Linux and GCC

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Content

Linux Operating System Kernel

- Designed by Linus Torvalds in 1991
- Free operating system
- One of the most prominent examples of free and open-source software collaboration

More details, watch Revolution OS (2001)

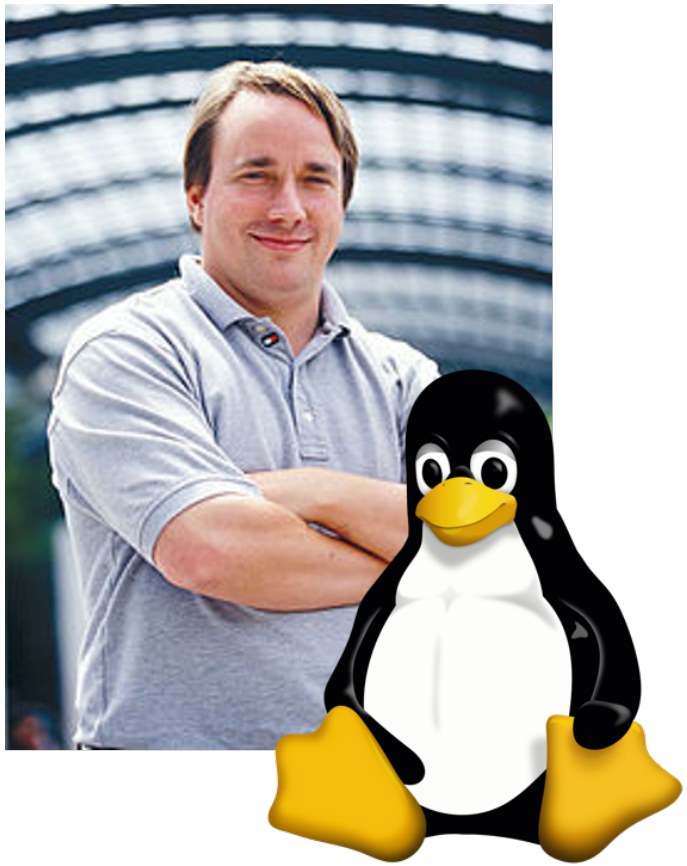

Figure : Linus Torvalds and Tux Penguin (Linux's mascot)

Ubuntu

- A Linux distribution for both desktop and server use
- Published by Canonical Ltd
- The most popular operating system
- The newest version: 16.04 LTS

Ubuntu

How to install

- Ubuntu 16.04 LTS x86_64 (64bit)
  - Download: http://releases.ubuntu.com/16.04/ubuntu-16.04-desktop-amd64.iso
- Install on virtual machine
  - Virtual Machine Softwares: VirtualBox (Free), VMware (Paid), Parallels (Paid)
  - Windows OS 64bit
  - Create a new virtual machine
  - Install Ubuntu (More information)
- Install alongside with another OS (dual boot)
  - Download Ubuntu iso file
  - Burn to DVD or USB (use Rufus)
  - On Windows, create a new partition
  - Check BIOS to boot from DVD or USB
  - Install Ubuntu (More information)

Tools

- `gEdit` like Notepad
- `Terminal` like Command Line

Tools

Some basic command lines in Terminal

- `# ls <path/to/dir>` - list files in directory
- `# pwd` - return path of current directory
- `# cd <path/to/dir>` - Go to directory
- `# rm <path/to/file>` - Remove a file
- `# more <path/to/file>` - Show contain of file
- `# mv <path/to/file1> <path/to/file2>` - Move file1 to file2
- `# cp <path/to/file1> <path/to/file2>` - Copy file1 to file2

GNU Compiler Collection

- The original GNU C Compiler (GCC) is developed by Richard Stallman.
- GCC, formerly for "GNU C Compiler", has grown over times to support many languages such as C++, Objective-C, Java, Fortran and Ada. It is now referred to as "GNU Compiler Collection".

Check GCC

- You could display the version of GCC via –version option:

  ```
  # gcc --version
  ```

  or

  ```
  # gcc -v.
  ```

- You can get the help manual via the –help option:

  ```
  # gcc --help
  ```

Hello-world C program

```
1 //hello.c
2 #include <stdio.h>
3
4 int main (void)
5 {
6   printf ("Hello, world!\n");
7   return 0;
8 }
```

Hello-world C program

To compile the hello.c:

```
# gcc hello.c
```

Hello-world C program

The default output executable is called "a.out".

```
# ./a.out
```

Hello-world C program

To specify the output filename, use -o option:

```
# gcc -o hello hello.c
# ./hello
```

More GCC Compiler Options

A few commonly-used GCC compiler options are:

```
# gcc -Wall -g -o Hello Hello.c
```

- -o: specifies the output executable filename.
- -Wall: prints "all" warning messages.
- -g: generates additional symbolic debuggging information for use with gdb debugger.

The End