Interactive Computing Application Suite

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Project Description

Overview:

Create one or more interactive GUI applications with Python to aid in the teaching and learning of certain computer science concepts

Primary Application:

Logic design simulation

- Build components from logic gates
- Simulate I/O runtime

Secondary Applications:

- Turing Machine creation & simulation
- Quantum logic simulation

User Point of View

Intuitive Design

Although information about various UI functions will be included in the applications. The goal is to design the UI so that a user will be able to intuitively use the software with minimal to no prior instruction.

Pictures and buttons should be visually descriptive, functionally should be obvious, and ideally users should never be surprised or frustrated by software interaction.

Simple to Use

All use cases for the application should be doable in the smallest possible number of steps.

Simple projects should be simple to create. Difficult projects may take a user longer but should not be any more difficult to build.

To attain this standard of usability, user testing will be necessary throughout development.

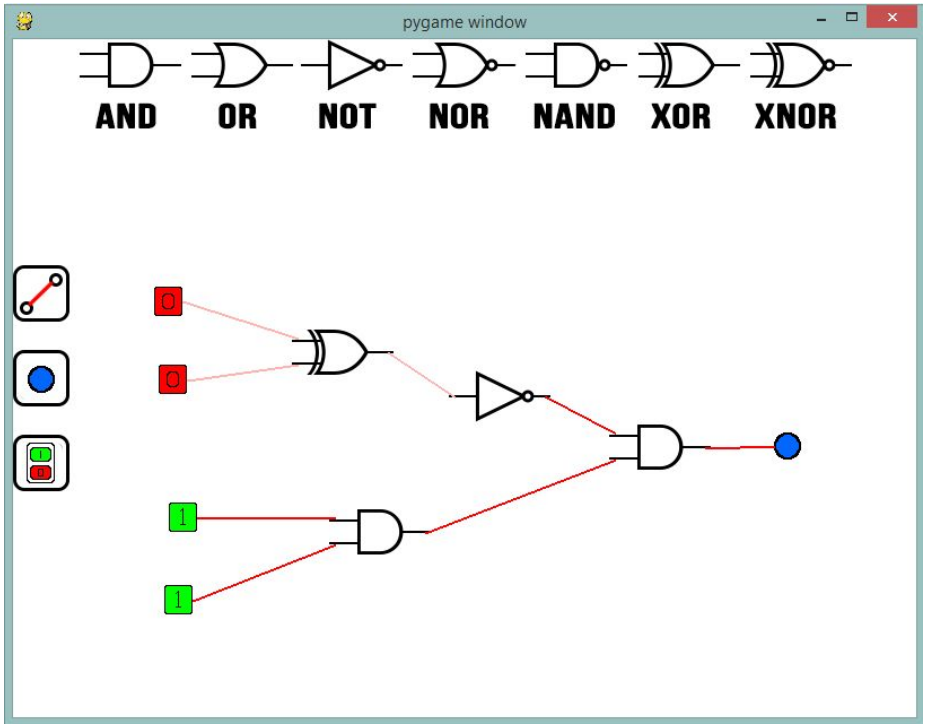
Operations and Technologies

PyGame Graphics Library

“PyGame is a Free and Open Source python programming language library for making multimedia applications like games.”

Python is not generally thought of as a language used to build applications, but the easy syntax & functionality makes coding easier, and PyGame has all the graphical tools I need. So it will work well for my project.

All software operation will be clientside



Live Logic Sim Demo

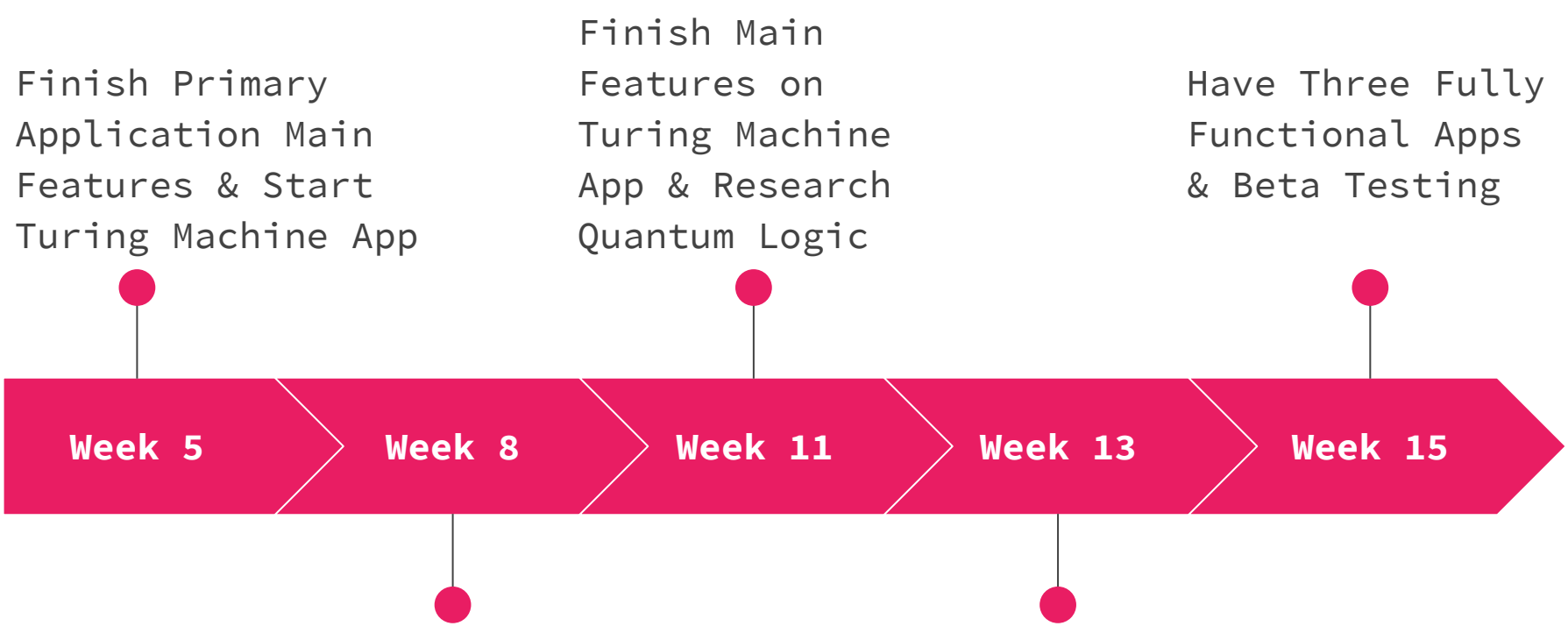
What's Left to do on the Primary Application

Features to Add

- Truth table generator
- Timing diagram generator
- Save/Load
- Create new components
- Add help menu
- Export as image/print

Bugs

- Right clicking while drawing a line may delete other components
- Dragging from buttons on the left is unintuitive


Finish Primary Application Main Features & Start Turing Machine App
Finish Main Features on Turing Machine App & Research Quantum Logic
Have Three Fully Functional Apps & Beta Testing
Week 5
Week 8
Week 11
Week 13
Week 15
Finish Major Functionality for Turing Machine App
Have some functionality for Quantum Logic App, or a different new App

Questions?