

EOS Pre-Lab

Yu-Lun Huang

2011/9/19

Outline

- Download VMware Player & Ubuntu
- Create Virtual Machine & Install Ubuntu
- Install Essential Packages
- Introduction to Vim
- Introduction to GCC Compiler
- Introduction to Man Page

Download VMware player (1/3)

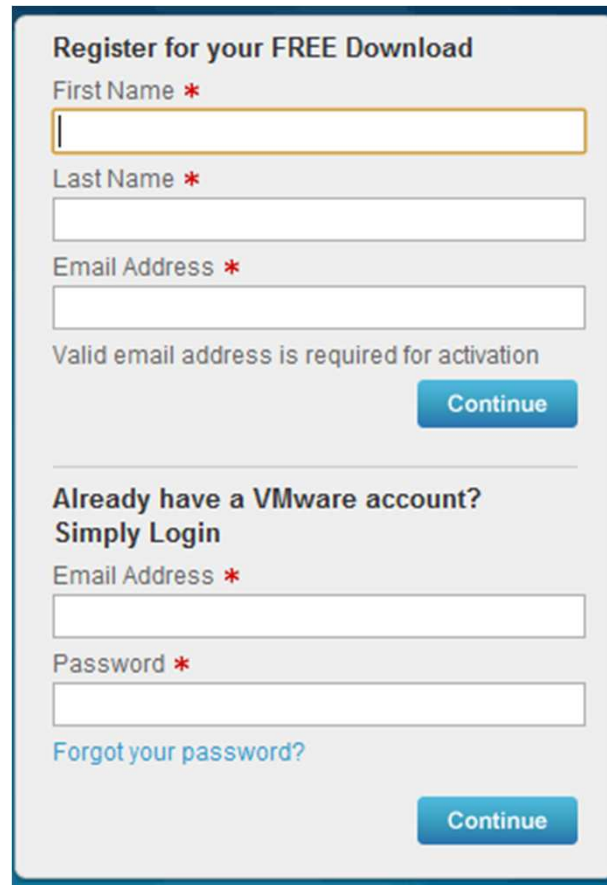
- Website:

http://downloads.vmware.com/d/info/desktop_downloads/vmware_player/3_0

Product Downloads		Drivers & Tools	Open Source	Need Help Downloading?	
PRODUCT		VERSION	RELEASE DATE		
VMware Player 3.1.4	View History	3.1.4	2011/03/29	Download	

Download VMware player (2/3)

- Register for free download



Register for your FREE Download

First Name *

Last Name *

Email Address *

Valid email address is required for activation

[Continue](#)

**Already have a VMware account?
Simply Login**

Email Address *

Password *

[Forgot your password?](#)

[Continue](#)

Download VMware player (3/3)

- Click the button to start download



- Run “VMware-player-3.x.y-z.exe” to start installation
- Reboot system to validate the changes after installation

Download Ubuntu

- Website:
 - <http://www.ubuntu-tw.org/modules/tinyd0/>
 - We suggest to download Ubuntu 10.04 for long term support (ubuntu-10.04.3-desktop-i386.iso)

下載

發行版

不同發行版具備不同的圖形環境與配套軟體。如果您不知道如何選擇，請選擇 Ubuntu 桌面版本。

- ☒ Ubuntu 桌面版本
- ☐ Ubuntu 伺服器版本
- ☐ Kubuntu 桌面版本

版本

最新版本是 11.04，套件更新服務持續到 2012 年 10 月。另外提供 Ubuntu 10.04 下載，套件更新服務持續到 2013 年 4 月。

- ☐ 11.04
- ☒ 10.04

電腦架構

一般電腦使用 32 位元的 Intel 架構，如果您的電腦可以使用 Intel 64（不是 IA64）或是 AMD64 等技術，您也可以選擇安裝 64 位元版本。若不確定，請點選 32 位元版本。

- ☒ 32 位元版本
- ☐ 64 位元版本

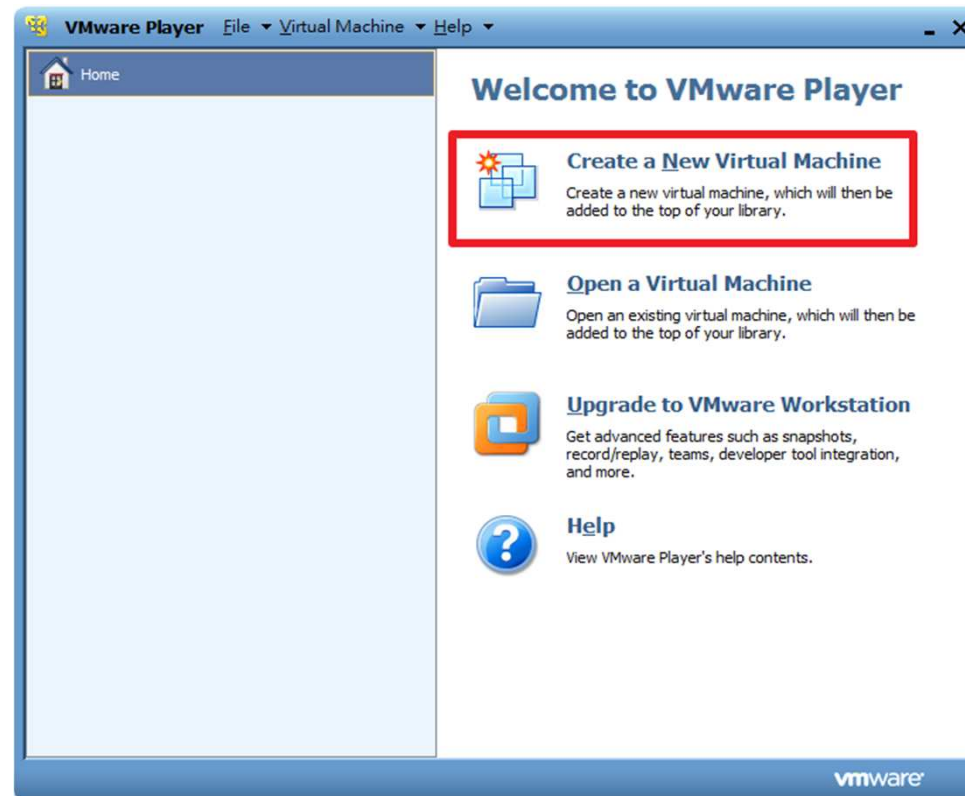
下載選項

- ☐ 下載 BitTorrent 種子
- ☐ 下載文字介面安裝光碟（安裝時可調整選項較多）

開始下載

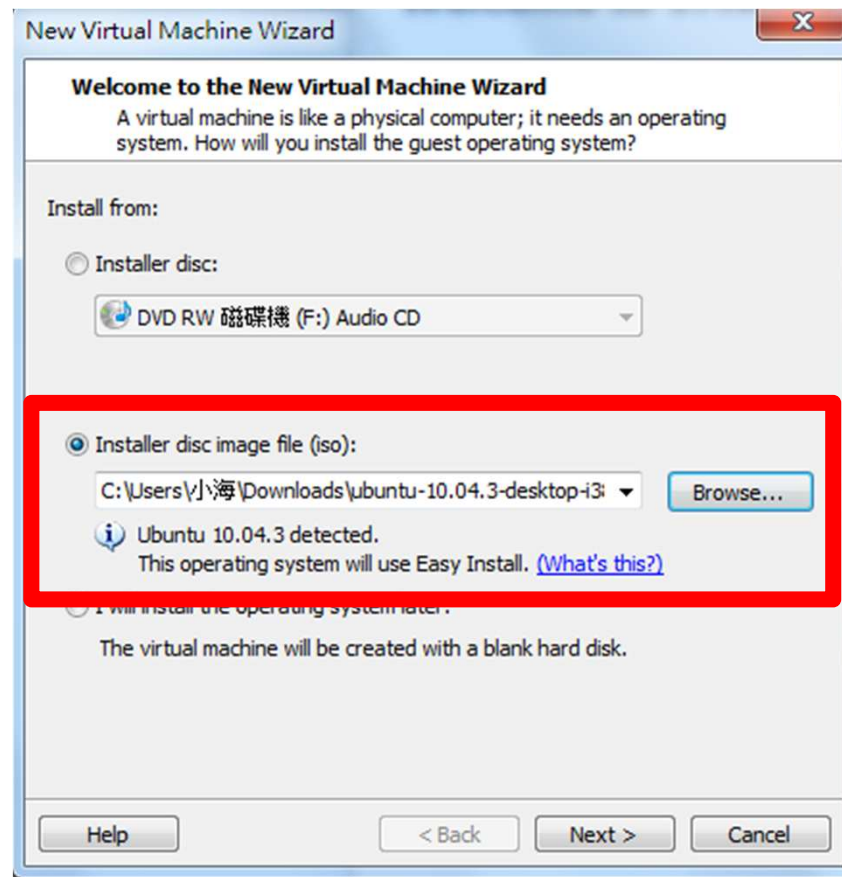
Install Ubuntu (1/6)

- Run VMware player
- Create a new virtual machine



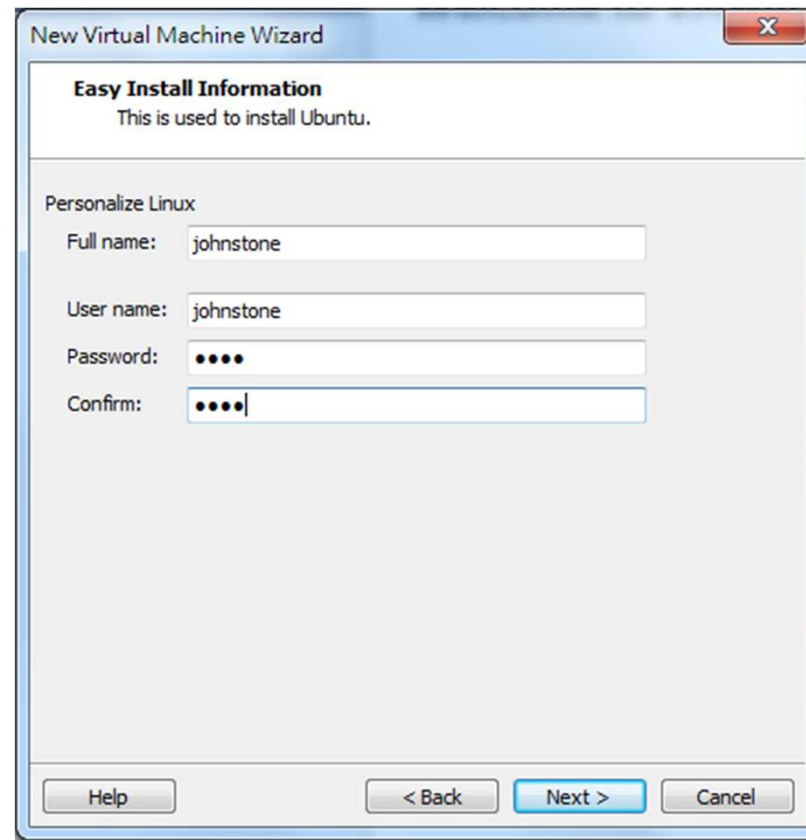
Install Ubuntu (2/6)

- Set the path to Ubuntu image (ubuntu-10.04.3-desktop-i386.iso)



Install Ubuntu (3/6)

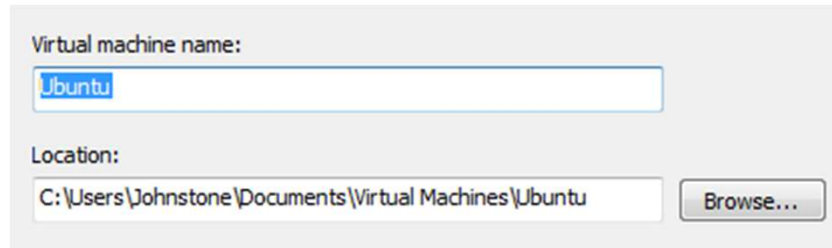
- Set the user name and password



The screenshot shows a window titled "New Virtual Machine Wizard" with a close button (X) in the top right corner. The window contains a section titled "Easy Install Information" with the subtitle "This is used to install Ubuntu." Below this, there is a section titled "Personalize Linux" with four input fields: "Full name:" (containing "johnstone"), "User name:" (containing "johnstone"), "Password:" (containing four dots), and "Confirm:" (containing four dots). At the bottom of the window, there are four buttons: "Help", "< Back", "Next >" (highlighted in blue), and "Cancel".

Install Ubuntu (4/6)

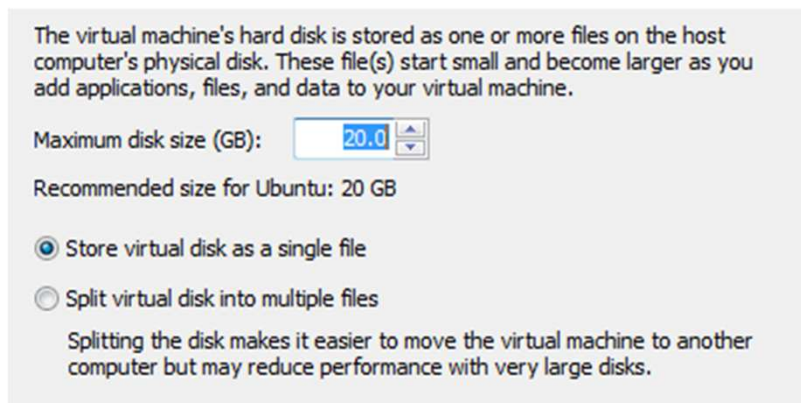
- Set the installation path of virtual machine



Virtual machine name:

Location:

- Set the disk size for virtual machine



The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.

Maximum disk size (GB):

Recommended size for Ubuntu: 20 GB

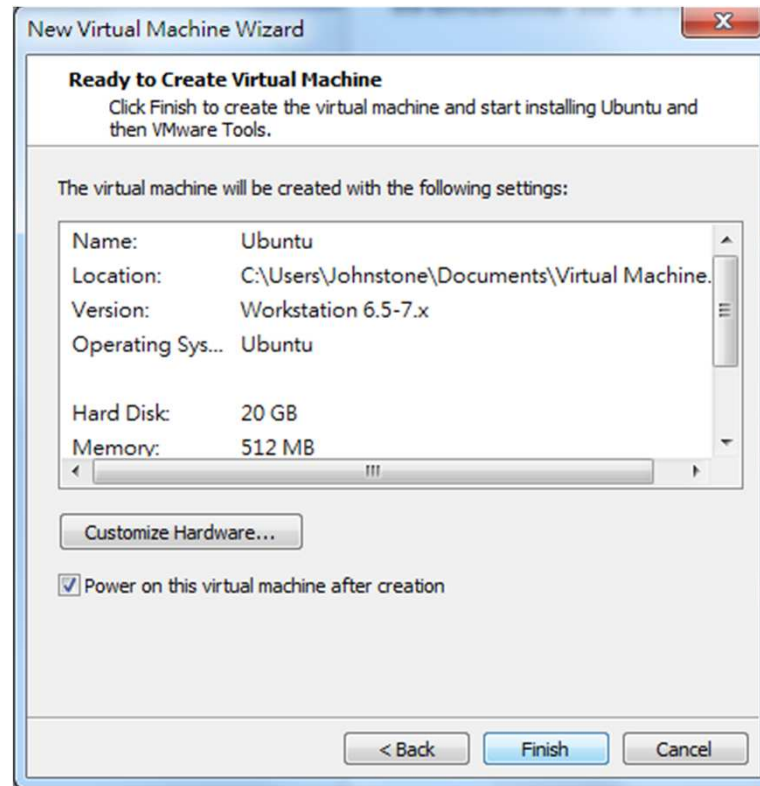
☒ Store virtual disk as a single file

☐ Split virtual disk into multiple files

Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.

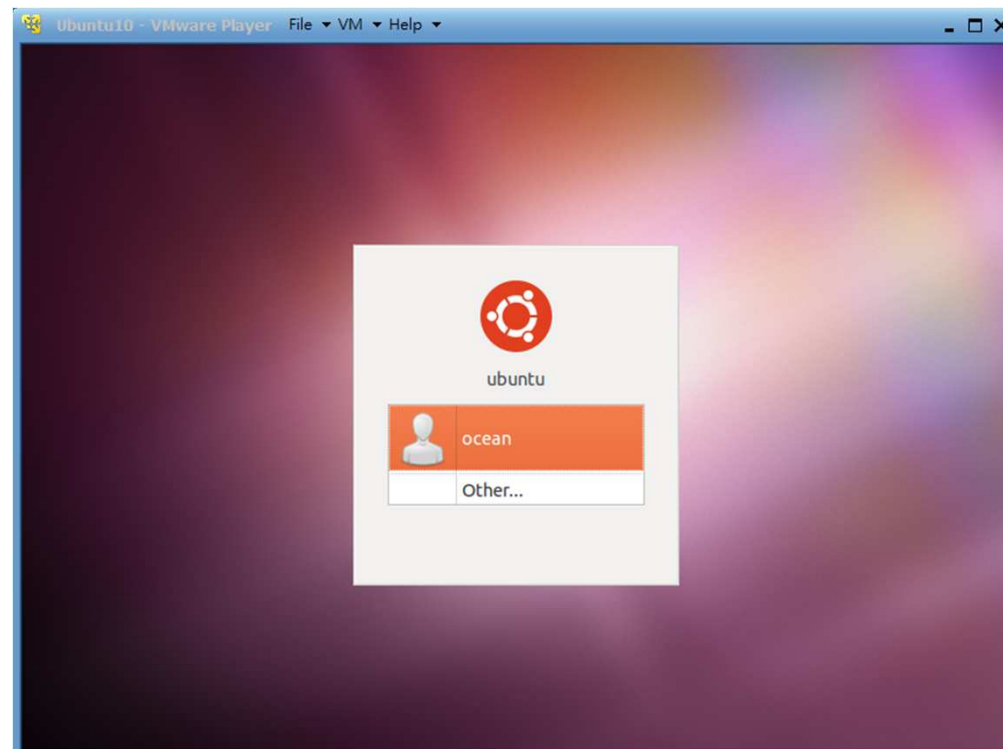
Install Ubuntu (5/6)

- Click “finish” to start the installation process
 - Or click “Customize Hardware ...” for detail settings



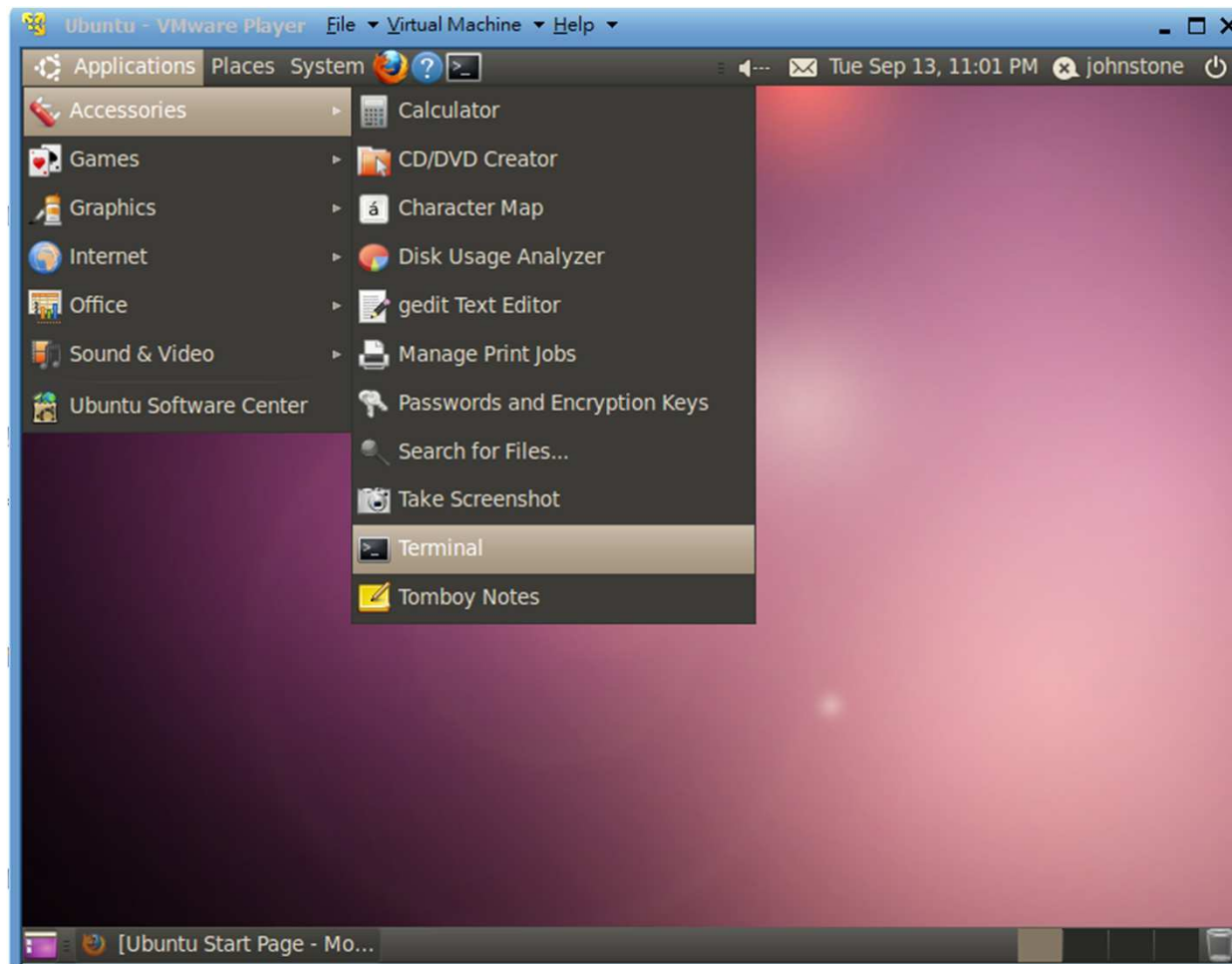
Install Ubuntu (6/6)

- The installation process will take several minutes
 - The monitor will show a GUI login interface after installation
 - Login the system with the user/password set in P.9



Install Essential Packages (1/4)

- After login the system, open the “Terminal”



Install Essential Packages (2/4)

- Check the internet connection before install packages
- Type the following commands in the terminal
 - These will install vim, gcc compiler, and man page

```
sudo apt-get install update  
sudo apt-get install vim  
sudo apt-get install build-essential  
sudo apt-get install libc6-dev  
sudo apt-get install manpages  
sudo apt-get install manpages-posix  
sudo apt-get install manpages-posix-dev  
sudo apt-get install manpages-dev
```

Install Essential Packages (3/4)

- Package install **successful** example1

```
ocean@ubuntu:~$ sudo apt-get install manpages-posix-dev
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  manpages-posix-dev
0 upgraded, 1 newly installed, 0 to remove and 345 not upgraded.
Need to get 1,428kB of archives.
After this operation, 5,235kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu/ maverick/multiverse manpages-posix-dev all 2.16-1 [1,428kB]
Fetched 1,428kB in 12s (117kB/s)
Selecting previously deselected package manpages-posix-dev.
(Reading database ... 121192 files and directories currently installed.)
Unpacking manpages-posix-dev (from .../manpages-posix-dev_2.16-1_all.deb) ...
Processing triggers for man-db
Setting up manpages-posix-dev (2.16-1) ...
ocean@ubuntu:~$
```

Install Essential Packages (4/4)

- Package install **successful** example2

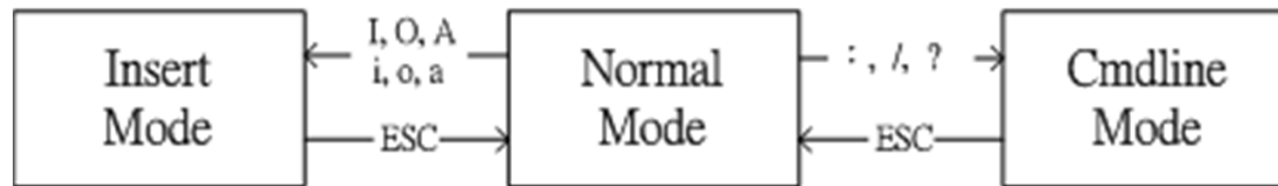
```
ocean@ubuntu:~$ sudo apt-get install manpages
Reading package lists... Done
Building dependency tree
Reading state information... Done
manpages is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 345 not upgraded.
ocean@ubuntu:~$
```

- Package install **failed** example

```
ocean@ubuntu:~$ sudo apt-get install manpages
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  manpages
0 upgraded, 1 newly installed, 0 to remove and 345 not upgraded.
Need to get 721kB of archives.
After this operation, 1,135kB of additional disk space will be used.
Err http://us.archive.ubuntu.com/ubuntu/ maverick/main manpages all 3.24-1ubuntu
1
Could not resolve 'us.archive.ubuntu.com'
Failed to fetch http://us.archive.ubuntu.com/ubuntu/pool/main/m/manpages/manpage
s_3.24-1ubuntu1_all.deb Could not resolve 'us.archive.ubuntu.com'
E: Unable to fetch some archives, maybe run apt-get update or try with --fix-mis
sing?
```

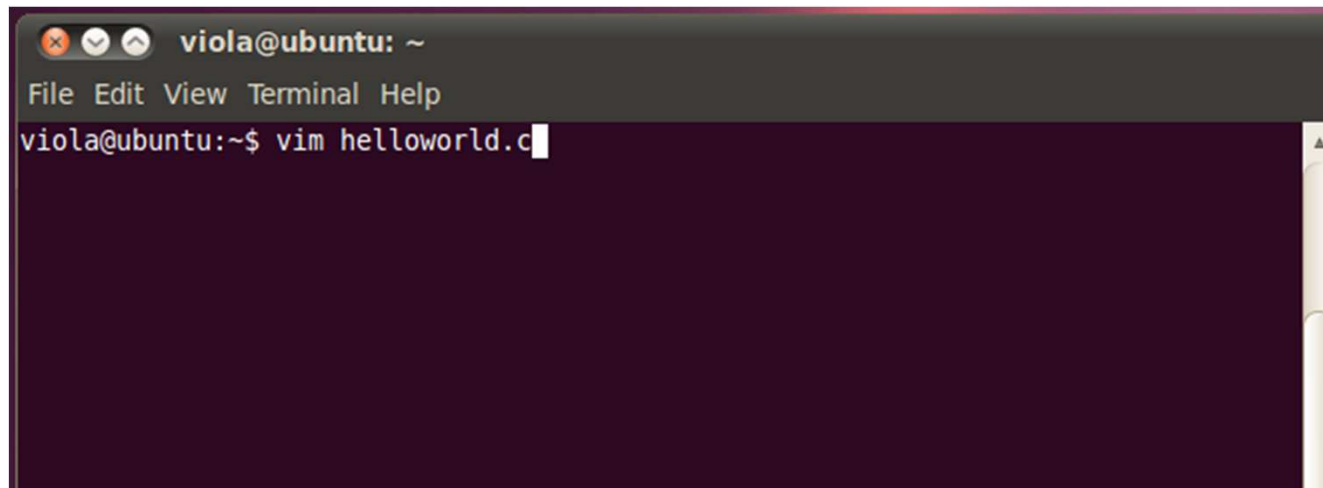

Introduction to Vim (1/6)

- There are 3 basic operation modes in vim
 - Normal mode
 - Insert mode
 - Cmdline mode



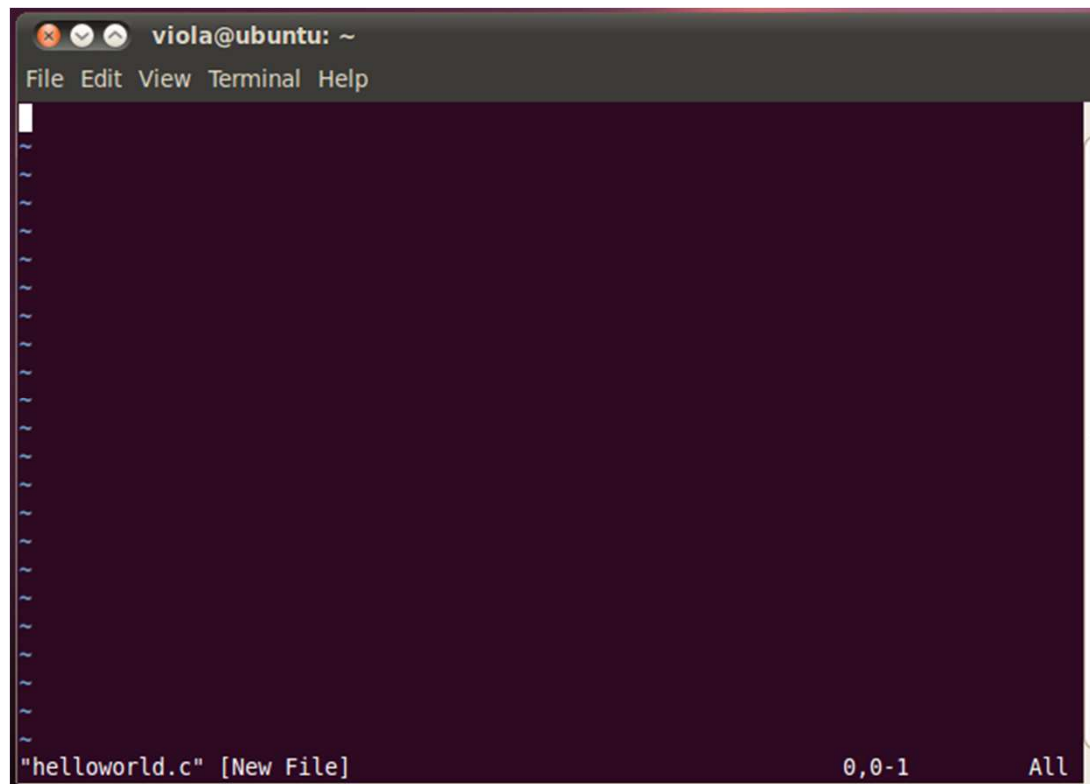
Introduction to Vim (2/6)

- Open the Terminal
- Create/Open a file using “vim” command
 - vim [filename]

A screenshot of a terminal window titled 'viola@ubuntu: ~'. The window has a dark background and a light-colored title bar. The terminal shows the command 'vim helloworld.c' being entered at the prompt 'viola@ubuntu:~\$'. The cursor is at the end of the command. The terminal also displays a menu bar with 'File Edit View Terminal Help'.

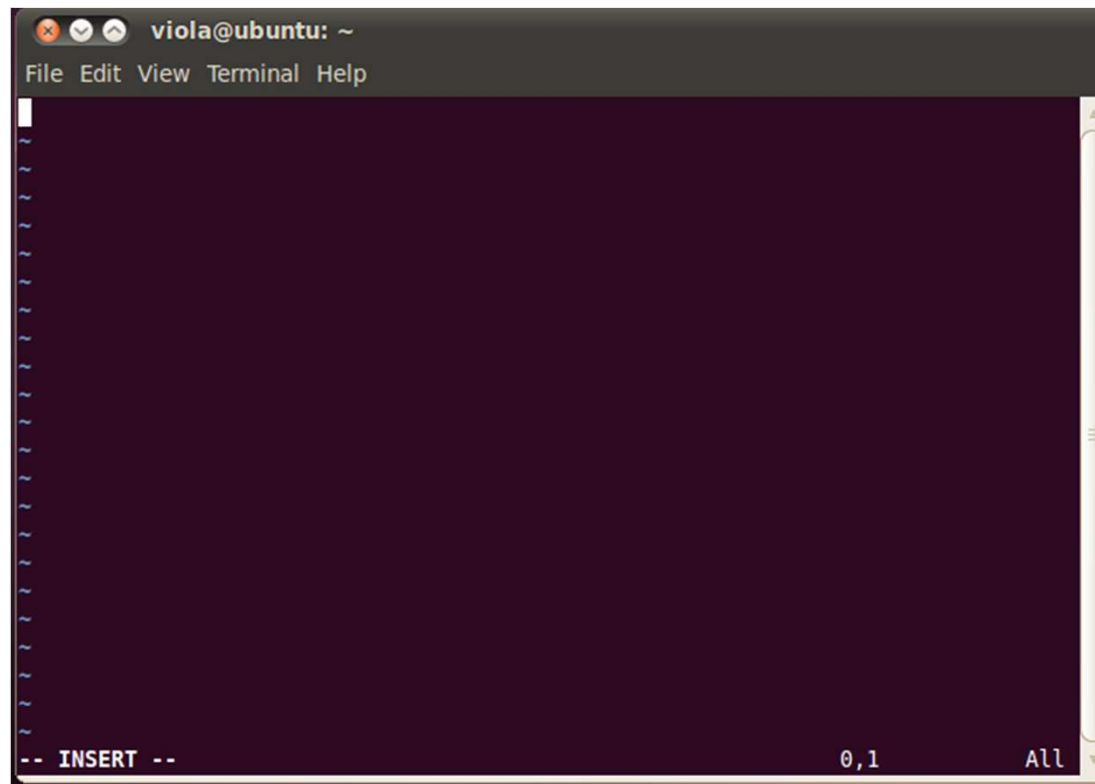
Introduction to Vim (3/6)

- You are in the “normal mode” after you start the vim




Introduction to Vim (4/6)

- Click "i" to enter "insert mode"
- Write your program under "insert mode"



Introduction to Vim (5/6)

- Click “ESC” back to “normal mode” after finish
- Type “:wq” to save file and exit vim
 - (Type “:” indicates entering the “cmdline mode”)



The screenshot shows a terminal window titled "viola@ubuntu: ~". The window has a menu bar with "File", "Edit", "View", "Terminal", and "Help". The terminal content is as follows:

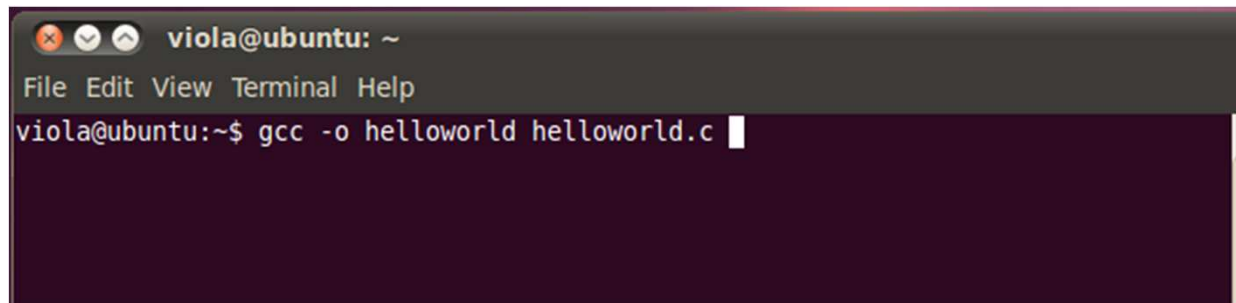
```
#include<stdio.h>

int main(){
printf("hello world");
return 0;
}
```

At the bottom right of the terminal, the text "6,1" and "All" are visible.

Introduction to GCC Compiler (1/3)

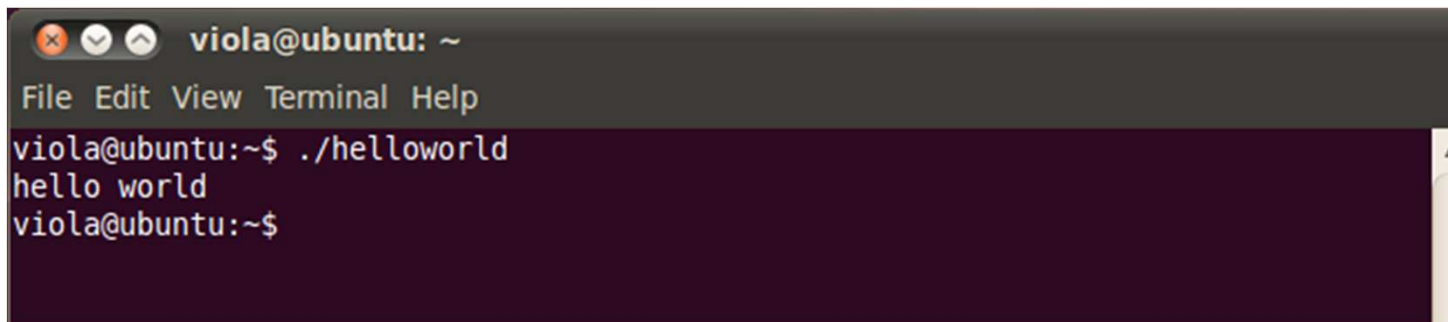
- Use GCC compiler to compile source code into object file
 - `gcc -o [object name] [source code ...]`

A screenshot of a terminal window titled 'viola@ubuntu: ~'. The window has a menu bar with 'File', 'Edit', 'View', 'Terminal', and 'Help'. The command prompt shows 'viola@ubuntu:~\$ gcc -o helloworld helloworld.c' with a cursor at the end of the line.

```
viola@ubuntu: ~  
File Edit View Terminal Help  
viola@ubuntu:~$ gcc -o helloworld helloworld.c
```

Introduction to GCC Compiler (2/3)

- Use “ ./[Filename] ” to execute the object file

A screenshot of a terminal window titled "viola@ubuntu: ~". The window has a menu bar with "File", "Edit", "View", "Terminal", and "Help". The terminal shows the command "viola@ubuntu:~\$./helloworld" being entered, followed by the output "hello world", and then the prompt "viola@ubuntu:~\$" again.

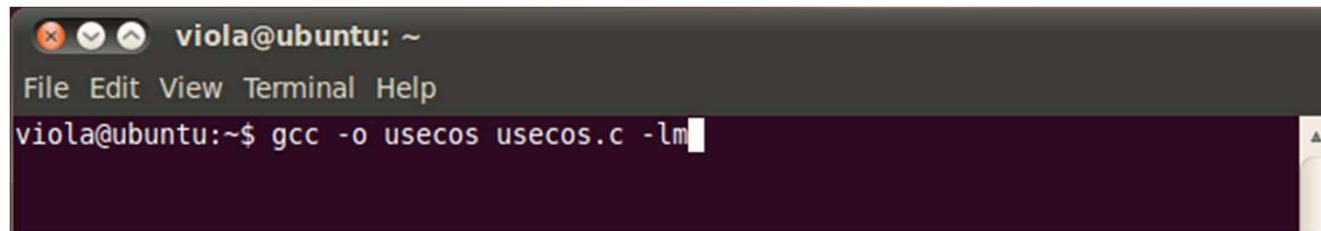
```
viola@ubuntu: ~  
File Edit View Terminal Help  
viola@ubuntu:~$ ./helloworld  
hello world  
viola@ubuntu:~$
```

Introduction to GCC Compiler (3/3)

- Sometimes you should specify a linked library to the linker
 - gcc [object name] [source codes ...] -l[library]
 - e.g. use “gcc -lm” to link the “libm.a” library, when you use cos() function in your program

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

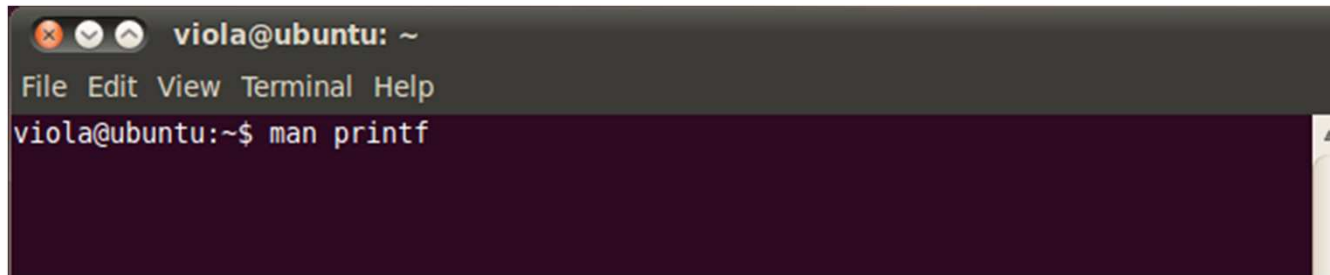
int main()
{
    float x=0, y=0;
    scanf("%d",&x);
    y=cos(x);
    printf("%f",y);
    return 0;
}
```

A terminal window titled 'viola@ubuntu: ~' with a menu bar containing 'File', 'Edit', 'View', 'Terminal', and 'Help'. The command prompt shows 'viola@ubuntu:~\$ gcc -o usecos usecos.c -lm' with a cursor at the end.

```
viola@ubuntu:~$ gcc -o usecos usecos.c -lm
```


Introduction to Man Page (1/4)

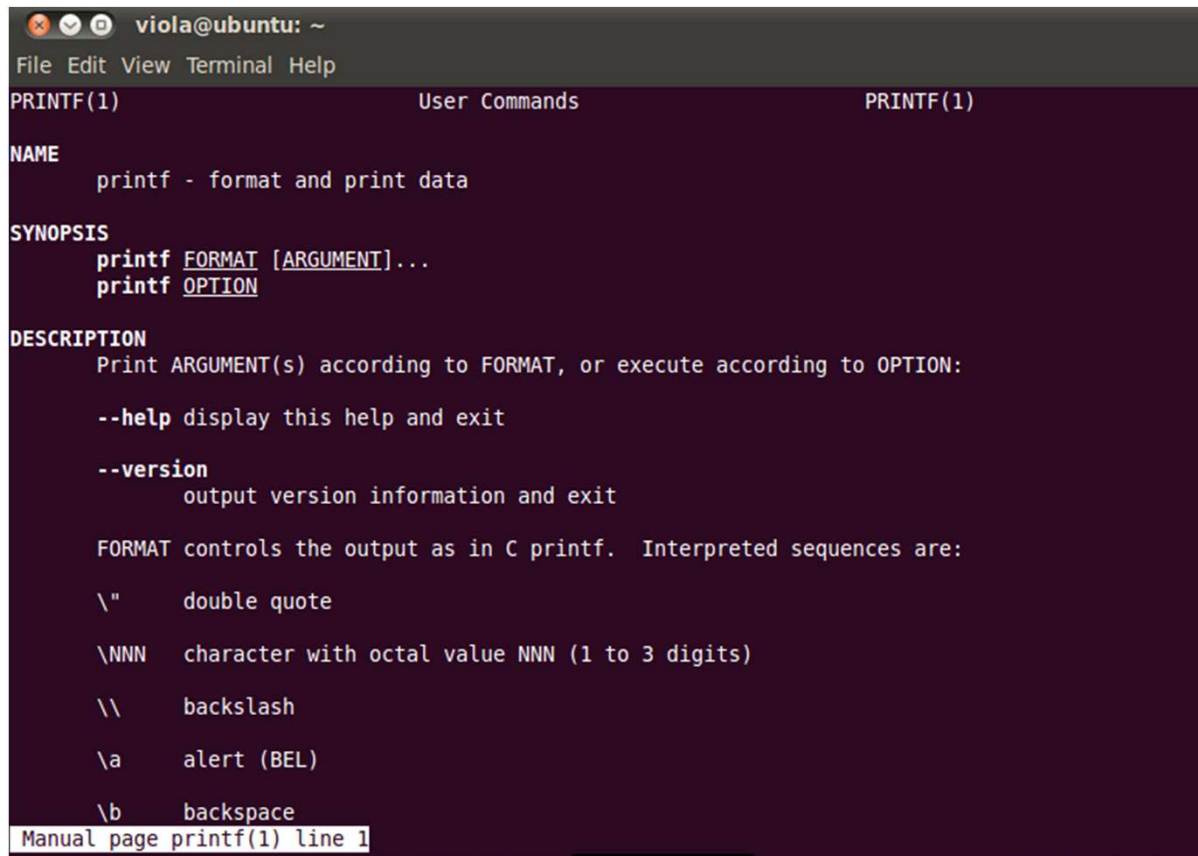
- Man page (manual pages) is a powerful manual in Unix
- You can use “man [cmd]” to find its usage/definition
 - e.g. use “man printf” to find its manual

A screenshot of a terminal window titled 'viola@ubuntu: ~'. The window has a menu bar with 'File', 'Edit', 'View', 'Terminal', and 'Help'. The terminal prompt is 'viola@ubuntu:~\$' and the command 'man printf' has been entered. The background of the terminal is dark purple.

```
viola@ubuntu: ~  
File Edit View Terminal Help  
viola@ubuntu:~$ man printf
```

Introduction to Man Page (2/4)

- The following picture shows the manual of “printf”
- Enter “q” to leave the man page



```
viola@ubuntu: ~
File Edit View Terminal Help
PRINTF(1)                                User Commands                                PRINTF(1)

NAME
    printf - format and print data

SYNOPSIS
    printf FORMAT [ARGUMENT]...
    printf OPTION

DESCRIPTION
    Print ARGUMENT(s) according to FORMAT, or execute according to OPTION:

    --help display this help and exit

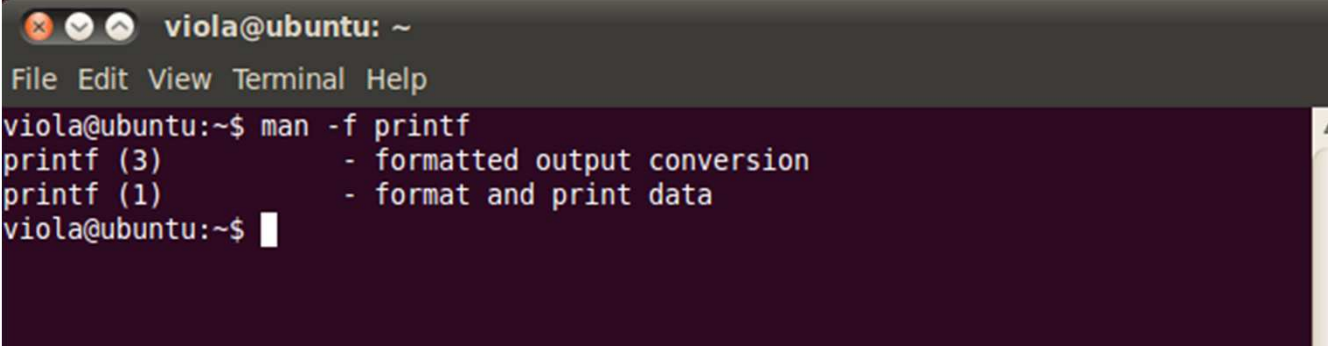
    --version
        output version information and exit

    FORMAT controls the output as in C printf.  Interpreted sequences are:

    \"    double quote
    \NNN  character with octal value NNN (1 to 3 digits)
    \\    backslash
    \a    alert (BEL)
    \b    backspace
    Manual page printf(1) line 1
```

Introduction to Man Page (3/4)

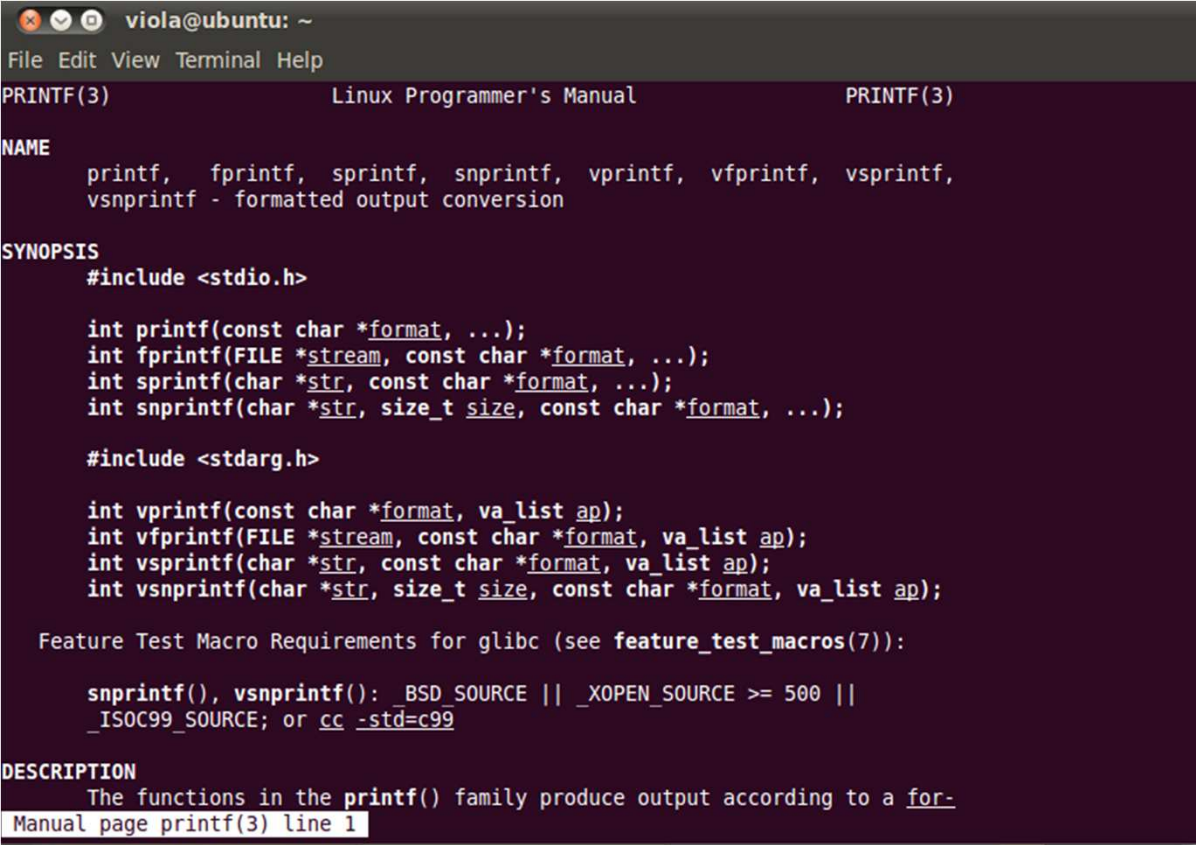
- Some commands have multiple usages/definitions
- Different usages/definitions are classified into “sections”
- Use “man -f [cmd]” to search available sections
 - e.g. “printf” has two sections
 - printf (1) is the guide of “printf” shell command
 - printf (3) is the manual of “printf” library call

A terminal window titled 'viola@ubuntu: ~' with a menu bar 'File Edit View Terminal Help'. The terminal shows the command 'man -f printf' being executed. The output lists two sections for 'printf': 'printf (3) - formatted output conversion' and 'printf (1) - format and print data'. The prompt 'viola@ubuntu:~\$' is followed by a cursor.

```
viola@ubuntu:~$ man -f printf
printf (3)          - formatted output conversion
printf (1)          - format and print data
viola@ubuntu:~$
```

Introduction to Man Page (4/4)

- Use “man [#sec] [cmd]” to access different sections
 - e.g., use “man 3 printf” to access “printf (3)”



```
viola@ubuntu: ~
File Edit View Terminal Help
PRINTF(3) Linux Programmer's Manual PRINTF(3)

NAME
    printf, fprintf, sprintf, snprintf, vprintf, fprintf, vsprintf,
    vsnprintf - formatted output conversion

SYNOPSIS
    #include <stdio.h>

    int printf(const char *format, ...);
    int fprintf(FILE *stream, const char *format, ...);
    int sprintf(char *str, const char *format, ...);
    int snprintf(char *str, size_t size, const char *format, ...);

    #include <stdarg.h>

    int vprintf(const char *format, va_list ap);
    int fprintf(FILE *stream, const char *format, va_list ap);
    int vsprintf(char *str, const char *format, va_list ap);
    int vsnprintf(char *str, size_t size, const char *format, va_list ap);

    Feature Test Macro Requirements for glibc (see feature_test_macros(7)):

    snprintf(), vsnprintf(): _BSD_SOURCE || _XOPEN_SOURCE >= 500 ||
    _ISOC99_SOURCE; or cc -std=c99

DESCRIPTION
    The functions in the printf() family produce output according to a for-
Manual page printf(3) line 1
```

Reference

- Linux 基本指令
 - http://homepage.ttu.edu.tw/u9106240/page_main/linux.html
- Vim 入門圖解說明
 - <http://blog.vgod.tw/2009/12/08/vim-cheat-sheet-for-programmers/>
- 鳥哥的 Linux 私房菜 – vim 程式編輯器
 - http://linux.vbird.org/linux_basic/0310vi.php
- GCC 常用編譯參數
 - <http://puremonkey2010.blogspot.com/2010/12/linux-gcc.html>