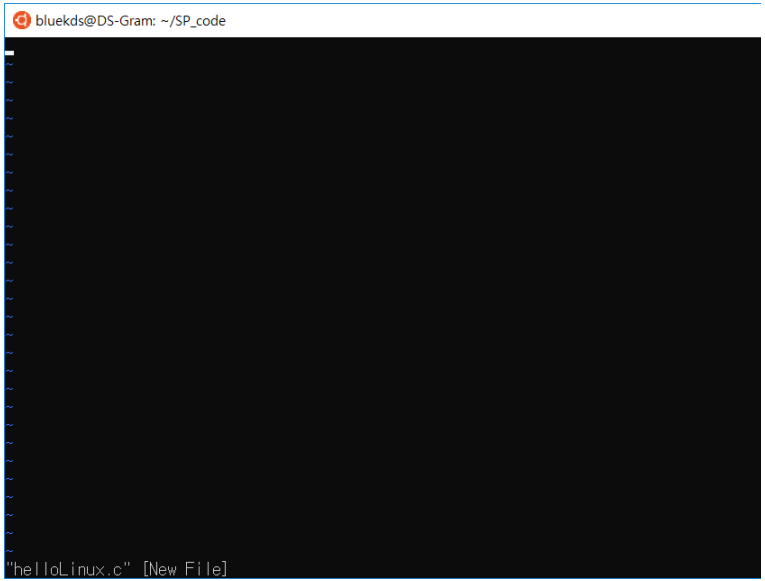
Hello Linux

Your first program with VI editor

Hello Linux를 출력하는 프로그램

- **Make a folder**
  - $ **cd ~** → move to home directory
  - $ **mkdir** (folder name)
  - $ cd (folder name)

- **VI editor**
  - $ **vi** helloLinux.c



VI editor

기능	명령	기능	명령
입력모드전환	i,a,o,O	명령모드전환	<Esc>
커서이동	j,k,h,l 또는 방향키	행이동	#G (50G, 143G 등) 또는 :행번호
한글자수정	r	여러글자수정	#s (5s, 7s 등)
단어수정	cw	명령취소	u, U
검색하여수정	:%s/aaa/bbb/g	복사	#yy (5yy, 10yy 등)
붙이기	p	커서이후삭제	D(shidt-d)
글자삭제	x, #x(3x,5x 등)	행삭제 (잘라내기)	dd, #dd(3dd, 4dd 등)
저장하고 종료	:wq! 또는 ZZ	저장하지않고 종료	:q!

Hello Linux를 출력하는 프로그램

bluekds@DS-Gram: ~/SP_code

```
#include <stdio.h>
#include <stdlib.h>

int main(void) {
        printf("Hello Linux!₩n");
        exit(0);
}
~
~
~
```

- **Compile**
  - gcc –o helloLinux helloLinux.c

bluekds@DS-Gram: ~/SP_code

```
bluekds@DS-Gram:~/SP_code$ gcc -o helloLinux helloLinux.c
bluekds@DS-Gram:~/SP_code$ ls
2_1.c  2_2.c  bin  helloLinux  helloLinux.c
bluekds@DS-Gram:~/SP_code$ ./helloLinux
Hello Linux!
bluekds@DS-Gram:~/SP_code$
```

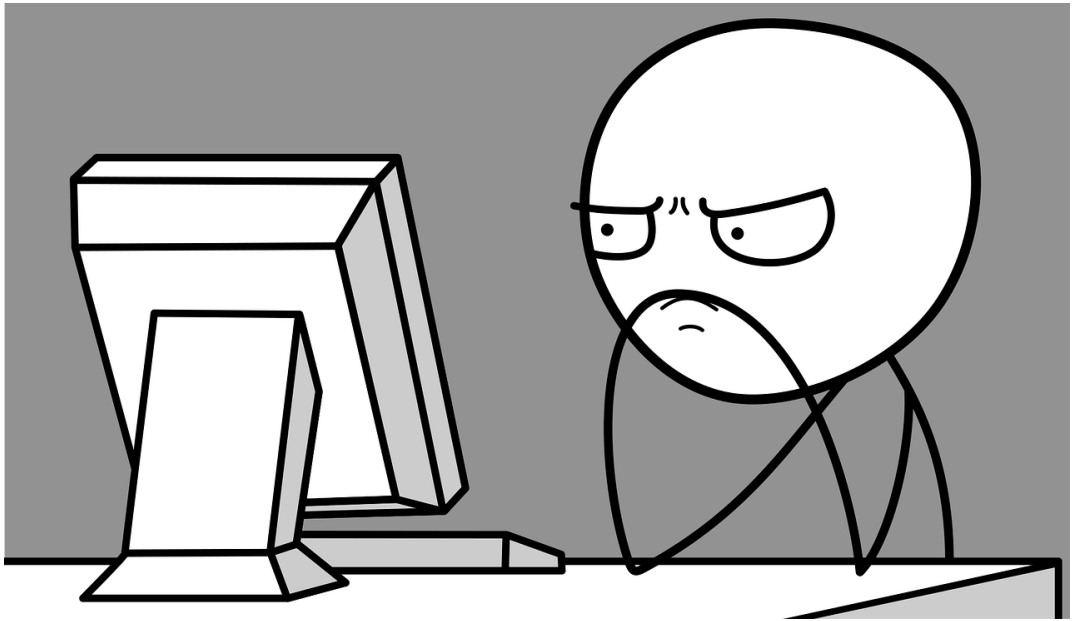
Lab 0-2

GUI 환경 구축

Windows subsystem for Linux (WSL)

Command user interface (CUI)

- **Unix/Linux는 기본적으로 CUI 사용**



Pixabay로부터 입수된 OpenClipart-Vectors님의 이미지 입니다.

ZZ	Exit, saving changes	t<x>	Up to <x> forward
Q	Enter ex mode	T<x>	Back up to <x>
<ESC>	End of insert	<x>|	Go to column <x>
:<cmd>	Execute ex command	w,W	Forward one word
:!<cmd>	Shell command	b,B	Back one word
^g	Show filename/size	e,E	End of word
^f	Forward one screen	^h	Erase last character
^b	Back on screen	^w	Erase last word
^d	Forward lf scre		Interrupt
^u	Backward ha	~	le character case
<x>G	Go to line <x>		after
/<x>	Search forward f		efore
?<x>	Se		end of line
n			below
N			above
]]			racter
[[			racters
%			
^l	Re		
^r	Refr		
z<CR>	Cur		to buffer
z-	Cu		st of line
^e	Sc		est of line
^y	Sc		itute character
``	Pre		bstitute lines
H	Home		Join lines
L	Last window	x	Delete after
M	Middle window line	X	Delete before
+	Next line	Y	Yank current line
hjkl	Cursor movement:	p	Put back lines
	left/down/up/right	P	Put before
0	Beginning of line	<<	Shift line left
$	End of line	>>	Shift line right
f<x>	Find <x> forward	u	Undo last change
F<x>	Find <x> backward	U	Restore current line

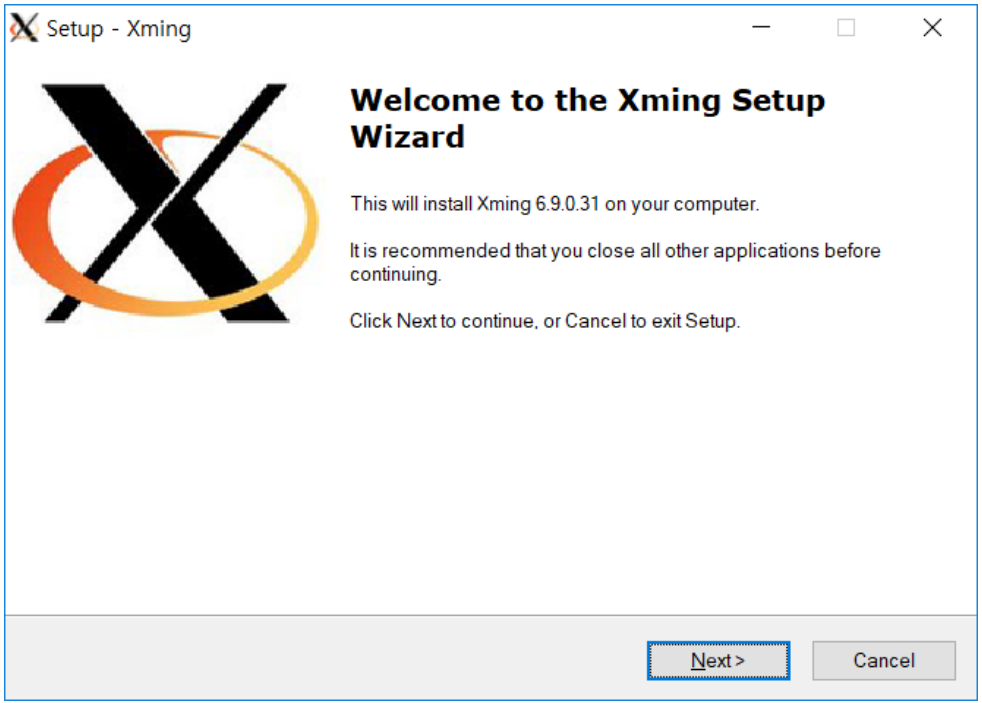
Pixabay로부터 입수된 Clker-Free-Vector-Images님의 이미지 입니다.

GUI 환경 사용 방법

- **Install X org server on Windows**
  - **Xming**
    - https://sourceforge.net/projects/xming/
  - VCXRV

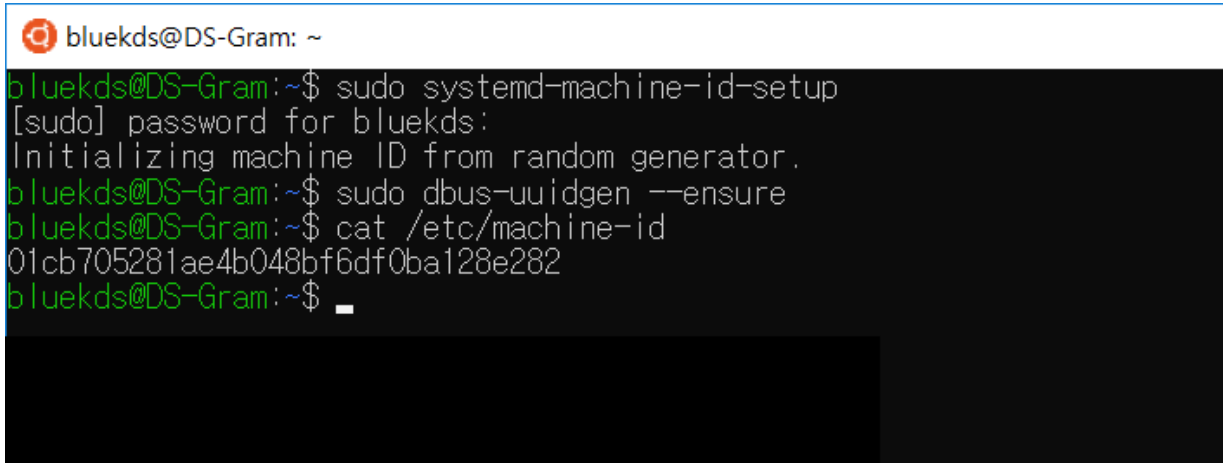
- **Install X Window System on Ubuntu**
  - Reference (click)

Install X org server on Windows



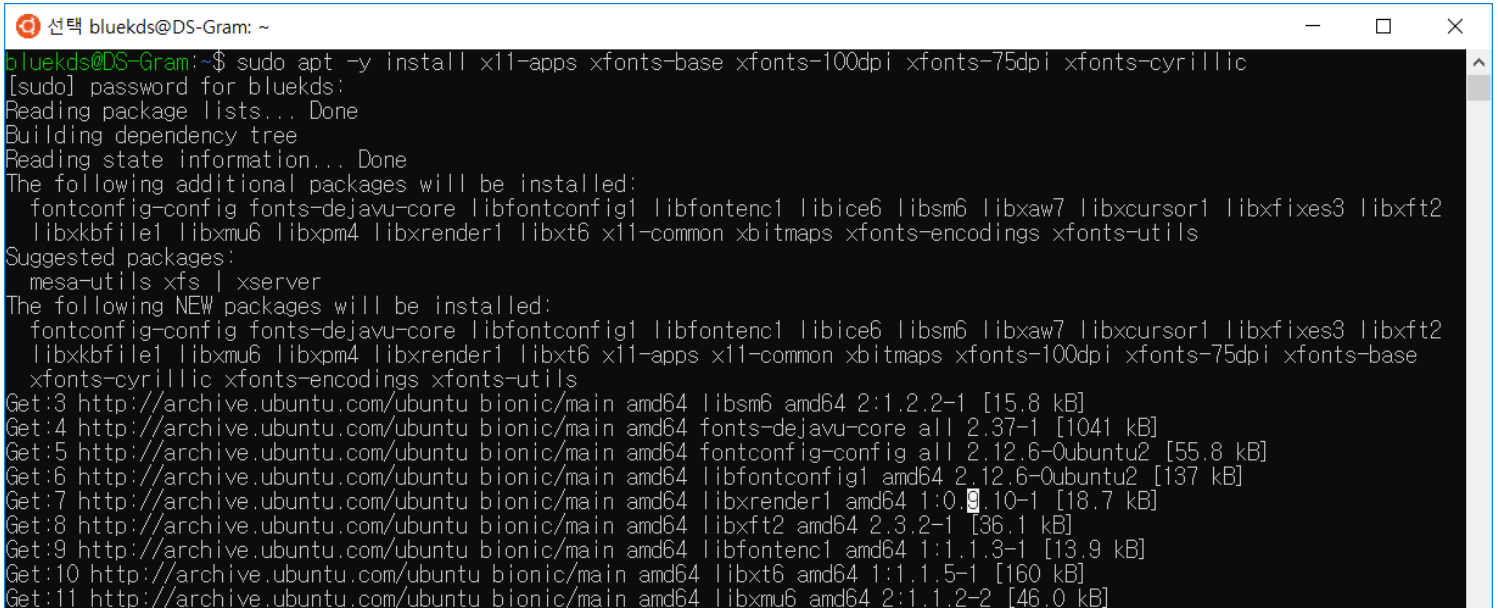
Install X Window system on Ubuntu

- $ **sudo** **systemd-machine-id-setup**
- $ **sudo dbus-uuidgen --ensure**
- $ **cat** **/etc/machine-id**



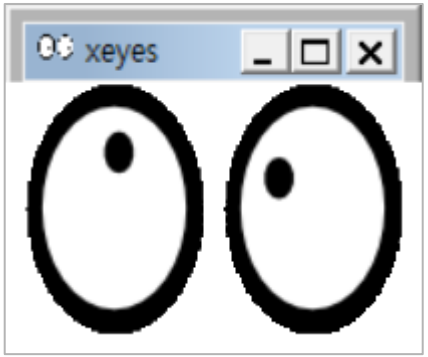
Install X Window system on Ubuntu

- **$ sudo apt -y install x11-apps xfonts-base xfonts-100dpi xfonts-75dpi xfonts-cyrillic**



Install X Window system on Ubuntu

- $ **export DISPLAY=:0**
- $ **xeyes**

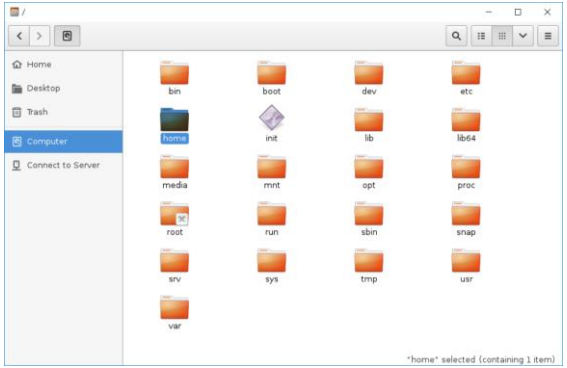


- **export 설정 로그인시 자동으로 하기**
  - $ vi ~/.bachrc

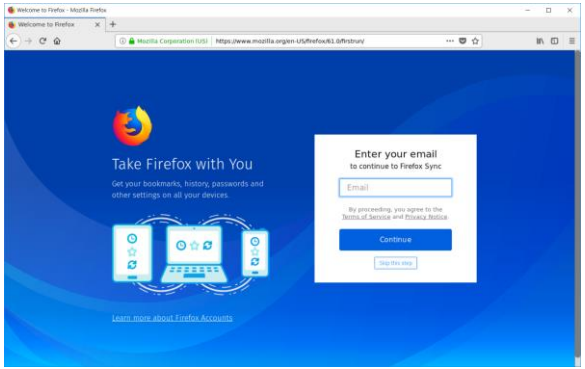
```
if ! shopt -oq posix; then
  if [ -f /usr/share/bash-completion/bash_completion ]; then
    . /usr/share/bash-completion/bash_completion
  elif [ -f /etc/bash_completion ]; then
    . /etc/bash_completion
  fi
fi

export DISPLAY=:0
```

필수 프로그램들 설치

- **Nautilus – GUI file manager**
- **File-roller – Compression manager**
  - sudo apt -y install nautilus file-roller (Already installed)

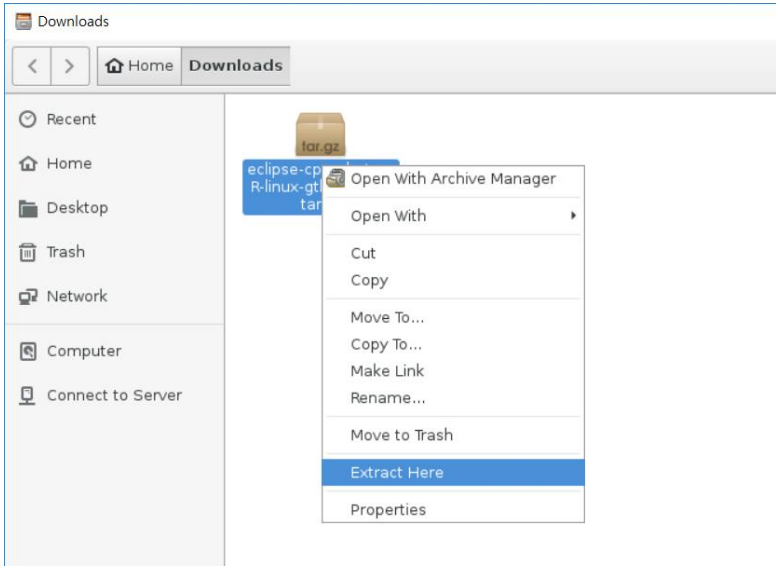


- **Firefox – Web browser**
  - sudo apt -y install firefox

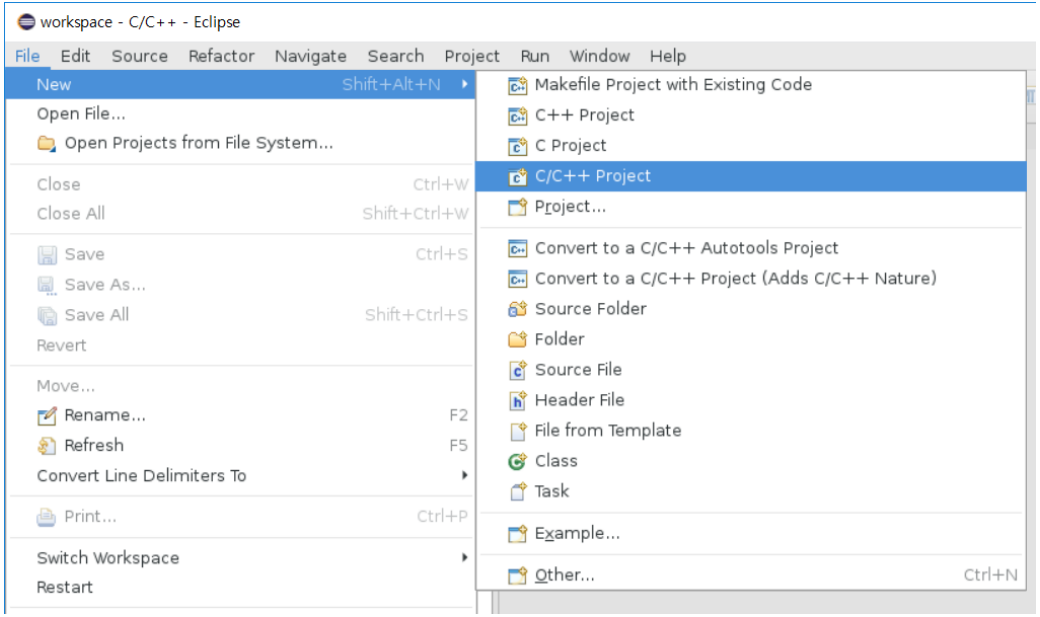


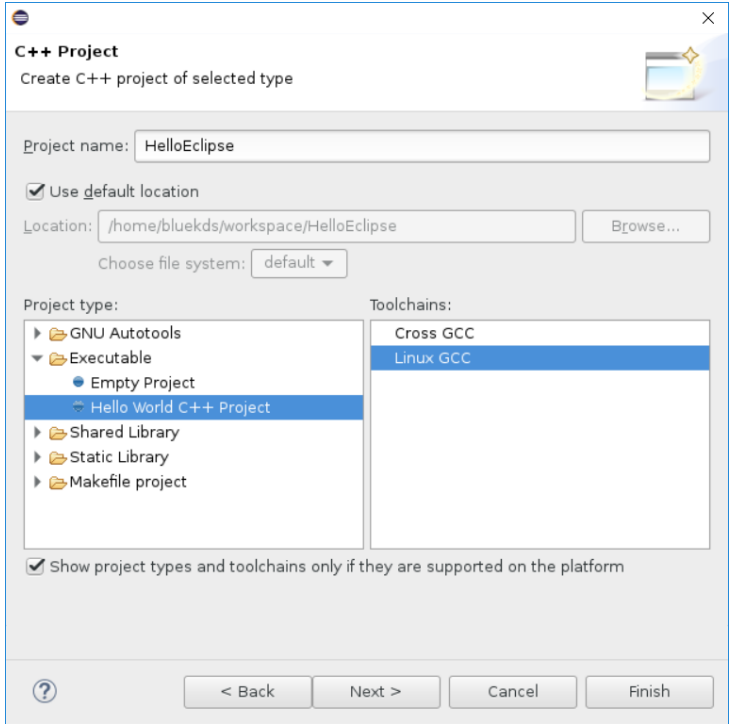
Install Eclipse CDT

- **Download eclipse CDT**
  - https://www.eclipse.org/downloads/
    - Eclipse IDE for C/C++ Developers → linux 64 bit
- **Extract the downloaded file**
- **Move to your home directory**
  - $ **mv** ~/Download/eclipse ~/
- **Run eclipse**
  - $ **cd** ~/eclipse
  - $ ./eclipse

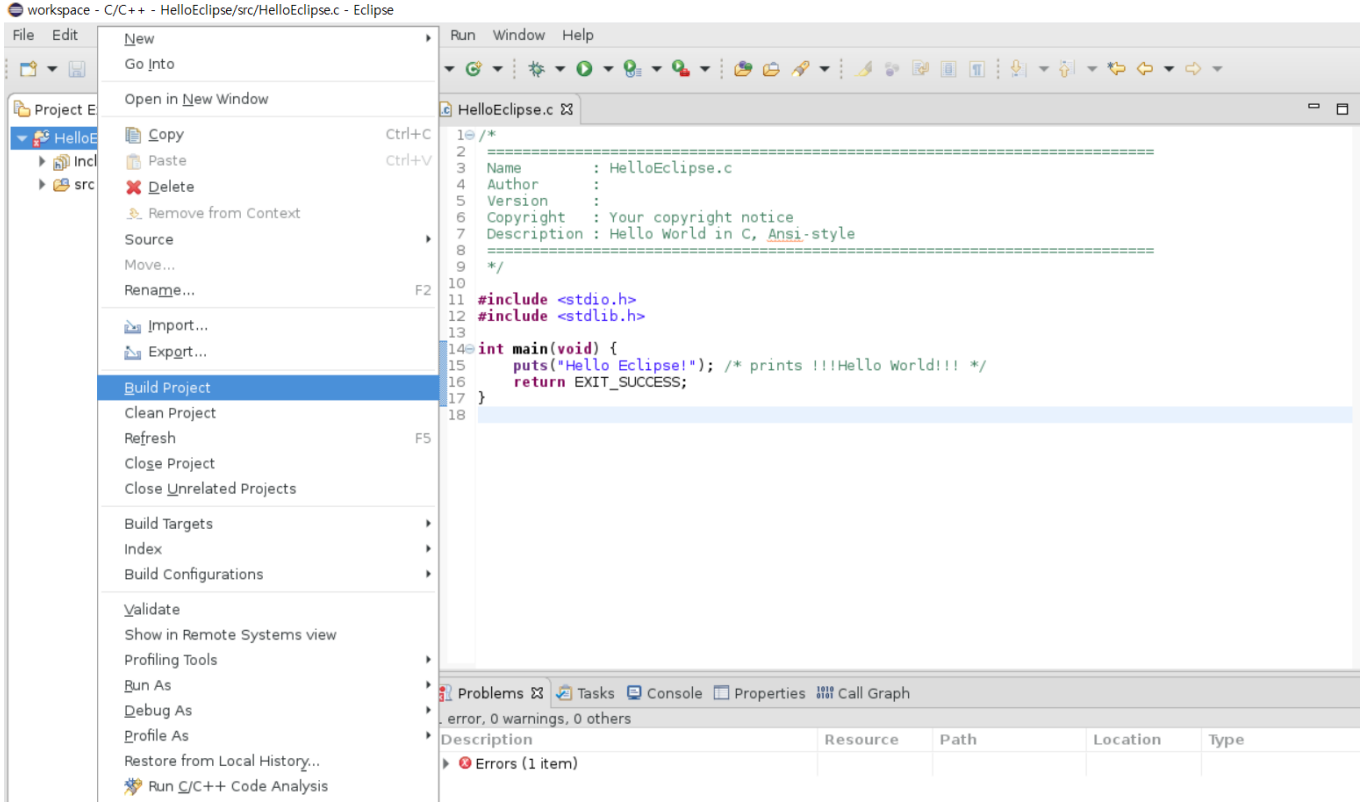


Hello Eclipse!

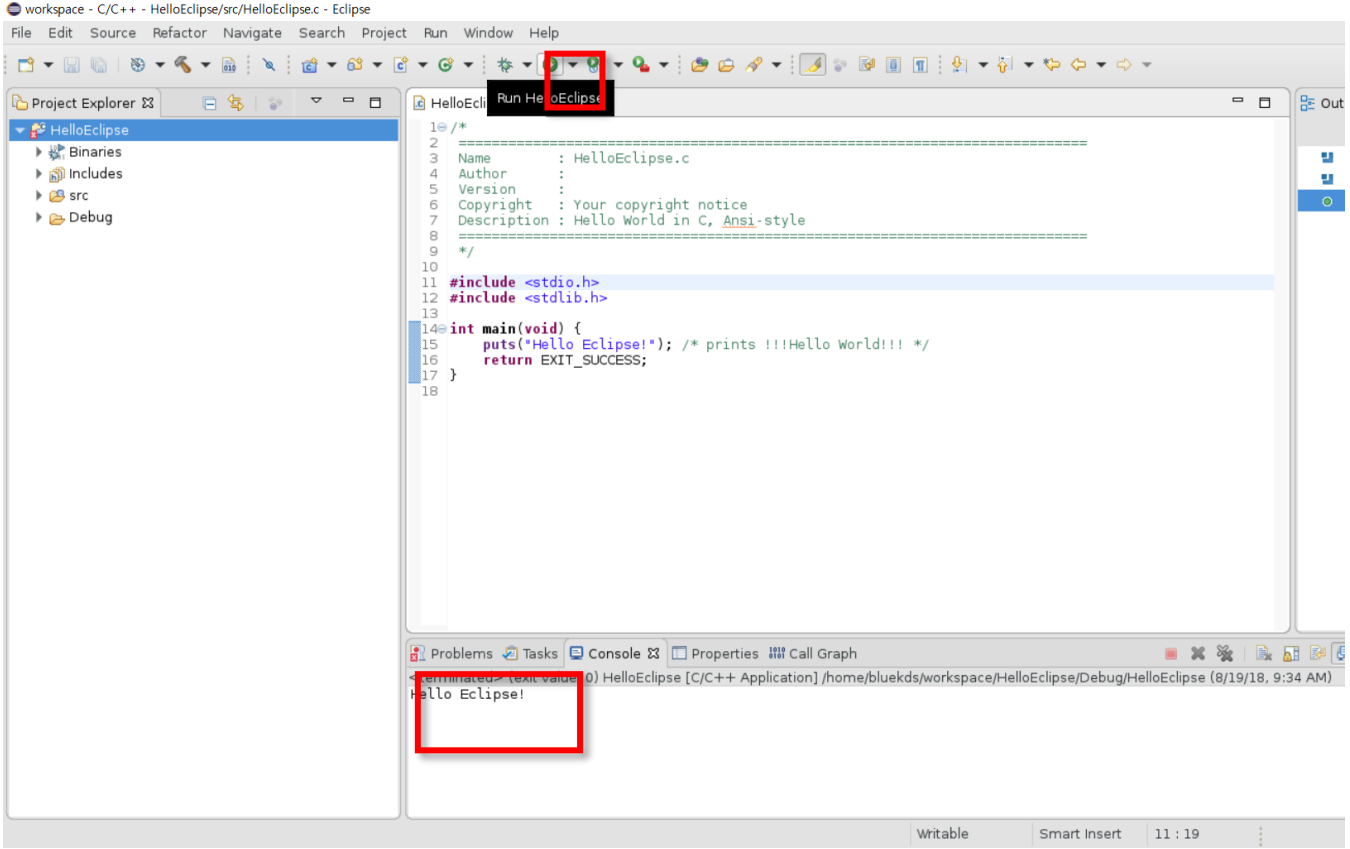




Hello Eclipse!



Hello Eclipse!



기타

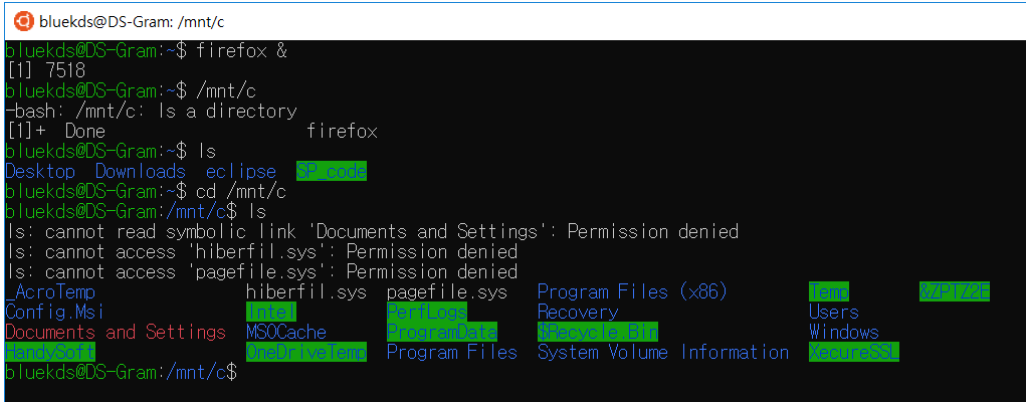
- **기타 유용한 프로그램들**
  - gedit – GUI text editor
  - Gnome Terminal – GUI terminal
  - Libre Office – Office for linux

- **한글 지원 설정**
  - $ sudo apt -y install language-pack-ko
  - $ sudo locale-gen ko_KR.UTF-8
  - $ sudo apt -y install fonts-unfonts-core fonts-unfonts-extra fonts-baekmuk fonts-nanum fonts-nanum-coding fonts-nanum-extra

Linux ↔ Window 파일 접근

- **Location of the Linux files**
  - %localappdata%\Packages\CanonicalGroupLimited.UbuntuonWindows_...\LocalState\rootfs

- **Access Windows folder in Linux**
  - cd /mnt/c



이미지 출처

- **본 슬라이드에 사용된 이미지들은,**
  - 다음 출처로 부터 가져 왔으며, 상업적 사용 및 출처 표시 제한이 없는 이미지만 사용 했습니다
    - Pixarbay
    - illustAC

Pixabay로부터 입수된 Peggy und Marco Lachmann-Anke님의 이미지 입니다.

폰트 정보

- **기본 폰트** [link]
  - Noto Sans, Noto Sans KR
    - Google 제공, 상업적 사용 제한 없음

- **Source code 폰트** [link]
  - Hack
    - 오픈소스 폰트, 사업적 사용 제한 없음