



## Milestone 3: SeeGOL

(Shoyler's Extremely Experimental Graphical Operating Library)

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Computer Science MS Project, CSCI-788-02

# The Premise

(Recap)

# In an alternative universe...



# A monument to compromise



16-bit 8086



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

# Project So Far

## Stage 3: Graphics Library

- Significant progress has been made
- GL and Pane packages provide user-level graphics control
  - Driver-independent
- User has limited access to the hardware
  - + User has an easier time producing graphical entities
  - - User doesn't have as much control

# Font Rendering

```
Machine  View
ABCDEF GHIJKLMNOPQRSTUVWXYZ 0123456789 .

NEWLINE TEST
NEWLINE TEST
NEWLINE TEST

WORD WRAP WORD WORD WRAP WORD WRAP WORD
WRAP WORD WRAP WORD WRAP WORD WORD WRAP
WORD WRAP WORD WRAP WORD WRAP

|0b101010| 0x2A| left pad of 6 both.

      BIN 0b101010  HEX 0x2A WORDS
      WORDS WORDS NEWLINE
      WORDS WORDS
```

# Panes





# Panes

```
Machine  View
This is a test of the header bit at th
e top of the slide
The quick brown fox
```

# Panes



Machine View

## About

SeeGOL was developed by Schuyler Martin as his capstone project. He has been studying CS at RIT as a BS/MS student. During that time, he focused his work in systems programming, CG, and CV. SeeGOL is evidence of the skills he has learned in that time.

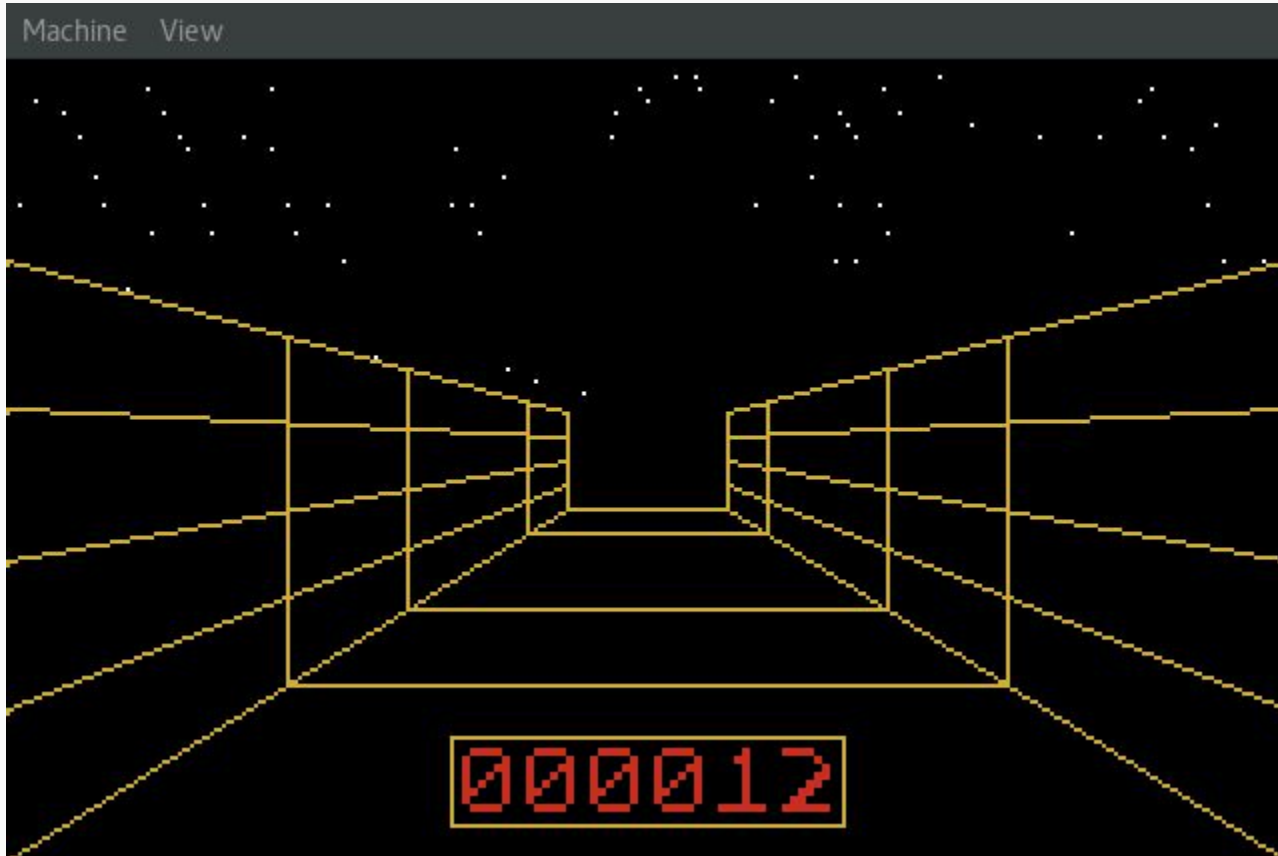
- Schuyler, 2017



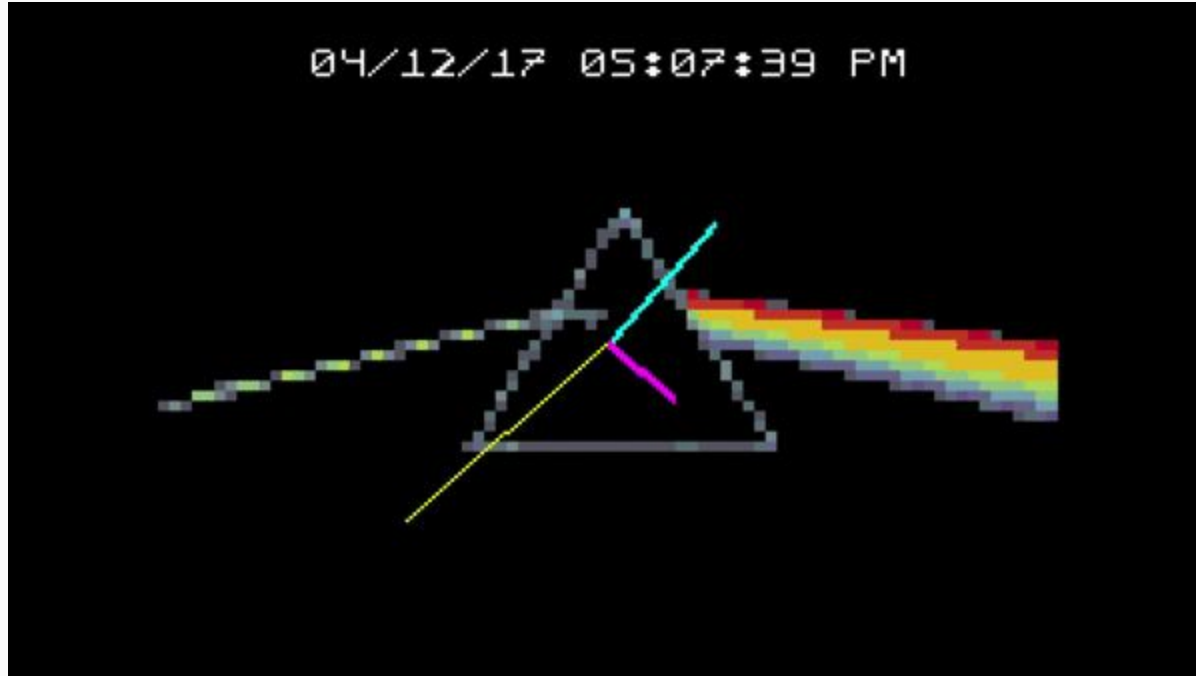
# Panes



# Procedurally Generated Line Drawing Example



# Clock Program



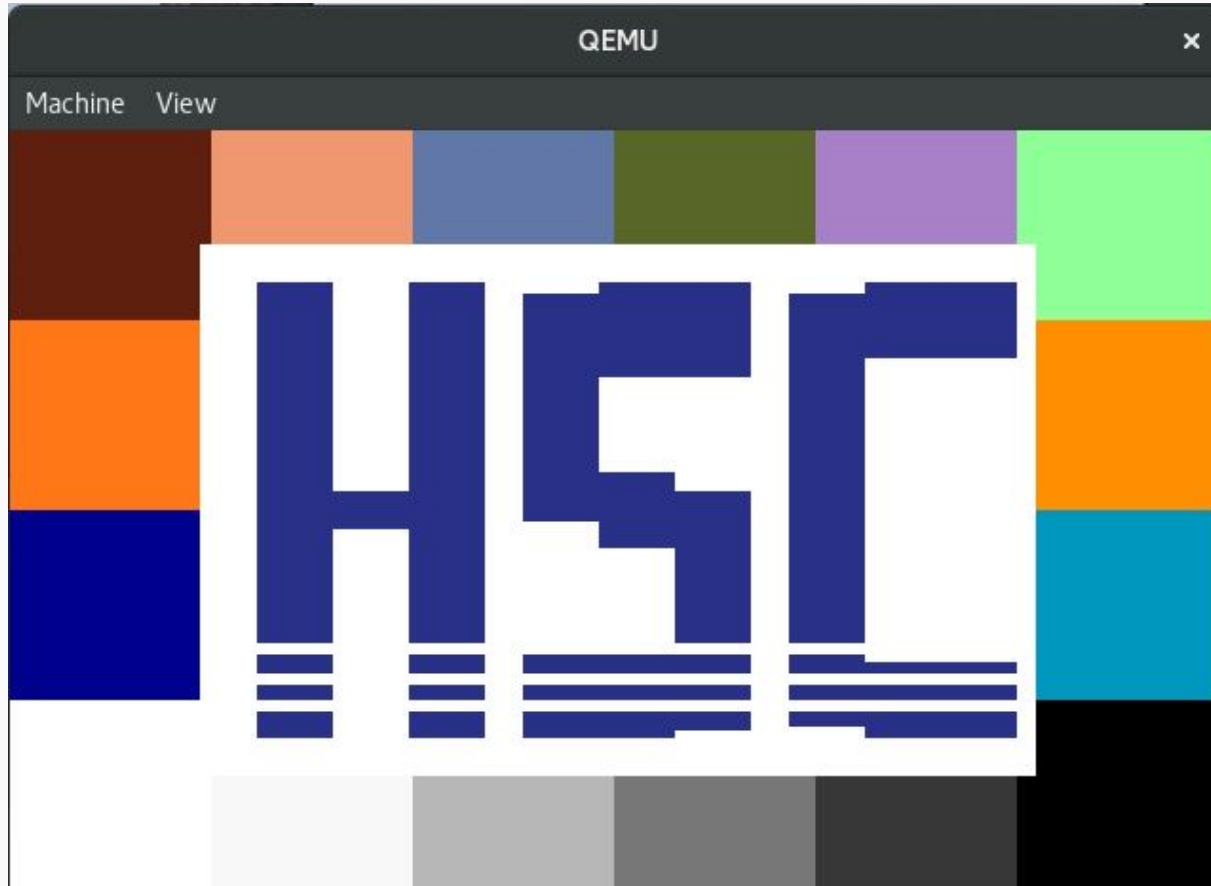
# Evolution of a Test Pattern

# Original Test Image, Drawn with Rectangles

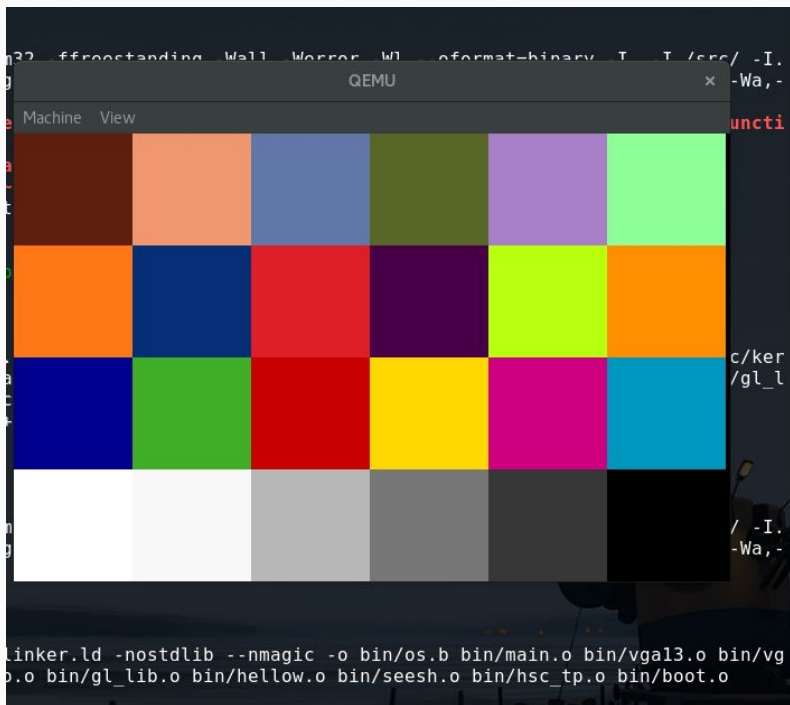




# Adding Programmable VGA 13 Color Palette



# Macbeth Color Chart Comparison



www.Rags-Int-Inc.com

<b>94.28.13</b> 11° 86% 37% 01 Dark Skin	<b>241.148.108</b> 18° 55% 95% 02 Light Skin	<b>97.119.171</b> 222° 43% 67% 03 Blue Sky	<b>90.103.39</b> 72° 62% 40% 04 Foliage	<b>164.131.196</b> 270° 33% 77% 05 Blue Flower	<b>140.253.153</b> 127° 46% 99% 06 Bluish Green
<b>255.116.21</b> 24° 92% 100% 07 Orange	<b>7.47.122</b> 219° 94% 48% 08 Purplish Blue	<b>222.29.42</b> 356° 87% 87% 09 Moderate Red	<b>69.0.68</b> 301° 100% 27% 10 Purple	<b>187.255.19</b> 77° 93% 100% 11 Yellow Green	<b>255.142.0</b> 33° 100% 100% 12 Orange Yellow
<b>0.0.142</b> 240° 100% 56% 13 Blue	<b>64.173.38</b> 108° 78% 68% 14 Green	<b>203.0.0</b> 0° 100% 80% 15 Red	<b>255.217.0</b> 51° 100% 100% 16 Yellow	<b>207.3.124</b> 324° 99% 81% 17 Magenta	<b>0.148.189</b> 193° 100% 74% 18 Cyan
<b>255.255.255</b> 0° 0% 100% 19 White	<b>249.249.249</b> 0° 0% 98% 20 Neutral 8	<b>180.180.180</b> 0° 0% 71% 21 Neutral 6.5	<b>117.117.117</b> 0° 0% 46% 22 Neutral 5	<b>53.53.53</b> 0° 0% 21% 23 Neutral 3.5	<b>0.0.0</b> 0° 0% 0% 24 Black

Numeric color values from Macbeth reference chart      Adobe RGB 1998

# Adding Text Rendering



# Adding Image Rendering



# 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>

# 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

# Questions?

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