Project Description: SeeGOL

(Shoyler's Extremely Experimental Graphical Operating Library)

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The Premise

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History

- IBM PCjr - 1984
  - IBM’s first attempt at the home computing market
- 16-bit Intel 8088 processor
  - Modified 8086 with an 8-bit bus, 64kb-128kb RAM
  - 5¼ and 3½in floppy drive variants
- Major commercial flop
  - Could run stand alone programs and/or DOS

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In an alternative universe...

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The Future Sucks

- No modern C compiler can target the 8086
  - Some experimental compilers exist but are missing major features
- PCjr problems with floppies
  - Most models only have one 5¼in floppy drive
  - 3½in drives only read 768kb floppy format
    - Rare, 1.44mb are far more common

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A monument to compromise

16-bit 8086

32-bit i386+
(with 16-bit Real Mode)

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Project Plan

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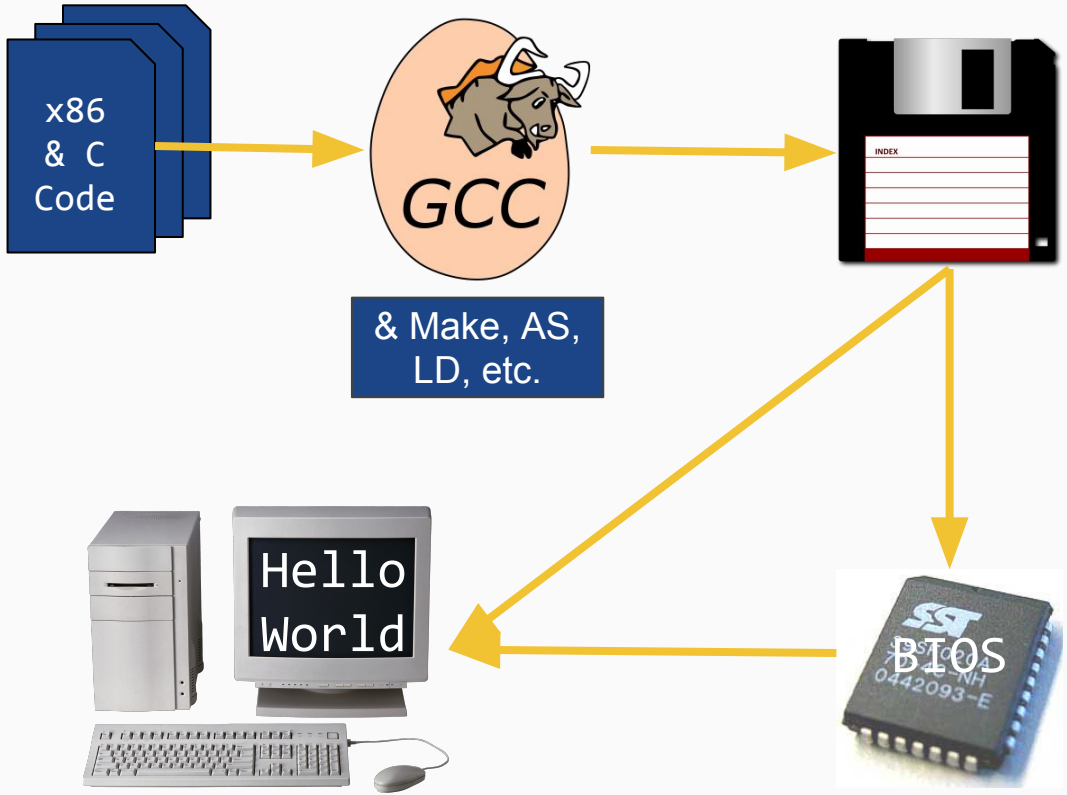
Stage 0:
The Bootloader

- Boot the OS!
  - Off of a floppy
- Build the build system
- x86 assembly loads code onto the computer and calls code written in C

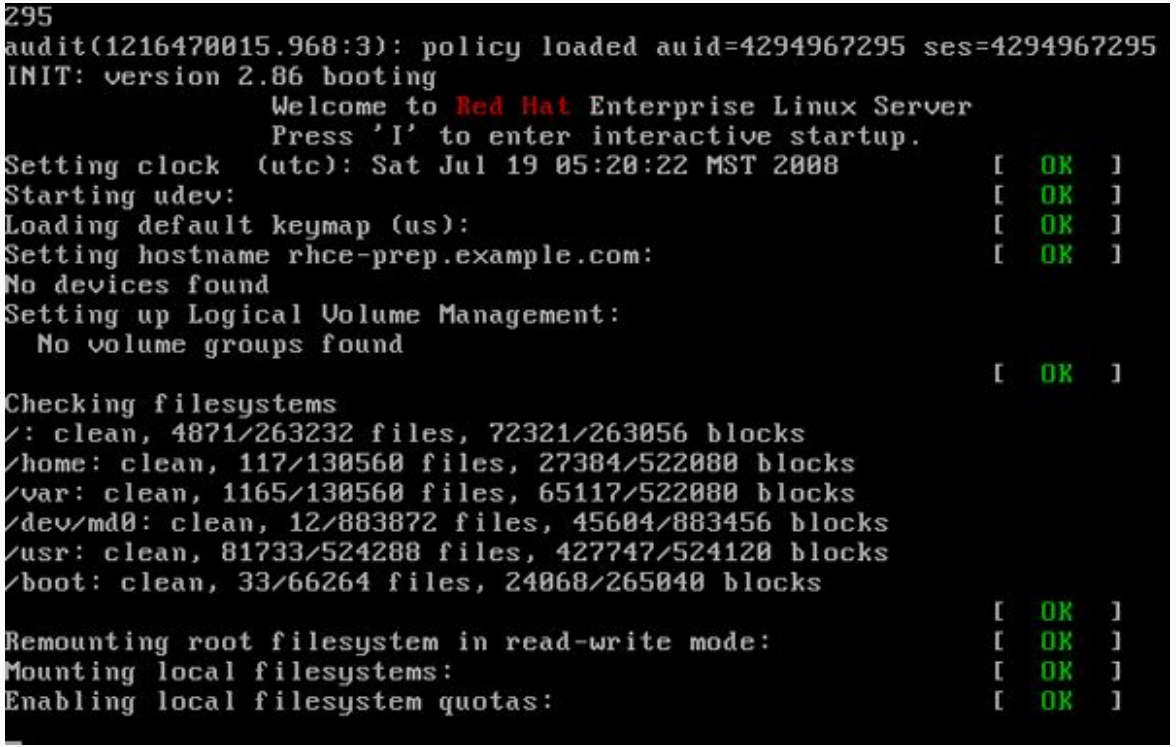
Development Toolchain and Booting



Stage 1: Debugging Tools

- Kernel-level input functions and print debugging
  - *KIO* library
- Has the ability to log text while in graphics mode

Linux System Start-up Logs



Stage 2: Graphics Mode

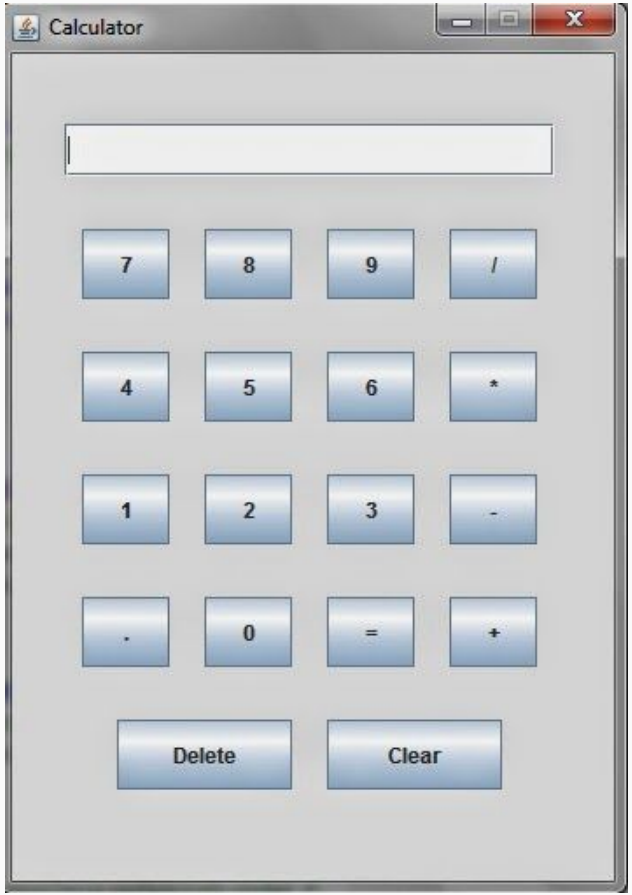
- Basic faculties to draw colored pixels to the screen
- In other words, “write the VGA driver”

VGA13 Mode Demo on Bobby Senior OS

Stage 3: Graphics Library

- Use the VGA driver to provide user-level GUI creation tools
- Analogous to *Swing* and *JavaFX* packages in Java

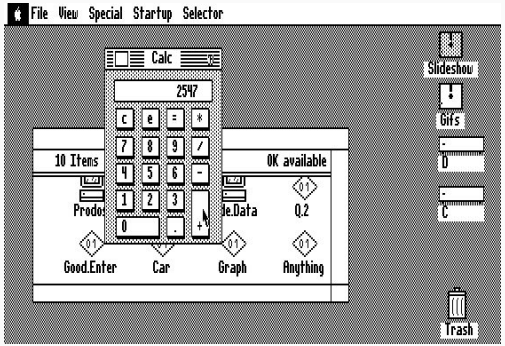
Example of a Java Swing Program

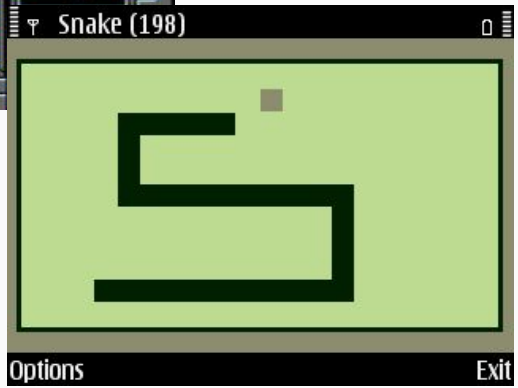


Stage 4+: Demo Programs & Advanced Features

- Proves the concept
- Software suite to prove that SeeGOL provides adequate features in the library

A Few Demo Program Ideas





Sources

[1] Image content comes from freely available online resources

[2] Diagrams and Code Snippets by Schuyler Martin

[3] HSC Logo created by Kailey Martin

[4] List of resources that were deemed helpful while making this project:
https://github.com/schuylermartin45/seegol/blob/master/docs/links.txt

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Special Thanks

[1] Prof. Warren Carithers - Advisor
Warren, taught me almost everything I know about Systems Programming and Computer Graphics. Without him, none of this would be possible.

[2] Prof. Sean Strout - Mentor
Sean is a close friend of mine and initially sparked a lot of my interest in becoming a C wizard.

[3] Prof. Thomas Kinsman - Mentor
Thomas has taught me how to think creatively with visual problems

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Questions?

Project available at https://github.com/schuylermartin45/seegol

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