

# Operating Systems: Introduction CS400

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# Introduction

- What is an operating system?
- Where would I find them?
- What do they do?
- What happens if they do not work?

# What is an OS?

- A layer of software that manages a computer's resources (software and hardware), as well as the interactions of the user.
- A management system for different programs running at the same time, allowing access the computer's central processing unit (CPU), memory, storage, and other resources in a controlled way. The operating system coordinates all access to resources to avoid system locks
- In short: they run your computer, smart phone, mobile device, ipad, chip set, etc ...

# What is an OS?

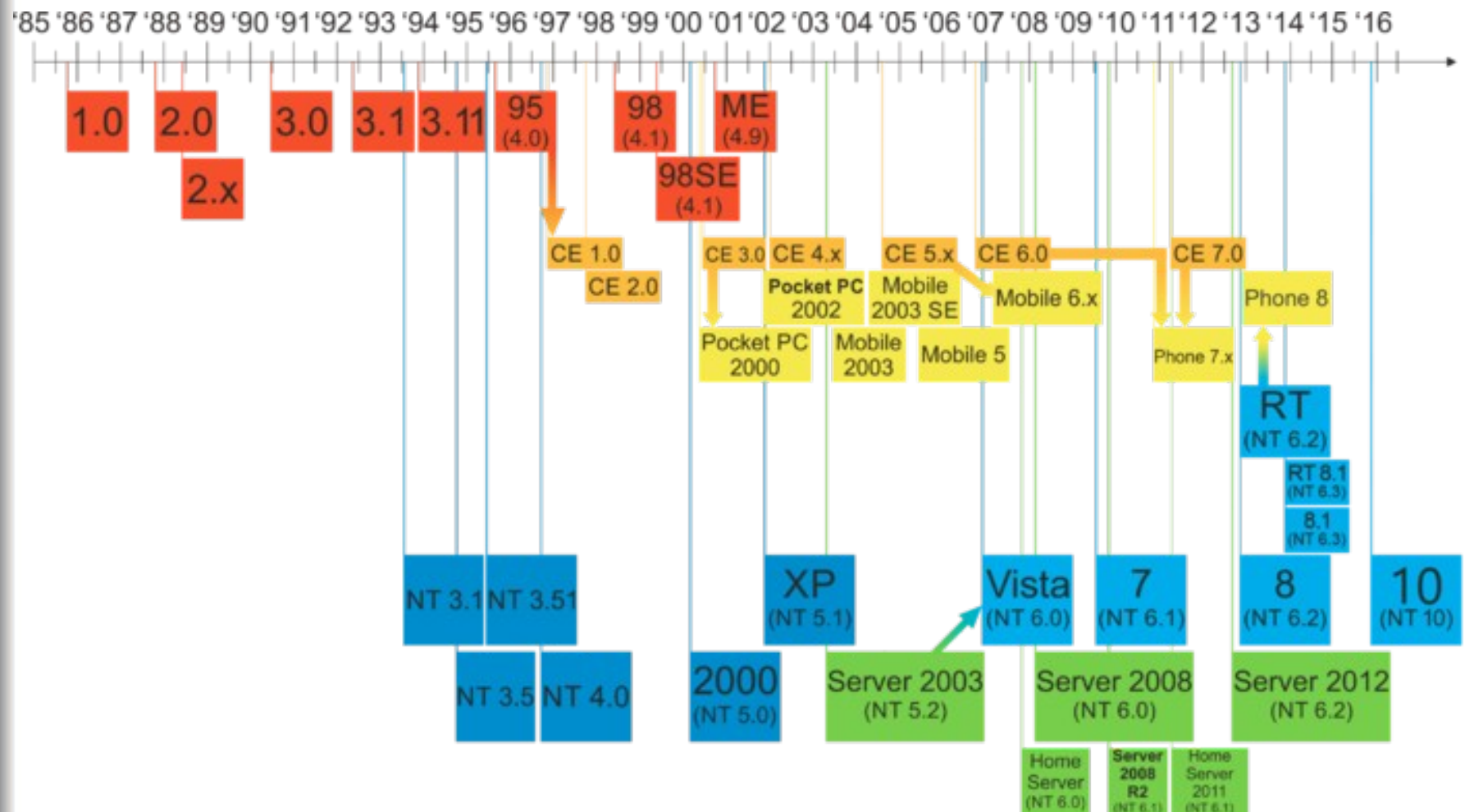
- The most important software on a device.
- Allows all software, processes and resources to run together
- Software, memory and hardware to communicate
- *Abstraction*: users control the machine without using direct machine language (more on this later!)

# Major Types of OS's?

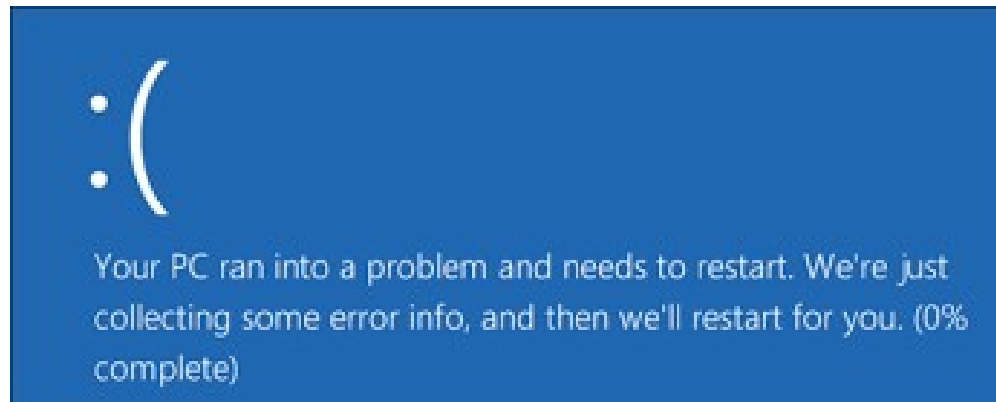
- Three most common operating systems for personal computers are Microsoft Windows, macOS, and Linux.
- Modern operating systems use a graphical user interfaces to let you interact visually with software using a combination of graphics and text.



# MS Windows



# MS Windows Blue Screens



A problem has been detected and Windows has been shut down to prevent damage to your computer.

The problem seems to be caused by the following file: kbdhid.sys

MANUALLY\_INITIATED\_CRASH

If this is the first time you've seen this stop error screen, restart your computer. If this screen appears again, follow these steps:

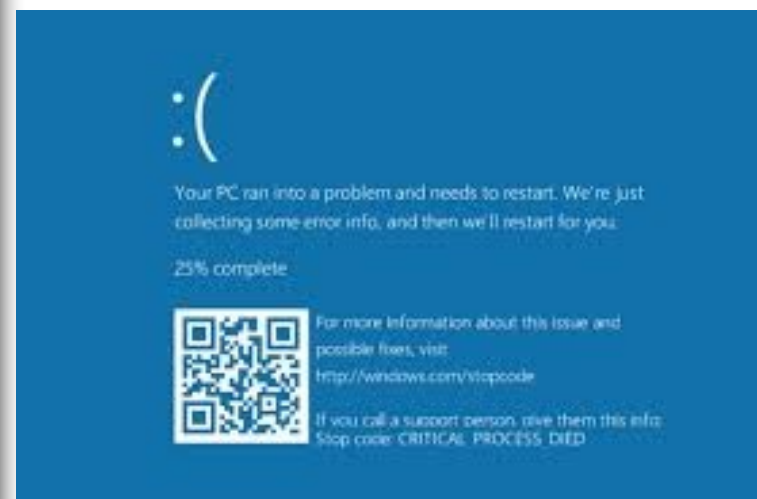
Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any Windows updates you might need.

If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use safe mode to remove or disable components, restart your computer, press F8 to select Advanced Startup Options, and then select Safe Mode.

Technical Information:

\*\*\* STOP: 0x000000e2 (0x00000000, 0x00000000, 0x00000000, 0x00000000)

\*\*\* kbdhid.sys - Address 0x94efd1aa base at 0x94efb000 DateStamp 0x4a5bc705



See all "blue screen of death" of MS Windows (video):  
<https://www.youtube.com/watch?v=Q9B8XYKotDk>



# Linux and Some Varieties



Budgie



Mandriva  
Linux



Sabayon  
Linux



Bodhi Linux



BackBox



android



Ubuntu



Arch Linux



Fedora



Deepin



Ubuntu MATE



SUSE Linux



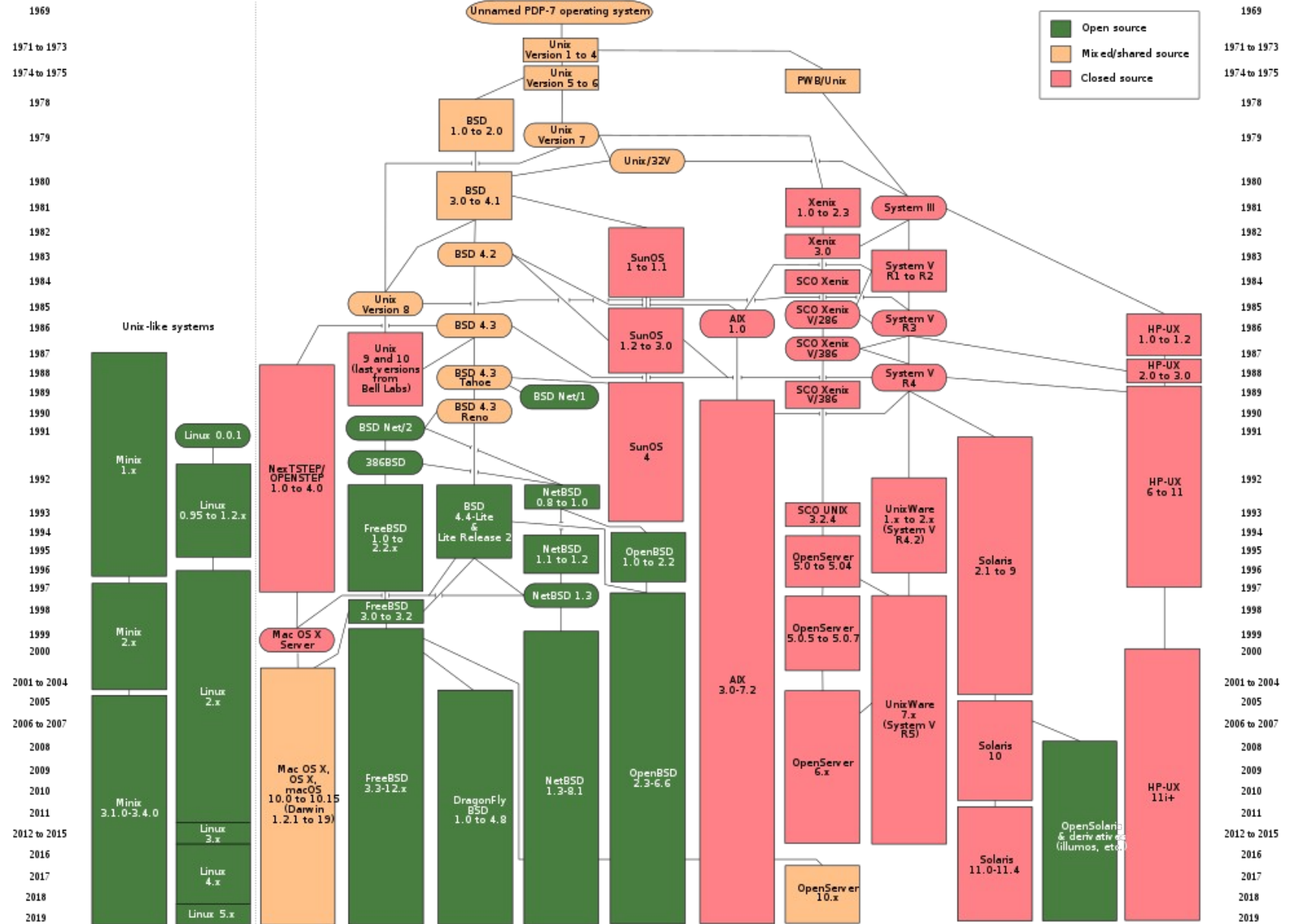
Kubuntu



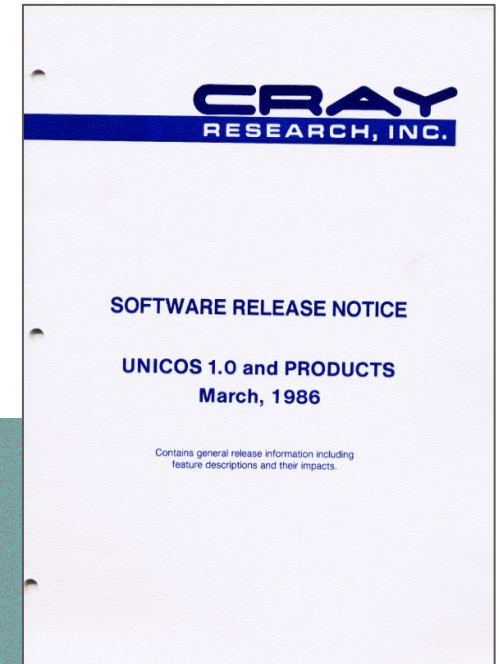
Mageia



# Unix

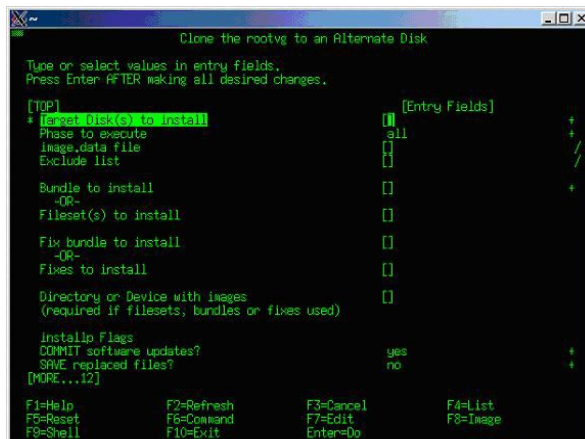


# More Unix Variants

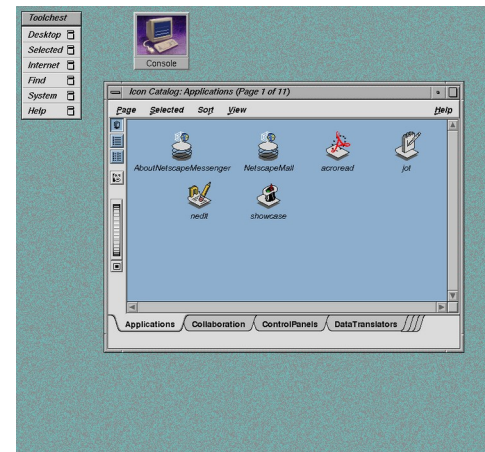


## MachTen from Tenon Intersystems

Bringing the Power of UNIX to Your Desktop



AIX



Irix

UNICOS



# MacOS



According to [StatCounter Global Stats](#), MacOS users account for less than 10% of global operating systems. This is compared to the percentage of Windows users, 80%.

# Other Types of OS's?

- Variants of Linux, Unix, and lesser-known ones.
- Early development OSs
- Specific application types of OSs
- Mobile devices, specific hardware controllers, etc.



# Ms DOS (1980's – 1990's)

- MS Disk Operating System (Before Windows)
- Single tasking (not multi-tasking)



```

C:\WINDOWS\system32\cmd.exe
10/04/2007 04:51 PM <DIR> Start Menu
01/27/2003 03:15 PM <DIR> Templates
02/07/2003 02:35 PM <DIR> WINDOWS
          5 File(s)      238,543 bytes
          19 Dir(s)    47,378,472,960 bytes free

C:\Documents and Settings\kheintz>cd ..
C:\Documents and Settings>cd ..
C:\>dir
Volume in drive C is media 02
Volume Serial Number is BC2E-0ED8

Directory of C:\

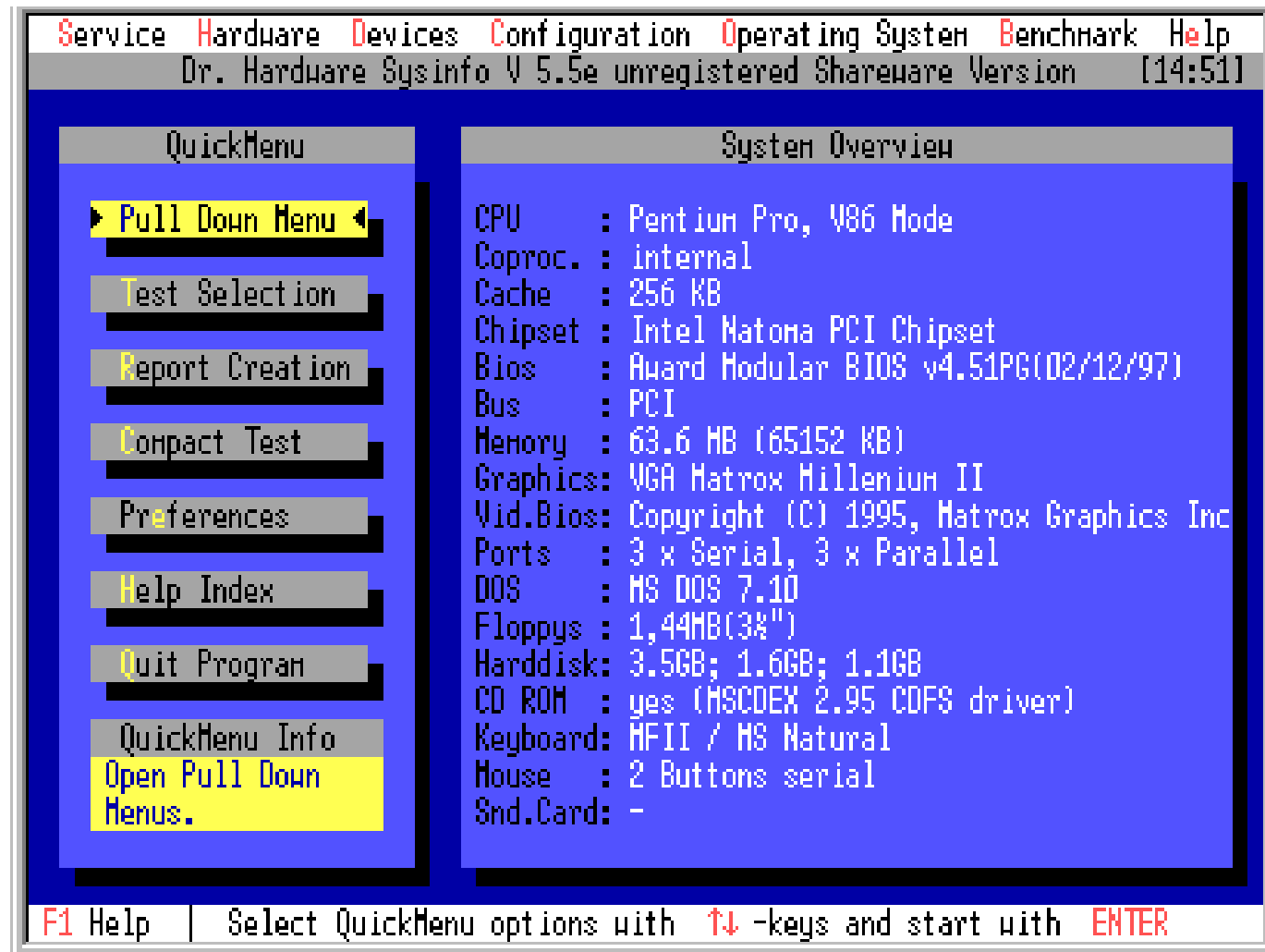
06/10/2004 03:59 PM                0 0000_
09/15/2003 10:01 AM             90 AUTOEXEC.BAT
02/07/2003 12:33 PM              2 autoexec.ixl
10/21/2008 01:18 PM              <DIR> Batch_Upload
01/27/2003 03:19 PM              0 CONFIG.SYS
06/13/2005 02:58 PM            3,197 DEBUG.TXT
02/28/2005 02:47 PM              <DIR> dell
01/30/2009 07:12 PM              <DIR> divx
10/13/2008 03:26 PM              <DIR> Documents and Settings
02/28/2005 02:48 PM              <DIR> drivtmp
04/20/2009 01:52 PM              <DIR> ev97dos
02/11/2009 12:14 PM            330,347 fwlog.txt
02/10/2009 05:27 PM          4,194,402 fwlog.txt.old
05/30/2008 03:58 PM              <DIR> KPCMS
03/09/2004 11:12 AM              <DIR> Microtek
04/16/2009 05:59 PM              <DIR> My Downloads
01/27/2003 05:19 PM              <DIR> My Music
10/24/2005 01:42 PM              <DIR> NPS
11/05/2008 04:43 PM              <DIR> prntdrv
04/16/2009 06:10 PM              <DIR> Program Files
12/09/2003 06:27 PM            56,710 service.txt
11/09/2005 11:33 AM              <DIR> spoolerlogs
02/20/2008 10:45 AM              <DIR> Temp
09/15/2003 10:01 AM              0 Tempfile.txt
04/16/2009 06:15 PM              <DIR> WINDOWS
11/06/2003 02:17 PM              <DIR> WUtemp
          9 File(s)      4,584,748 bytes
         17 Dir(s)    47,378,472,960 bytes free

C:\>_
  
```

See all versions of MSDOS (video):  
<https://www.youtube.com/watch?v=5cS-PluyEhU>

# Other DOS's?

- Digital Research Dos



# IBM OS/2 Warp (1990's)

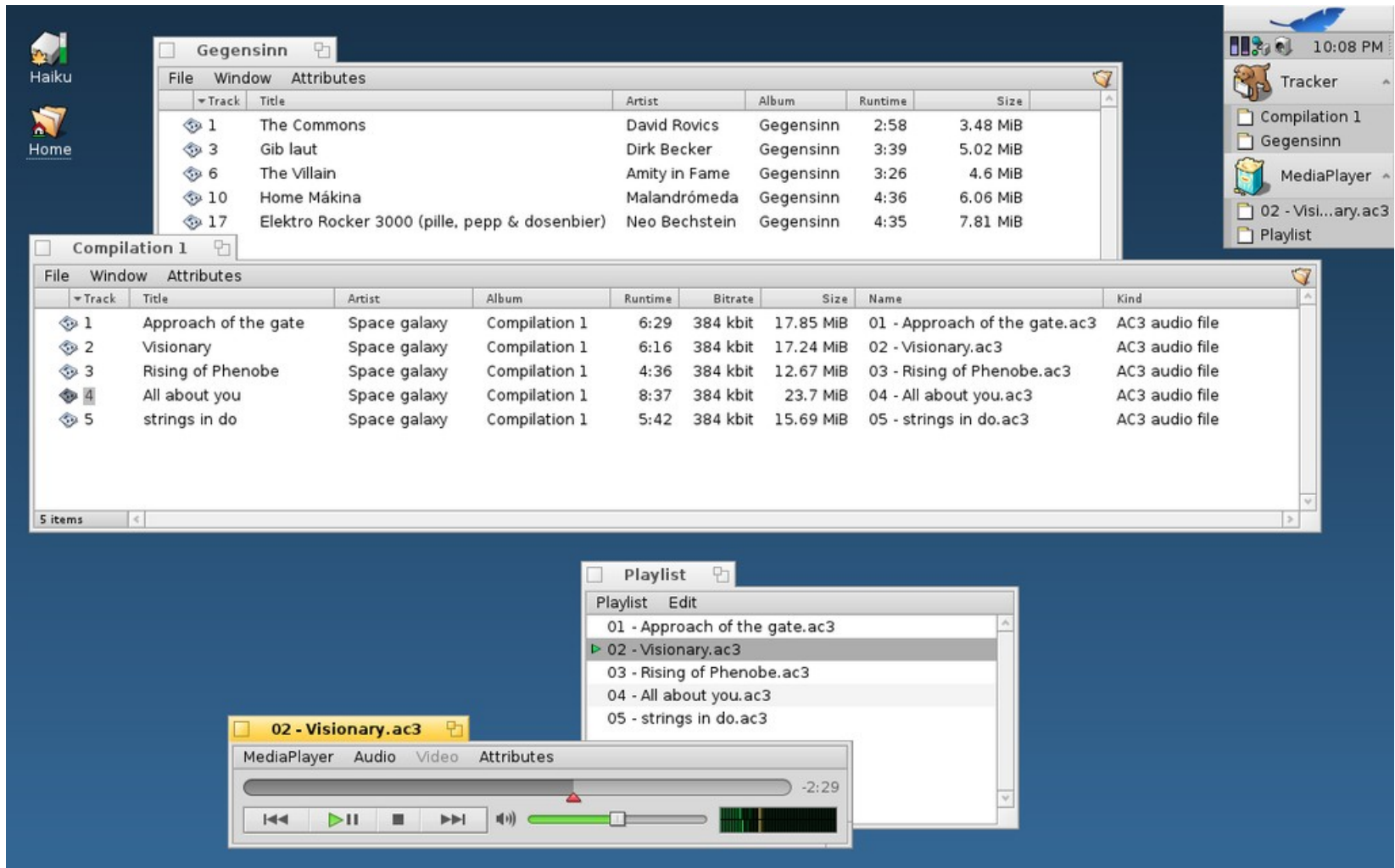




# BeOS (1990's)

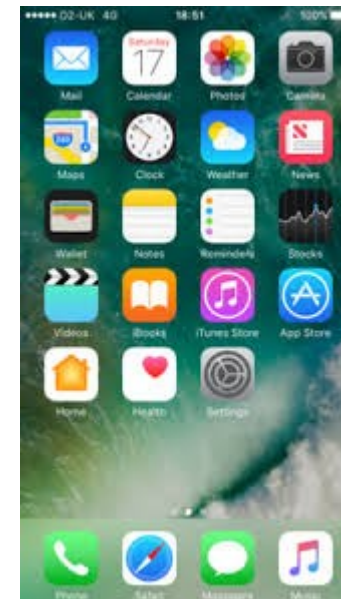
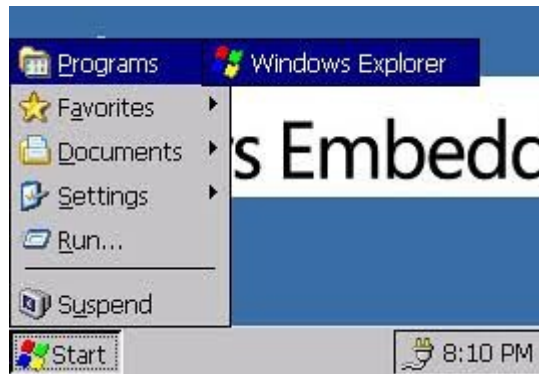


# Haiku (compatible with BeOS) 2001 - present



Learn more:  
<https://www.haiku-os.org/>

# Phones, Mobile devices



All devices  
need some  
kind of  
OS to  
function

# Consider this...

## Group Discussion

- Go online to find a small software that is an OS, or fulfills a role as one. Discuss as a group. You could even choose one from these slides.
  - What are the main differences between this OS and other popular OS's? (i.e., MacOS, Windows, Linux)
  - Why was your OS developed?
  - What does the media report about the OS?
  - What sorts of functions does this OS provide?



**THINK**

Please write down your discussion points to help you introduce your OS to the class.