



Computer Fundamentals

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Lecture 17



Outline

- Survey of PC and network operating systems



PC Operating Systems

➤ Microsoft Windows

- ☐ Most popular OS for PCs
- ☐ Installed more than other OS combined
- ☐ Installed on about 95% of computers
- ☐ Apple and Linux represent the other 5%



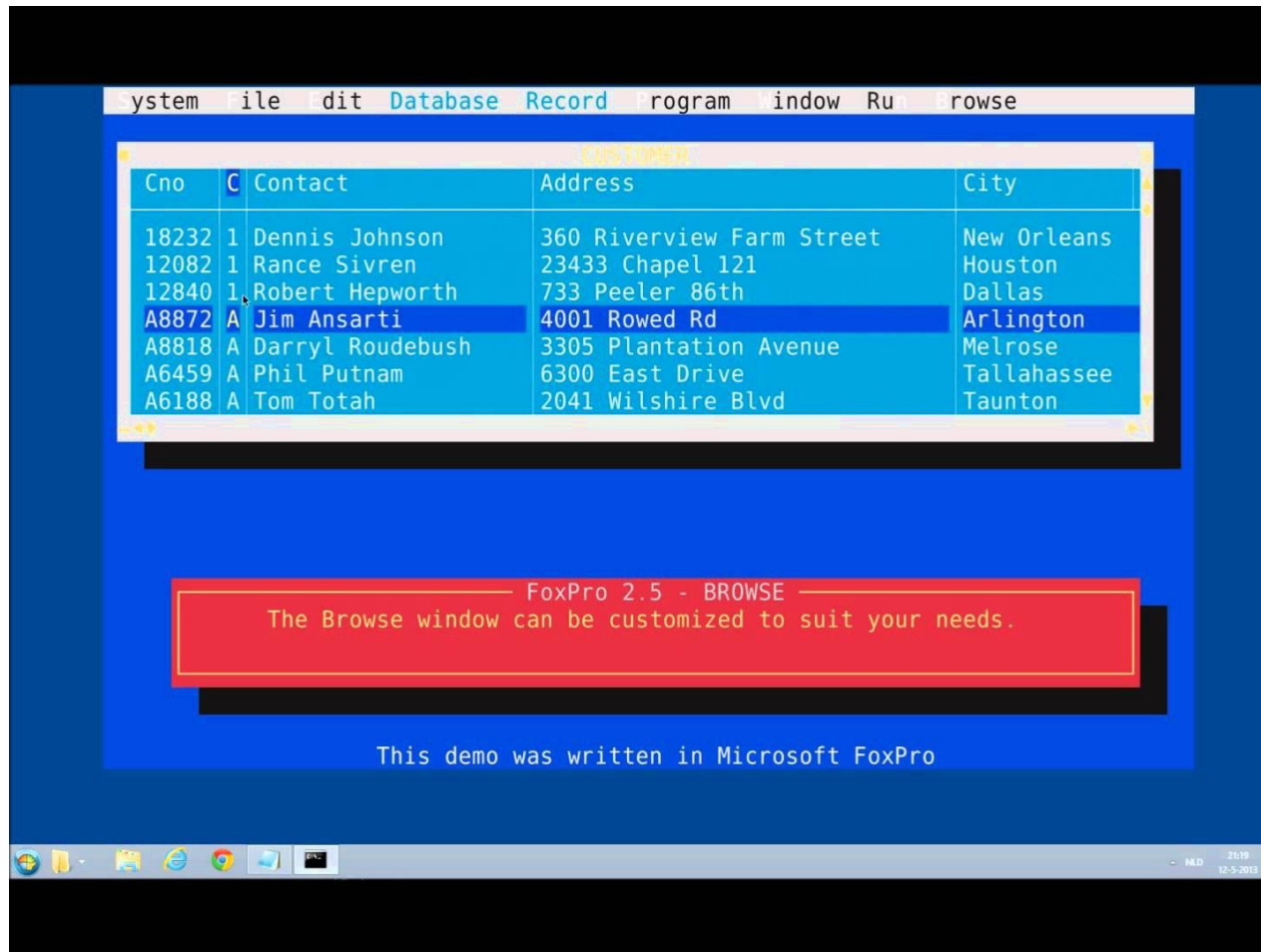
PC Operating Systems (cont.)

➤ DOS

- ☐ Disk Operating System
- ☐ Single user single-tasking OS
- ☐ Command line interface
- ☐ 16-bit OS
- ☐ Powerful
- ☐ Fast
- ☐ Supports legacy applications



PC Operating Systems (cont.)



Source: <https://www.youtube.com/watch?v=IIIdtsvuDfr0>



PC Operating Systems (cont.)

➤ Windows NT

- ☐ Designed for a powerful system
- ☐ 32-bit OS
- ☐ Very stable
- ☐ Windows NT Workstation
 - Single user multi tasking OS
- ☐ Windows NT Server
 - Multi user multi tasking OS
 - Network operating system



PC Operating Systems (cont.)

- Windows 9x
 - ❑ 95, 98, and Millennium Edition (Me)
 - ❑ 32-bit OS
 - Supported 16-bit programs well
 - ❑ Very pretty not stable OS
 - ❑ Still found in outdated computer
 - ❑ 95 introduced the Start button
 - ❑ 98 introduced active desktop
 - ❑ Me improved multimedia software



PC Operating Systems (cont.)

- Windows 2000
 - ❑ Look of 9x with NT stability
 - ❑ Optimized for office and developers
 - ❑ Application software ran very well
 - ❑ Entertainment software ran very poorly



PC Operating Systems (cont.)

➤ Windows XP

- ❑ Microsoft's desktop product introduced in 2001
- ❑ Different look from Windows 2000
- ❑ Many different versions
- ❑ Digital multimedia support was enhanced
- ❑ Communications were enhanced
- ❑ Mobile computing became a priority
 - E.g. automatic network configuration



PC Operating Systems (cont.)

➤ UNIX

- ☐ Runs on all computer types
- ☐ 32- or 64-bit
- ☐ Very stable and fast
- ☐ Command line interface
 - Can work completely functional even without GUI
- ☐ Can cost thousands of dollars



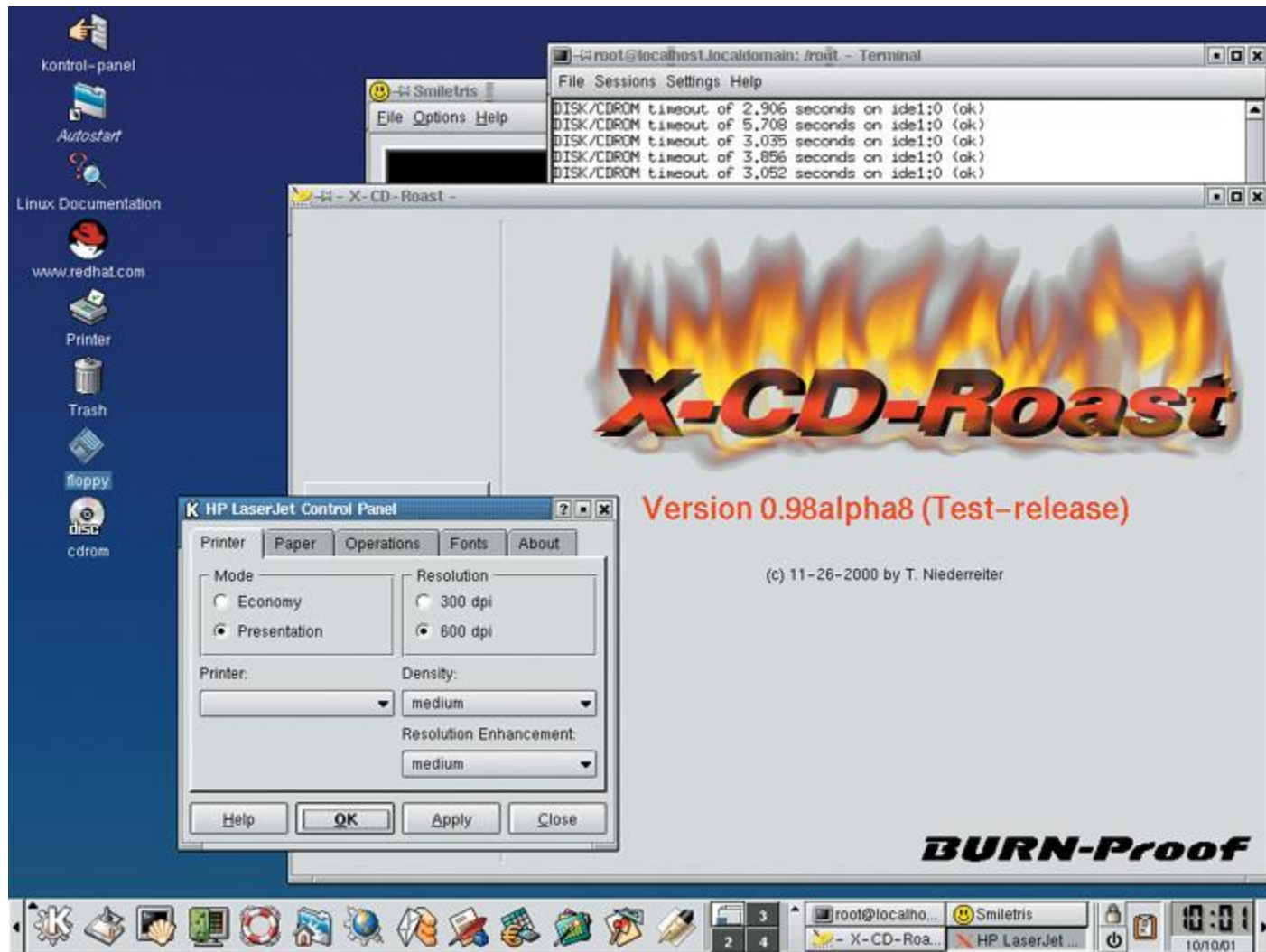
PC Operating Systems (cont.)

➤ Linux

- ☐ Free or inexpensive version of UNIX
- ☐ 32-bit OS
- ☐ Very stable and fast
- ☐ Most flavors are open source
- ☐ Windows based GUI, called shell, offers ease of use
- ☐ Command line interface offers power to user



PC Operating Systems (cont.)





PC Operating Systems (cont.)

- Macintosh operating systems
 - ❑ OS X, current version
 - ❑ Based on FreeBSD¹ Linux
 - ❑ Very stable and easy to configure
 - ❑ Only runs on Mac hardware

¹ Berkeley Software Distribution



PC Operating Systems (cont.)





NOS Features

- Network operating system
- Fast and stable
- Runs on servers
- Multi-user and multitasking OS
- 32- or 64-bit



NOS Features (cont.)

- File and print sharing
 - ❑ Users access the same files
 - ❑ Hundreds of users use a printer
 - ❑ Different OS can interact



NOS Features (cont.)

- Data integrity
 - ❑ Backup copies data onto tape
 - ❑ RAID¹ copies data onto other drives
 - Redundant Array of Inexpensive Disks
 - Relies on two or more hard drives
 - May speed-up access to data

¹ formerly Redundant Array of Inexpensive Disks, now Redundant Array of Independent Disks



NOS Features (cont.)

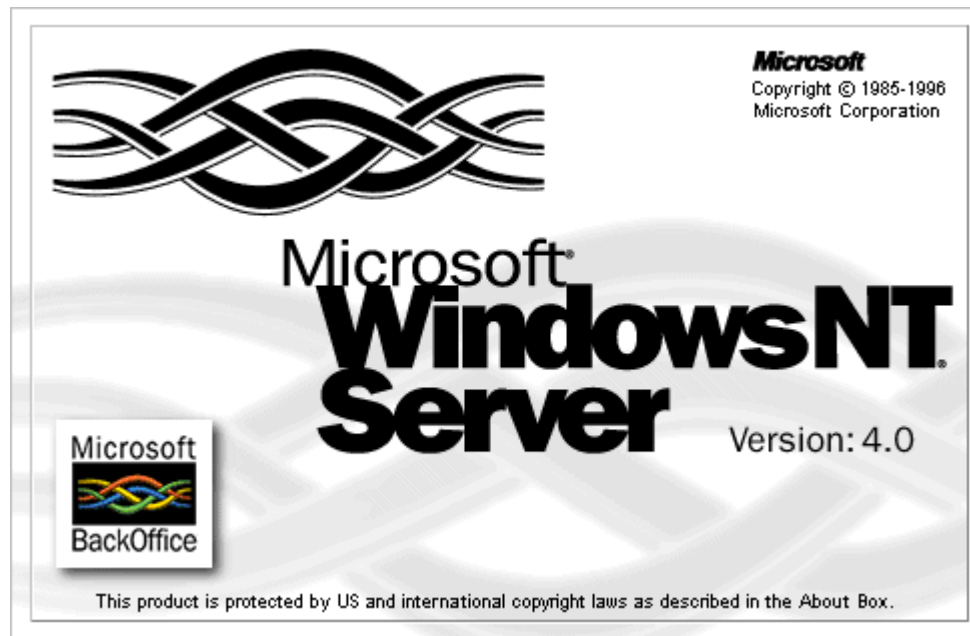
➤ Data security

- ☐ Access to data can be restricted
- ☐ Access to server resources is controlled
- ☐ Audits can be kept



NOS Features (cont.)

- NT Server
 - ❑ Same core as NT Workstation
 - ❑ Security added
 - ❑ Multi user capability added
 - ❑ RAID support included





NOS Features (cont.)

- Windows 2000 Server
 - ❑ Same technology as 2000 workstation
 - ❑ Active Directory (AD)
 - Central database of server
 - Stores information about network components
 - Provides authentication and authorization of users
 - Simplifies network management
 - ❑ Distributed programs supported
 - Use of multiple networked computers
- Available as three products
 - ❑ Server Standard Edition
 - Network server for average business
 - SMP¹ support for 2 processors
 - ❑ Advanced Server Edition
 - More powerful, requires more RAM support
 - Print server clustering provides alternative print server if one fails
 - SMP support for up to 4 processor
 - ❑ Data Center Edition
 - Most powerful, database server for large-scale applications
 - SMP support for up to 32 processors

¹symmetric multiprocessing



NOS Features (cont.)

➤ Windows 2003 Server

- ❑ Designed to compete with UNIX
- ❑ XP like interface
- ❑ Better support for XP computers
- ❑ MS .NET framework supported
 - A software framework installed in Windows
 - Helps in creating mobile, desktop, and web applications for Windows PCs
- ❑ Distributed programs are supported

➤ Available as two products

- ❑ Server Standard Edition
 - Network server for average business
 - SMP support for up to 2 processors
- ❑ Data Center Edition
 - Most powerful, database server for large-scale applications
 - SMP support for up to 32 processors



NOS Features (cont.)

- UNIX for servers
 - ❑ Oldest NOS in widespread use
 - ❑ Stable secure and fast
 - ❑ Main OS for Internet and Web hosting
 - ❑ Large organizations depend on UNIX



NOS Features (cont.)

- Linux for servers
 - ❑ Popular in small businesses
 - ❑ Stable, fast and inexpensive
 - ❑ Linux's popularity is growing



Embedded Operating Systems

- Devices have EOS built in
- Cell phones, PDAs, medical equipment
- Stable and fast



Embedded Operating Systems (cont.)

- Windows XP embedded
 - ❑ Based on Windows XP
 - ❑ Customized for each device



Source: https://en.wikipedia.org/wiki/Windows_XP_editions



Embedded Operating Systems (cont.)

- Windows CE
 - ❑ Not based on a desktop OS
 - RTOS
 - ❑ Customized for each device
 - PDA and cell phones
 - ❑ Microsoft Automotive OS for cars
 - ❑ CE supports
 - Wireless communication
 - Multimedia
 - Browsing
 - MS Office and Outlook



Embedded Operating Systems (cont.)

➤ Palm OS

- ❑ Standard on Palm PDA
- ❑ First PDA OS for consumers
- ❑ Can be found on cell phones





Embedded Operating Systems (cont.)

➤ Pocket PC

- ❑ Developed by MS to compete with Palm
- ❑ Not customizable
- ❑ Interacts securely in business based communications
- ❑ Can control PCs through wireless connection
 - Administrators can control servers



Embedded Operating Systems (cont.)

➤ Symbian

- ❑ Found in smart cell phones
 - Nokia and Sony Ericsson
- ❑ Games, Instant Messaging, Internet
- ❑ Full color display