Introduction to Linux

Linux User Group at UTA

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Goals of Linux User Group

- promote the use of the Linux operating system and other open source software.

- provide a venue for students to gain experience giving technical presentations.

- provide a forum for students to learn about new aspects of Linux and open source software.

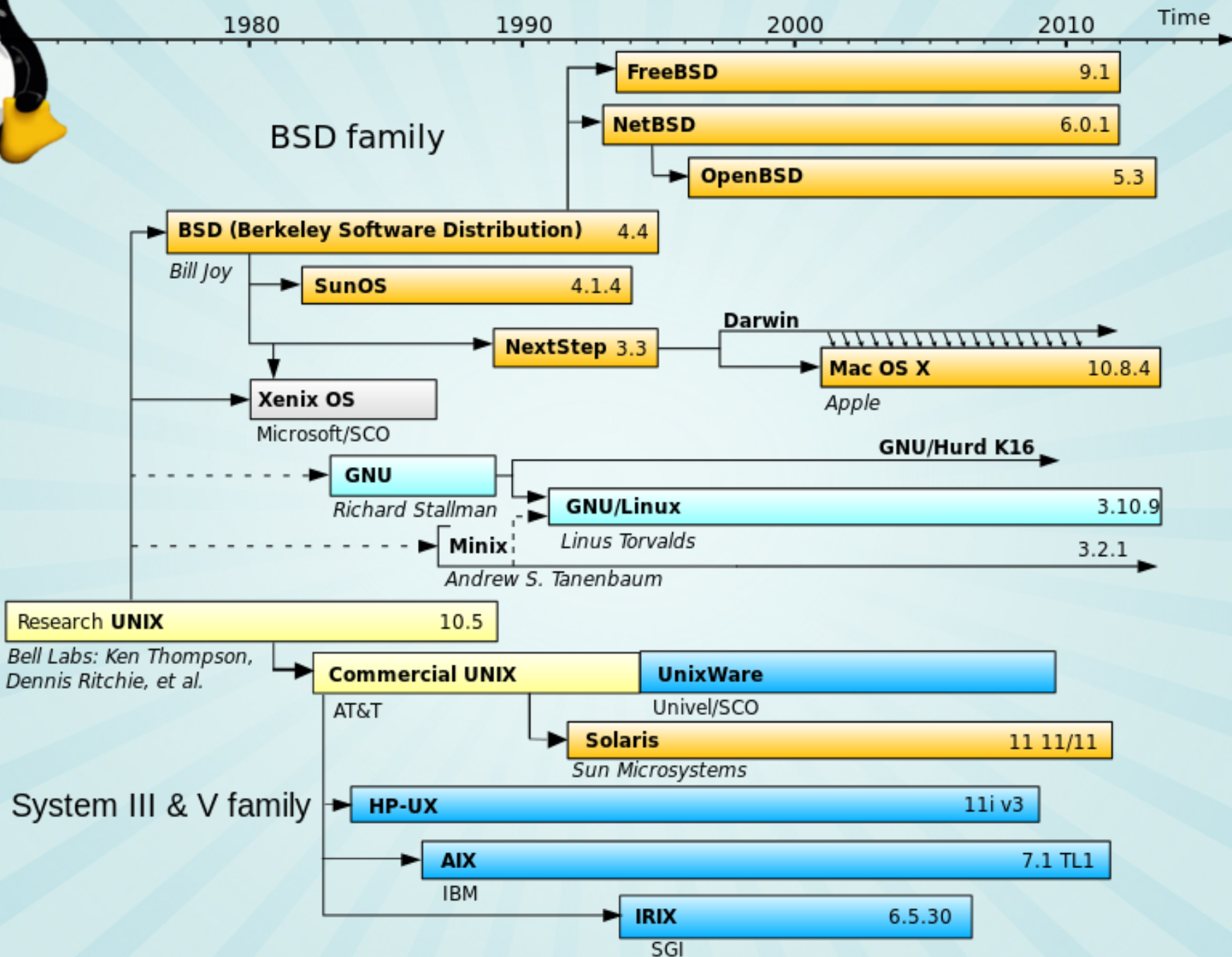- promote fellowship among students who participate in the group.

What is Linux

- Linux is an Operating System (OS) – the software that manages its processor, memory and devices and lets you run different programs on it.

- It is free and open source.

- It has been developed collaboratively by many developers across the globe making it extremely robust and transparent.

- It is the number one OS running on the Internet[1] – Google and Facebook's sites run on Linux OS.

The world of Operating Systems

- In early days, computers were <u>large multi-user mainframes</u> running some flavor of the **Unix** operating system. (1969-current)

- <u>Personal Computers</u> (PC) started using **MSDOS** (1981-2000), transitioning to **Windows** later (1990-current).

- **Mac-OS** competed with Windows on Mac-PCs but Microsoft always dominated.[2] (1984-current)

- **Linux** rose as a free Unix-"like" operating system now completely dominating the server market and becoming a popular PC OS.[1] (1991-current)

1980 | 1990 | 2000 | 2010 | Time

BSD family

FreeBSD 9.1

NetBSD 6.0.1

OpenBSD 5.3

BSD (Berkeley Software Distribution) 4.4

Bill Joy

SunOS 4.1.4

NextStep 3.3

Darwin

Mac OS X 10.8.4

Apple

Xenix OS

Microsoft/SCO

GNU/Hurd K16

GNU

Richard Stallman

GNU/Linux 3.10.9

Linus Torvalds

Minix

Andrew S. Tanenbaum

3.2.1

Research **UNIX** 10.5

*Bell Labs: Ken Thompson,
Dennis Ritchie, et al.*

Commercial UNIX **UnixWare**

AT&T

Univel/SCO

Solaris 11 11/11

Sun Microsystems

System III & V family

HP-UX 11i v3

AIX 7.1 TL1

IBM

IRIX 6.5.30

SGI

Why *you* might need Linux

- Software Engineers & System Administrators
  - Large websites like Google/Facebook run on Linux[3]
  - Most hardware (smartphones, TVs..) runs on Linux
  - Prevalent programming environment
- Robotics and Control Engineers
  - ROS based on Linux
- Mechanical/Aerospace/Physics Engineers
  - Run simulations on high performance clusters which run on Linux

Free Open Source

"Free as in freedom"

Software with source code available that you are free to study, change and distribute for any purpose. Examples GPL, BSD licenses.

"Standing on the shoulders of giants"

Imagine:

– Having to pay ridiculous amounts of money to start working on a new idea

– Not being unable to customize software to your needs

= stifled innovation!

Open Source in Your Life[1,4]

- Major websites:
    - Google, Facebook, Amazon, Twitter, Dropbox
- Software you use:
    - Mozilla Firefox, Oracle Java, VLC, LibreOffice
- Android smartphones
- Embedded Linux devices:
    - Smart TVs & DVRs, ATM machines, Wireless routers

LUG-UTA Goals this Semester

- Introduce you to the Linux shell and desktop

- Guide you to setting up a web server

- Set up your programming environment in Linux

- Show off exciting applications of Linux like Rasberry-Pi and Robot Operating System

- Plus, we will have many presentation on advanced topics like Latex authoring, version control, Linux security, networking and many new topics

Getting started with Linux

- Install Linux on a virtual machine (VM)
- Read some good Linux tutorials on the web
- Watch some Linux introductory videos on the internet
- Try your new skills on your Linux VM
- Attend LUG meetings

Installation on a Virtual Machine

- Download and install Oracle VirtualBox (shown in this guide) https://www.virtualbox.org/wiki/Downloads

  - VirtualBox 4.x.x for Windows hosts x86/amd64

  - VirtualBox 4.x.x for OS X hosts x86/amd64

- Download the ISO image of a Linux distribution (Ubuntu Linux will be used for this demo)

  - Ubuntu 64-bit http://releases.ubuntu.com/14.04.1/ubuntu-14.04.1-desktop-amd64.iso

  - Ubuntu 32-bit http://releases.ubuntu.com/14.04.1/ubuntu-14.04.1-desktop-i386.iso

Installation

- Refer to this video for help in the install:
  https://www.youtube.com/watch?v=0WiiswmOH1Q

Homework :)

- Register for this free, self paced Linux course on EdX:

  - https://www.edx.org/course/linuxfoundationx/linuxfoundationx-lfs101x-introduction-1621
  - There are no deadlines to meet, take your time reading the material

- Watch these introductory videos on YouTube:

  - A detailed guide to installing Ubuntu inside VirtualBox on a Windows computer (it applies to Ubuntu 14.04 as well): https://www.youtube.com/watch?v=0WiiswmOH1Q

  - A dummies introduction to Ubuntu: https://www.youtube.com/watch?v=Do5npazUXpM

  - An introduction to command line: https://www.youtube.com/watch?v=IVquJh3DXUA

Upcoming events

- Computer Security Club meeting at 6:00pm in ERB 414

- HP Event on September 22 at 6:00pm

- LUG meetings:

    – Linux commands!

    – Robot OS and demos!

Contact Info

- Website: **www.luguta.org**
- Join us on MavOrgs: https://mavorgs.collegiatelink.net/
- Join our mailing list (see web page)
- Email:
  - Rohit Rawat rohitrawat@gmail.com
  - Clayton Dorsey claytondorsey@gmail.com

- Next meeting tentatively in two weeks.

References

- [1] http://en.wikipedia.org/wiki/Linux_adoption

- [2] http://en.wikipedia.org/wiki/Microsoft_Windows

- [3] http://en.wikipedia.org/wiki/Google_platform

- [4] http://en.wikipedia.org/wiki/Linux