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# **Creative Software Design**

## **1 - Lab1 - Environment Setting**

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# Introduction

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- Undergraduate Mentor: 양수빈

# Q&A Policy

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- Basically, ask questions in “Chat” (To: Everyone) of a Zoom sessions.
  - In this case, **you must ask questions in English** and TA or mentor will give answers in English as well.
- Or you can ask questions in personal chat with TA or mentor.
  - In this case, you can use Korean.

# Topic Covered

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- Install Ubuntu
- How to use Terminal
- Vim Basic Usage

# Today's Lab

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- Many of today's slides overlap with the contents of last semester's Introduction to Software Design (소프트웨어입문설계) lab slides, so TA will proceed quickly.
- If you are unfamiliar with the today's topics, ask the TA a question so that you can understand it.

# Development Environment

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- (If you're using OS other than Ubuntu) Use virtual machine: <http://www.virtualbox.org/>
- Ubuntu: Ubuntu 20.04 is recommended.
  - <http://releases.ubuntu.com/20.04>
- Editor: Vim is recommended.

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# **Install Ubuntu**

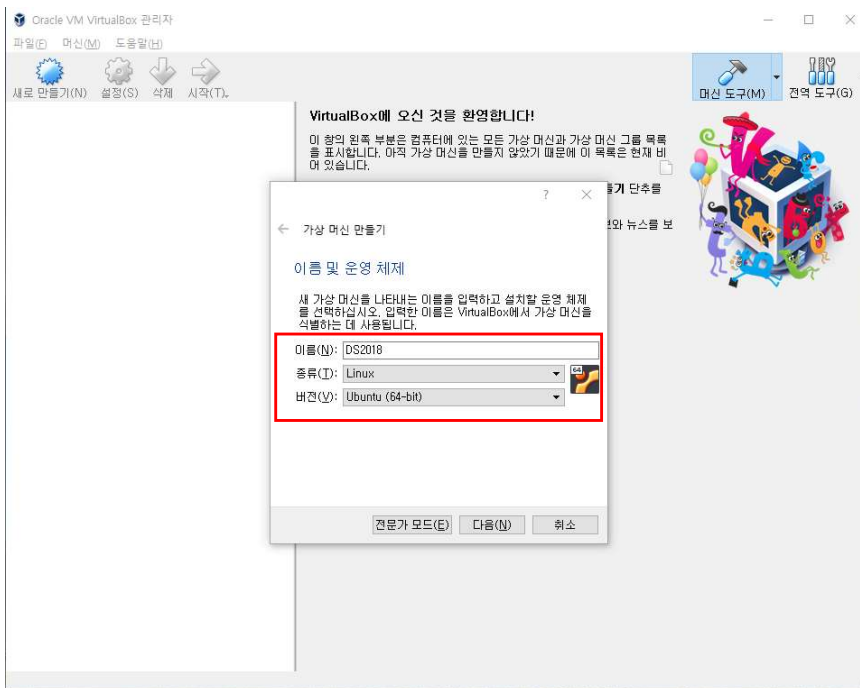
# Install Ubuntu in Virtual Box

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- If you're using a computer with Ubuntu installed, you can use it as is.
- Following slides assume you're using other OSs.

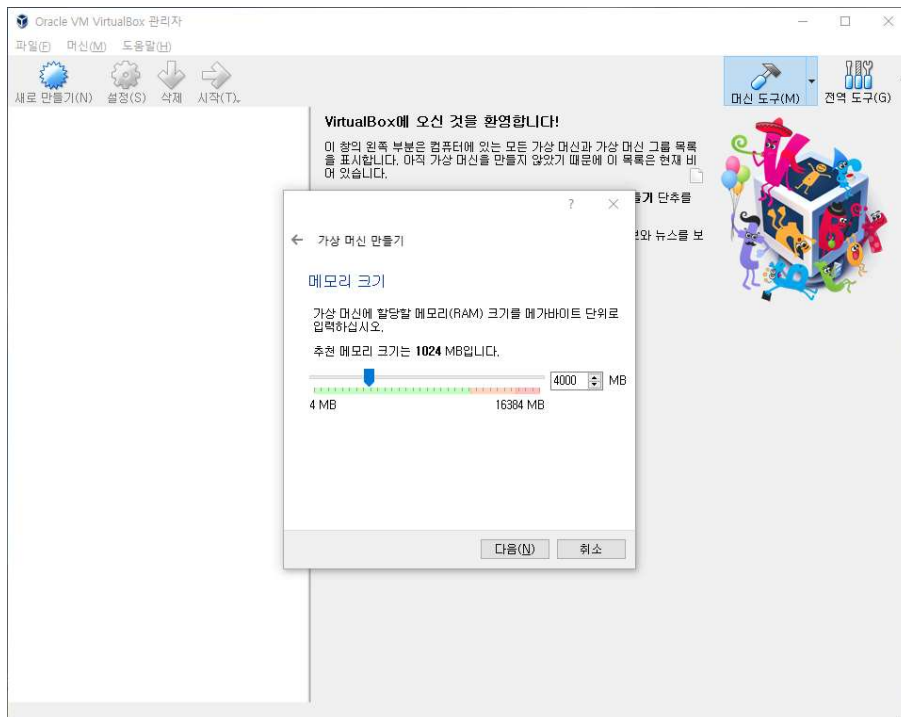


# How to install Ubuntu



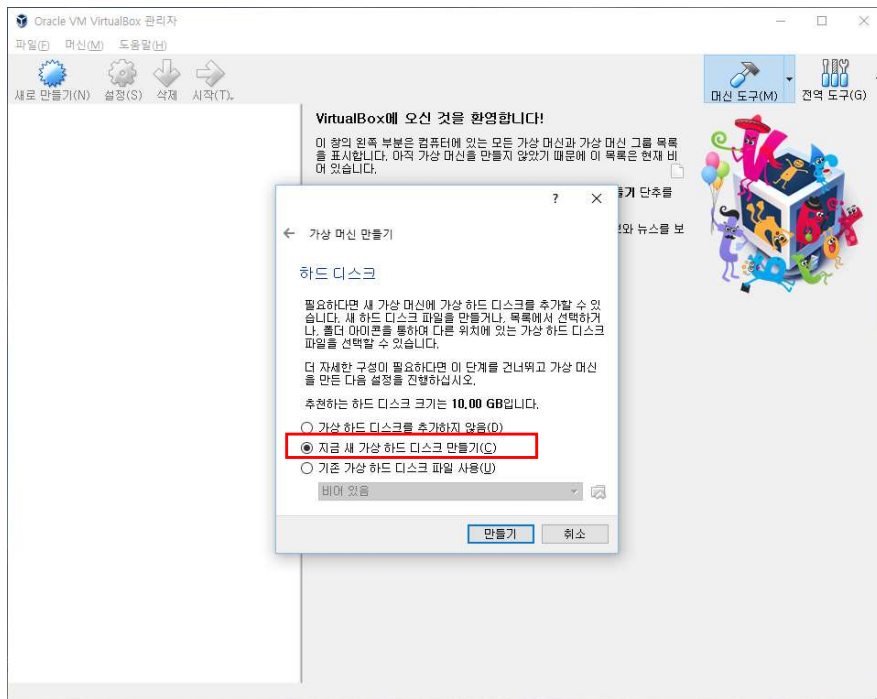
- Name : (any name you want)
- Type : Linux
- Version : Ubuntu (64-bit)

# How to install Ubuntu



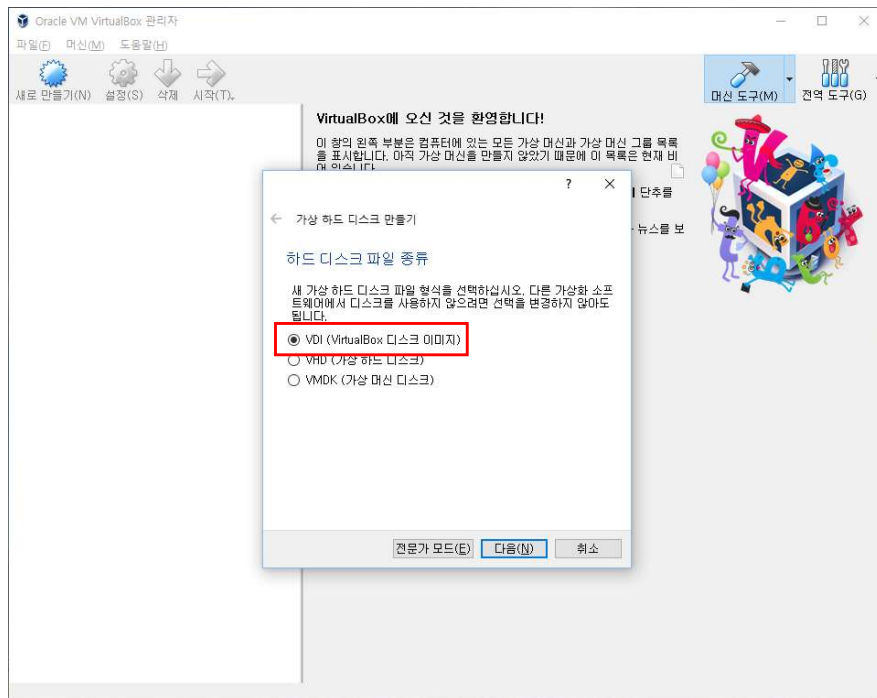
- Memory size : (any size)

# How to install Ubuntu



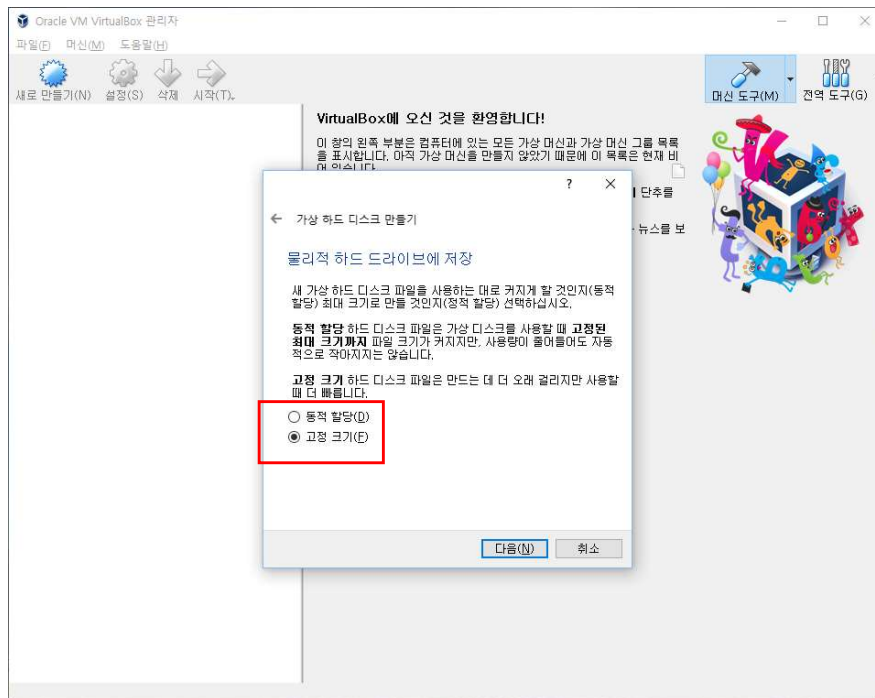
- Create a virtual hard disk

# How to install Ubuntu



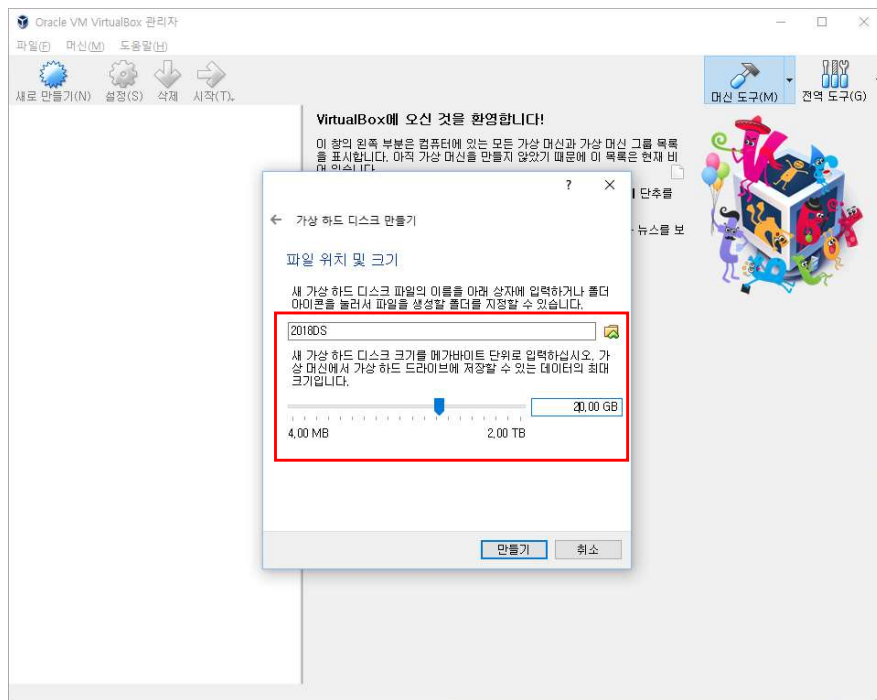
- VDI

# How to install Ubuntu



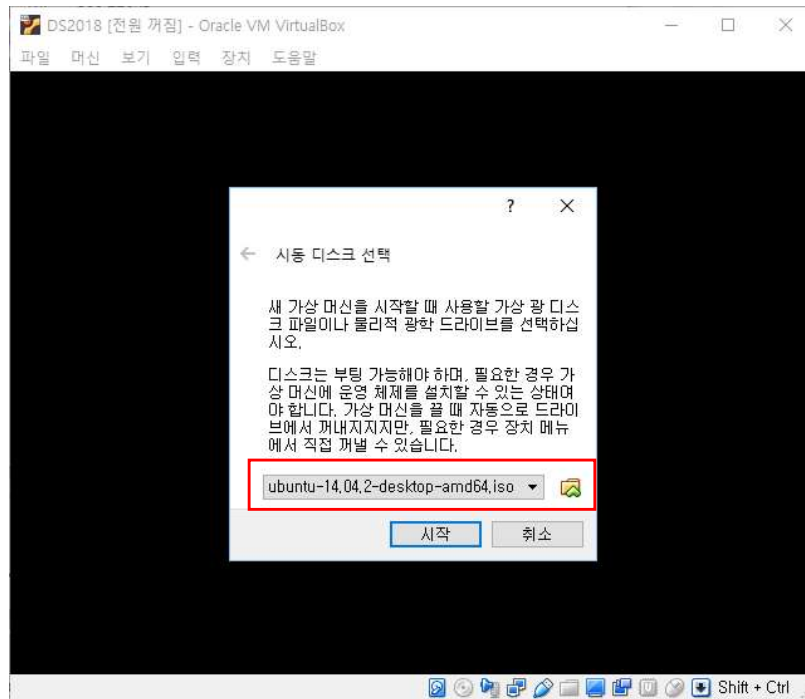
- Recommendation: Fixed size

# How to install Ubuntu



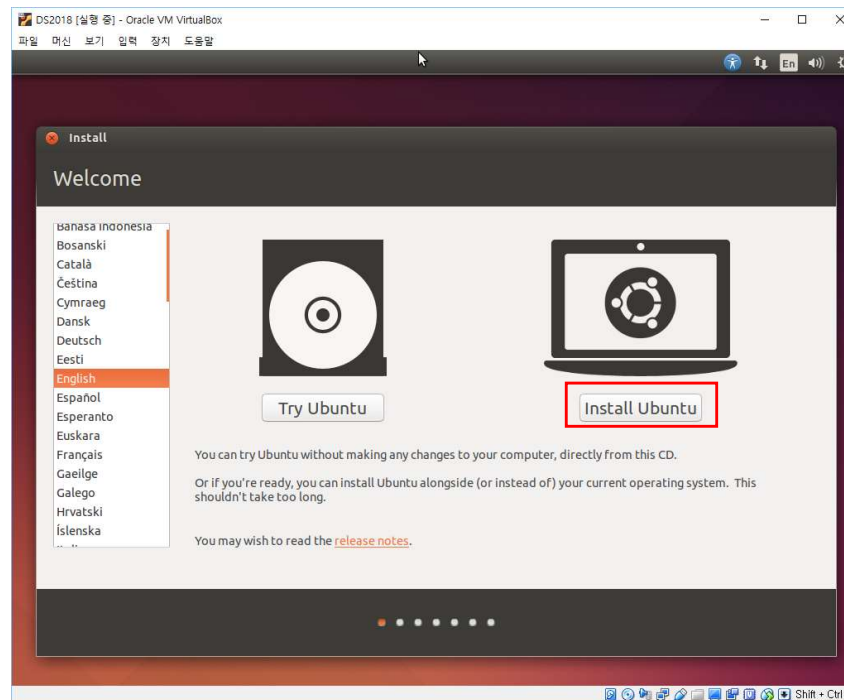
- Virtual disk file location & size:
- any location you want
- any size you want (e.g. 20GB)

# How to install Ubuntu



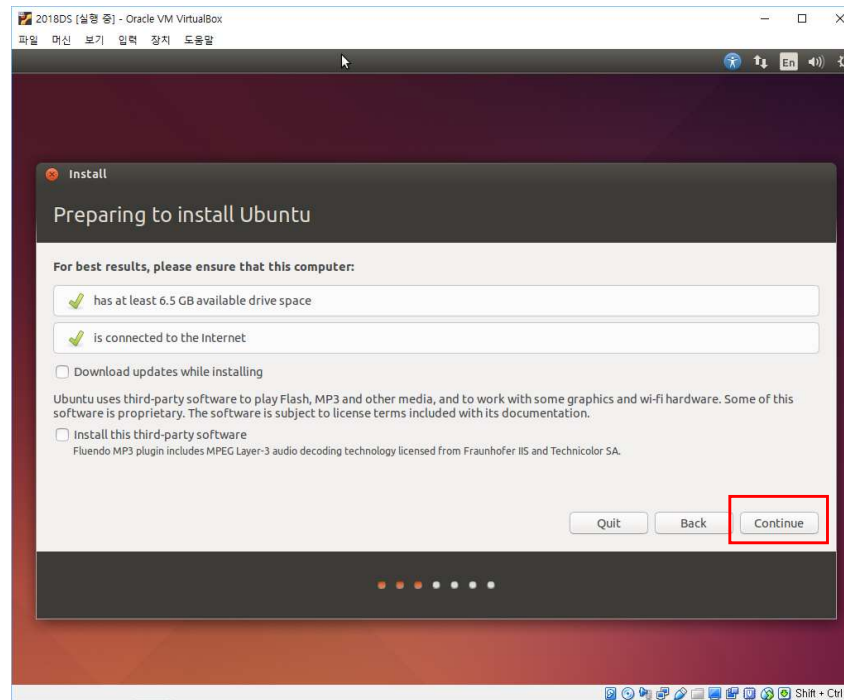
- Choose the downloaded Ubuntu .iso file as a boot disk

# How to install Ubuntu

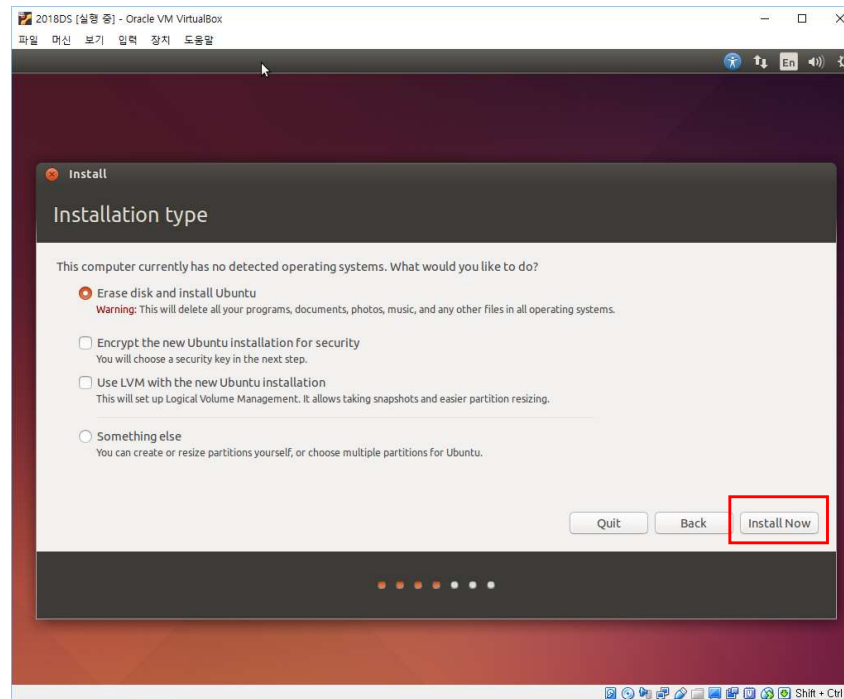




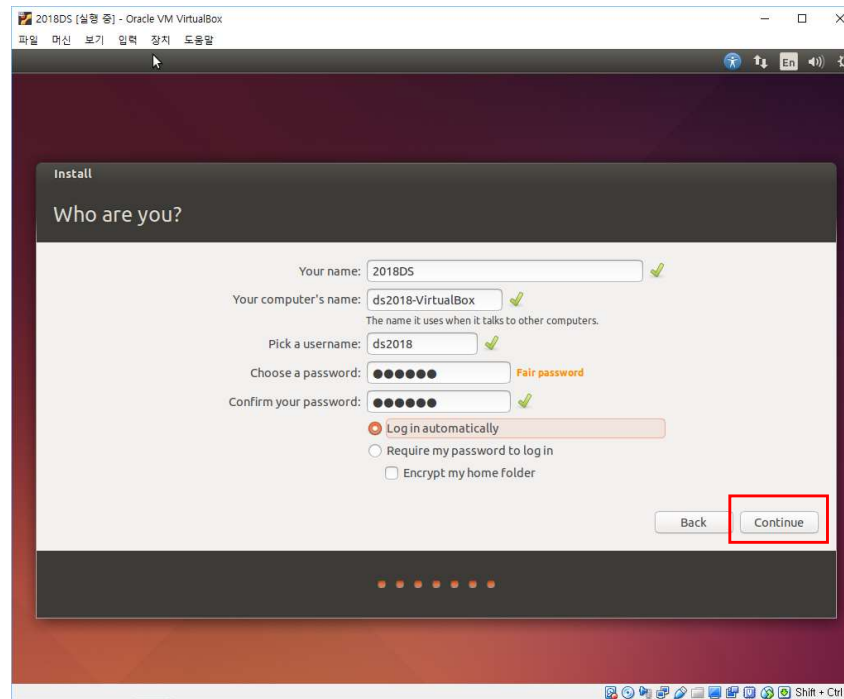
# How to install Ubuntu



# How to install Ubuntu



# How to install Ubuntu



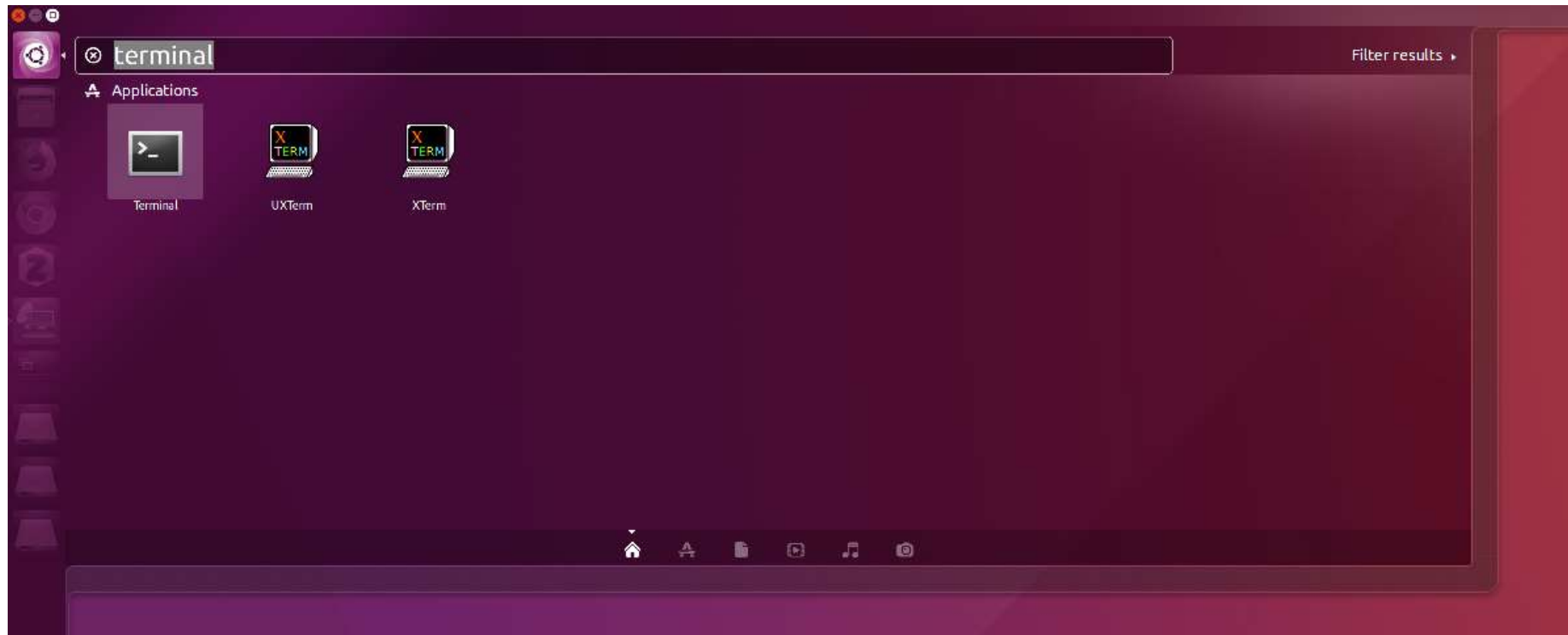
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# **How to use Terminal**

# Launch a Terminal

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- Click Dash button (Start button)
- Type “terminal” and click Terminal
- or use Shortcut: CTRL + ALT + T



# How to use Terminal

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- Retrieve file on current directory

```
(Shell – home directory)
```

```
$ ls
```

- Current Location

```
(Shell – home directory)
```

```
$ pwd
```

```
/home/<user>
```

```
# this is your Home Directory
```

# How to use Terminal

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- Directory type

- Normal directory : <dir-name>
- Current directory : .
- Parent directory : ..
- Root directory : /
- Home directory : ~

- Path type

- Absolute address : /<dir1>/<dir2> ..
- Relative address: : <dir1>/<dir2>

# How to use Terminal

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- Make directory

(Shell)

```
$ mkdir <dir-name>
```

- Change (current working) directory

(Shell)

```
$ cd <destination directory>
```

- Remove file, directory

(Shell)

```
$ rm <file-name>
```

(Shell)

```
$ rm -rf <dir-name>
```



# How to use Terminal

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- Move source(s) to destination directory.

(Shell)

```
$ mv <source file> <destination directory>
```

(Shell)

```
$ mv <source directory> <destination directory>
```

- Rename SOURCE to DEST

(Shell)

```
$ mv <SOURCE> <DEST>
```

# How to use Terminal

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- Copy

(Shell)

```
$ cp <source file> <destination directory>
```

(Shell)

```
$ cp <source file> <destination file>
```

(Shell)

```
$ cp -r <source directory> <destination directory>
```

# Other Commands

- **“cat {file\_name}” : Print file contents**
- **“vi {file\_name}” : Edit the file with vi editor (if the file does not exist, create it)**
- **“gedit {file\_name}” : Edit the file with gedit editor (if the file does not exist, create it)**

# Examples

- **ls**

```
seongil@seongil-VirtualBox:~$ ls
Desktop  Downloads      Music    Public  Templates  test.c
Documents examples.desktop Pictures  seongil  test       Videos
```

- **cat**

```
seongil@seongil-VirtualBox:~$ cat test.c
#include<stdio.h>
int main (void)
{
    printf("Apple\n");
    return 0;
}
```

- **vi test.c, vi test.py**

```
seongil@seongil-VirtualBox: ~
#include<stdio.h>
int main (void)
{
    printf("Apple\n");
    return 0;
}
```

```
seongil@seongil-VirtualBox: ~
print("Apple")
```

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# **Vim Basic Usage**

# Vim

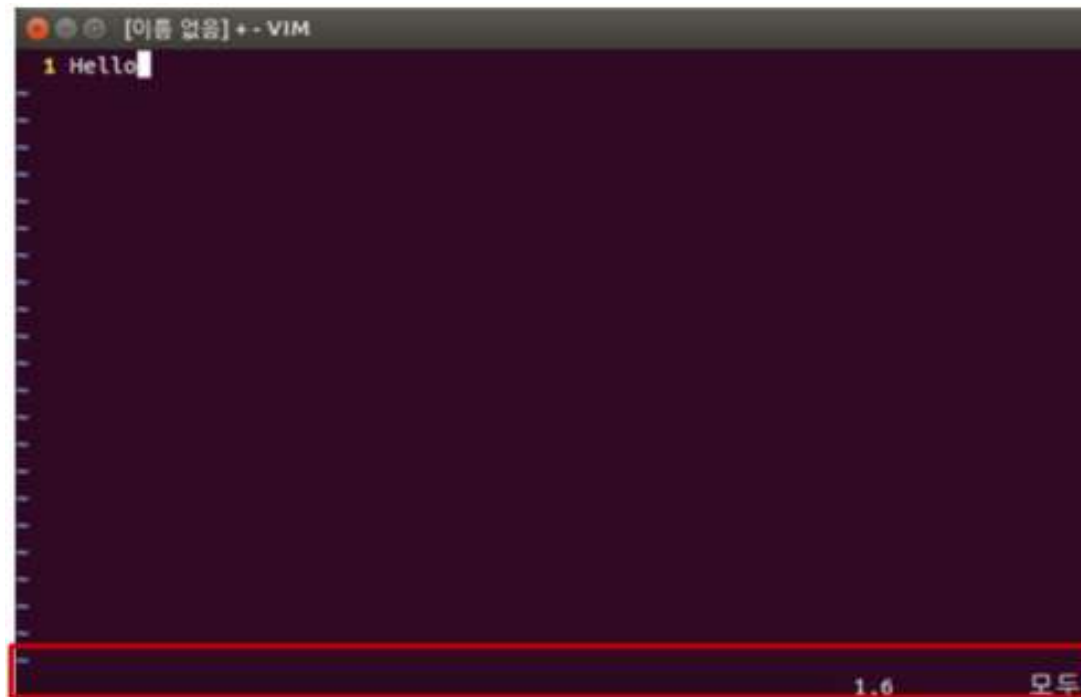


- 
- **Vi IMproved**
  - An editor with many improvements to the existing Vi editor (first released in 1991 by Bram Moolenaar)
    - Vi is created in 1976 by Bill Joy, a key developer of BSD
    - Vim is used much more now.
  - Vim is a default editor in most Linux systems.
    - Knowing how to use Vim is a great way to work on Linux.
  - Three modes in Vim:
    - Normal mode
    - Insert mode
    - Command-line mode

# Normal Mode

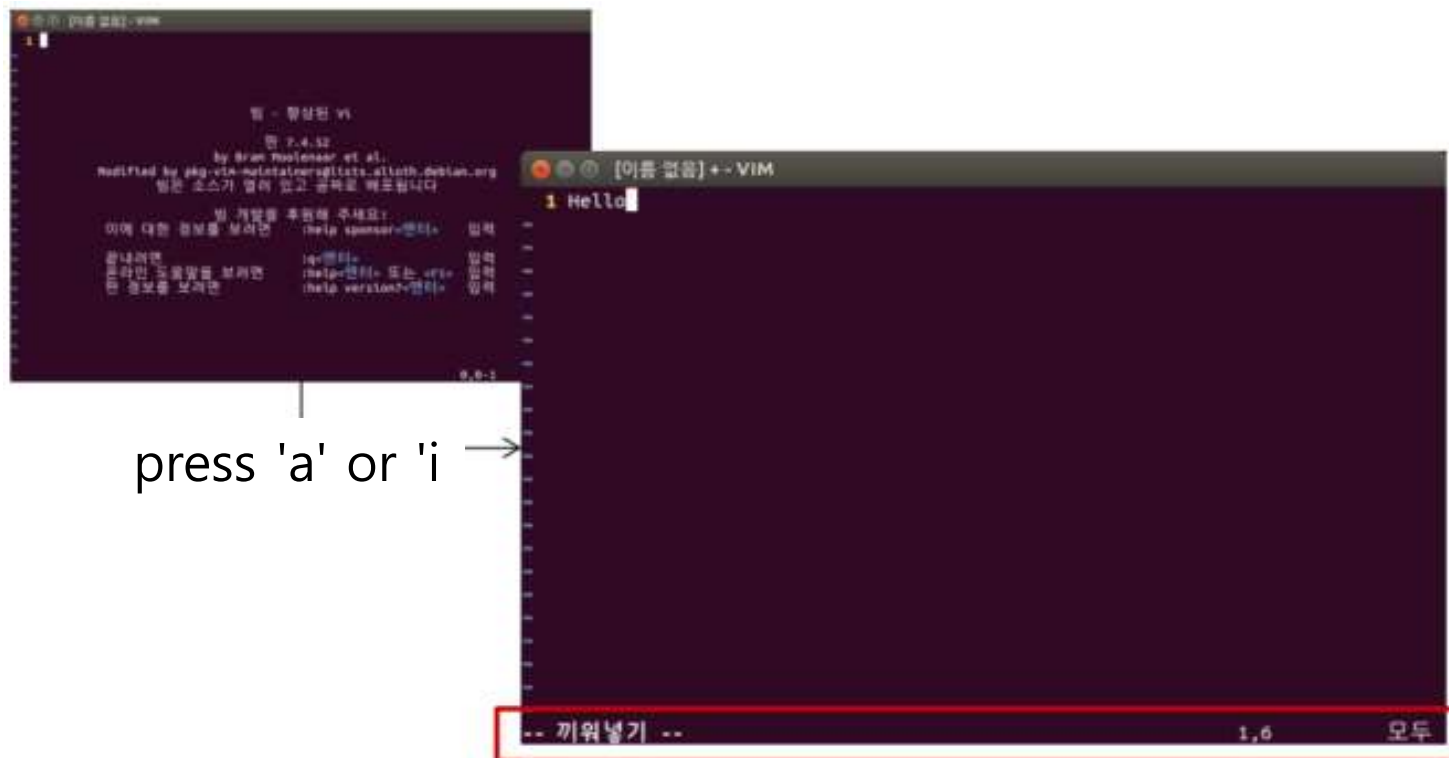
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- Vim starts in Normal mode.
- Copy, paste, delete, search and other functions are available through shortcut keys.
- In this mode, vim is waiting for your command shortcut.



# Insert Mode

- Press **a** or **i** in Normal mode to enter Insert mode.
- In this mode, you can enter and edit a file as you would in a general text editor.
- Press **ESC** to return to Normal mode.

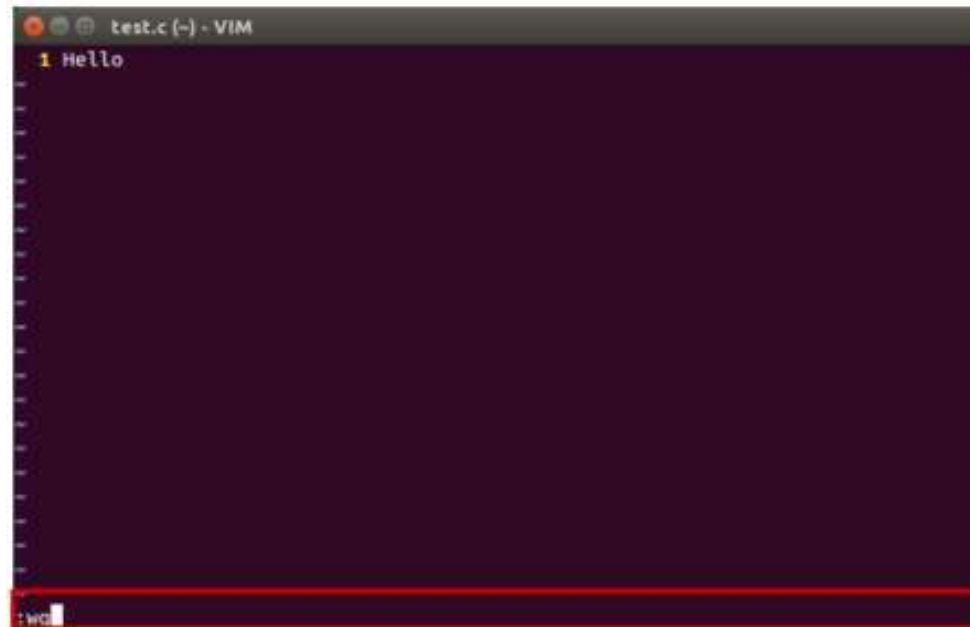




# Command-line Mode

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- Press **:** in Normal mode to enter Command-line mode.
- In this mode, you can enter commands on the command line in vim.
  - w : save
  - q : quit
  - ! : "force" something (ex : wq! , q!: force save, force quit)
- Press **ESC** to return to Normal mode.



The screenshot shows a terminal window titled "test.c (-) - VIM". The main area of the window contains the text "1 Hello" on the first line. At the bottom of the window, a red horizontal bar highlights the command-line prompt, which currently shows a colon ":" followed by a cursor, indicating that the editor is in command-line mode.

# References for Vim Basic Usage

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- Vimtutor: A tutorial included in vim

(Shell)

```
vimtutor
```

- Additional tutorials:
  - Interactive Vim tutorial  
<http://www.openvim.com/tutorial.html>

# References for Vim Commands

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- Vim Cheat Sheet : <https://vim.rtorr.com/lang/ko/>
- `:help <command>` : help document for the command

# Vim Cursor Movement Commands

previous  
gg  
first line

# n ?text N  
find word under cursor previous text find text next text

C-b C-u  
page 1/2 page

H  
screen

{ ( paragraph sentence

back 0 ^ Fx Tx b ge h k j l e w tx fx \$ forward  
line non-blank find x after x word end left up right end word before x find x line

;  
previous x

B delimited word gE delimited end ;  
previous x

,

next x

) sentence } paragraph E delimited end W delimited word ;  
next x

L  
screen

C-d C-f  
1/2 page page

absolute movements  
" ' #G %  
last location last edit line # matching bracket

N /text n \*  
previous text find text next text find word under cursor

G  
last line next



# Vim Advanced Usage

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- In the supplementary material *1-Lab1-reference-VimAdvanced.pdf*, you can find how to use:
  - Shell settings for convenient vim use
  - `.vimrc` - vim configuration file
  - Vim visual mode
  - Vim windows
  - Vim plug-ins
  - Vim color schemes

# Next Topic (Today)

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- You need to complete the environment setup and become familiar with the basic usage of vim for labs after today.
- Now, let's move on to the next topic - *1 - Lab2 - g++, make, gdb*