25D Linux Foundation Course

01 – Introduction to Linux

Overview

❑ **The Role of an OS**

❑ **How Linux Came to Be**

❑ **GNU and Linux**

❑ **Linux Distributions**

❑ **Common Linux Distributions**

The Role of an OS

- ❏ **Application platform**

  - – **OS is the middleman between the apps we use every day and the resources those apps need (CPU, memory, etc.)**

- ❏ **Hardware moderator**

  - – **Gives access to hardware for apps but also acts as a referee for several apps competing for the same hardware**

  - – **Os has prewritten code that allows developers to focus on app development and use that prewritten code to access hardware (CPU, hard drive, memory, etc.)**

- ❏ **Data storage**

  - – **Provides easy access to storage mediums (Hard drive, removable media, optical, etc.)**

- ❏ **Security**

  - – **Provides a degree of security by how it is constructed, policies enforced and configurations applied**

- ❏ **Connectivity**

  - – **Manages a variety of methods to allow computers to communicate (bluetooth, ethernet, Wi-Fi, NFC (Near Field Communications) and mobile wireless)**

The Role of an OS

❑ **The Linux OS is composed of the following:**

- **The Linux kernel**
  - **The heart and soul**
  - **Fulfills the key operating system duties**

- **Libraries**
  - **Prewritten code elements**
  - **Objects providing key functionalities used by developers**

- **Utilities**
  - **Used to complete OS management tasks**
  - **Used to edit text files (vi)**
  - **Used to manage running processes**

- **User Interface**
  - **Means of interacting with the OS by the end user**
   - **Command Line and Graphical**

How Linux Came to Be

❑ **Created by a graduate student named Linus Torvalds in the early 1990's**

- **Inspired by Dr. Andrew Tanenbaum and his creation of the UNIX clone, Minix**

- **Released Linux version 0.02 on October 5th 1991**

  - **Consisted of the Linux kernel and three utilities:**

    - **bash: command line interface**

    - **update: flushes file system buffers**

    - **gcc: C++ compiler**

- **By "released" Torvalds posted the source code on the internet and made freely available to anyone**

- **Invited other programmers to modify and build apps for the OS**

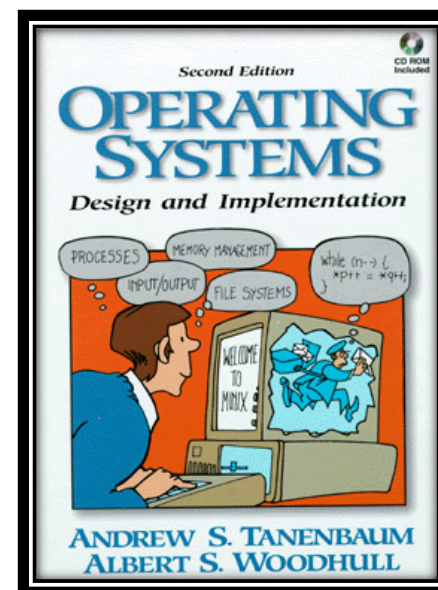- **Became a world-wide collaborative effort**

How Linux Came to Be
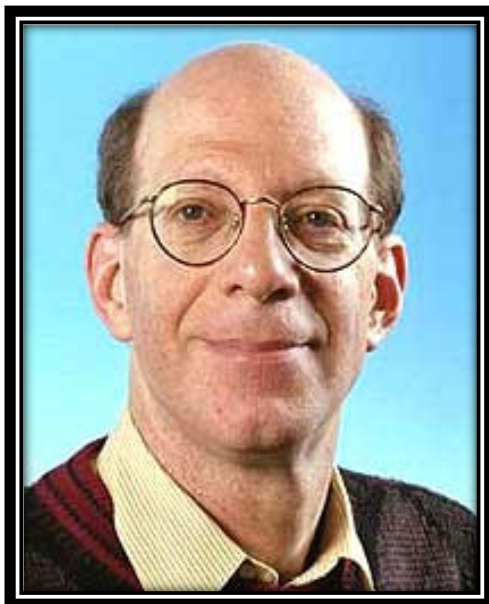
- Dr. Andrew S. Tanenbaum
- Creator of Minix
- Provided source code in his textbook *Operating Systems: Design and Implementation*

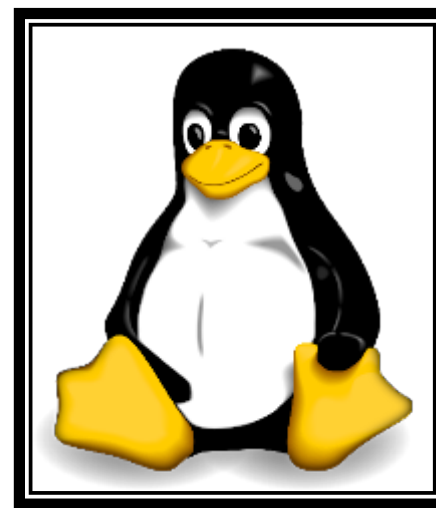# How Linux Came to Be

- Linus Torvalds
- Creator of Linux
- Posted source code on the Internet

GNU and Linux

- Richard Stallman
- Founder of GNU's Not UNIX movement
- Believes source code for programs should be free from all restrictions

Linux Distributions

❑ **What Is a Distribution?**

– **Start with the basic kernel source code (Freely available)**

– **Using the basic kernel developers/vendors can customize the kernel**

– **Different apps and functions added by vendors changing the "flavor"**

– **Many different distributions available from multiple vendors**

❑ **Think of ice cream**

– **There is a basic recipe for ice cream available to everyone**

– **Different companies add different ingredients to the recipe to generate thousands of variations and flavors**

Commonly Used Distributions

The Life Cycle of a Linux Distribution

❑ **Design Phase**

– **Requirements, goals, purpose, features and roles identified and assigned.**

– **Lessons Learned from previous version are considered**

❑ **Development Phase**

– **Distribution created based on requirements established in the design phase**

– **Testing is conducted**

❑ **Deployment Phase**

– **Released for end user use**

❑ **Management Phase**

– **Any bugs missed in previous steps are identified and updates created then released**

❑ **Retirement Phase**

– **Support lifecycle ends (varies) and is retired**

– **Some versions overlap so there may be several versions of a specific distribution available at different points in their lifecycle**

Common Linux Implementations

- ❑ **Using Linux on the Desktop**
  - – **About 2% of the desktop market**
  - – **Historic lack of desktop productivity applications**
  - – **Intimidating (it's that OS with no pictures!)**

- ❑ **Using Linux on the Server**
  - – **Used much more as servers than desktops/user workstations**
  - – **Stable, fast and less expensive and provides all of the common services (Email, etc.)**
  - – **Use a server distribution**

- ❑ **Using Linux on Mobile Devices (Android)**

- ❑ **Using Linux for Virtualization**

- ❑ **Using Linux with Cloud Computing**

- ❑ **Using Embedded Linux**
  - – **Can be optimized down to a small footprint, running on minimal hardware**
  - – **Great for smart TVs, smartphones, network devices and video game systems**

- ❑ **The Role of an OS**

- ❑ **How Linux Came to Be**

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- ❑ **Common Linux Distributions**

Questions?

Check on Learning

Question 1

What is another term describing the actual operating system?

A. Libraries

B. Kernel

C. Desktop Environment

D. Bash Shell Functions

Check on Learning

Question 2

Which of the following provides prewritten code elements that programmers can call when writing programs to run on a Linux OS?

A. Kernel

B. Kernel Nibbles

C. Libraries

D. Bash Shell Profiles

Check on Learning

Question 3

What did Linus Torvalds do with the source code for Linux?

A. Sold it to NASA

B. Sold it to Microsoft

C. Used it to develop Minix

D. Patented it and then copyrighted it

E. Posted it on the Internet for everyone

Check on Learning

Question 4

You are a computer programmer. Your supervisor wants you to download the source code for the latest Linux kernel and modify it to support a custom application your company is developing for use in-house. Legally, can you do this?

A. No, Linux source code is no longer available on the Internet

B. No, you will be susceptible to US copyright laws

C. Yes, but you must donate to the GNU Project

D. Yes, you can create a new Linux flavor and redistribute it as long as the source code remains free

Check on Learning

Question 5

You have been tasked with setting up an email server for your organization of 150 people. You're considering using Linux to do this. Is this possible?

A. Yes, Linux can be configured to provide e-mail services

B. No, Linux can provide email services, but only for 25 users

C. Yes, but special email software will need to be purchased

D. No currently available email application has been ported to run on Linux

Check on Learning

Question 6

Your installing a new Linux server that will be used to host mission critical database applications. The server will be heavily utilized by a large number of users every day. Which distributions would be the best choice for the deployment? (Choose two.)

A.   Red Hat Linux Enterprise Server

B.   Red Hat Linux Enterprise Desktop

C.   Ubuntu Server

D.   SUSE Linux Enterprise Desktop