PyCut

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Introduction

What is PyCut?

- Targets 4th grade math curriculum to teach logical thinking through puzzles
  - Inspiration from *Logical Journey of the Zoombinis* (1996)
- Take the responsibility of a pizza shop owner: you must make pizzas to meet the customer's order
  - However, order is not clear
  - Must determine what ingredients the customer wants with as little detail as possible

Curriculum

- Operations and Algebraic Thinking
  - Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. (Adding more topping, less topping)
- Measurement and Data
  - Represent and interpret data.

About the project

How does the code work?

- Written in Python
- Used Sugar Quickstart to generate Sugar Activity framework
- Used Pygame as the basic game engine (especially for handling graphics / images) and tying game together
- Framework for game engine was uniquely created for PyCut

Best Pieces

- Graphics for the game were a strong point
  - Pygame assisted with handling the different art assets made for the project
- Engagement of the game
  - When given a playtest of the game, elementary school-aged kids were interested in the game and playing it through
  - Overall satisfying and awesome to see it played and liked
- Structure of the project
  - Project is organized and compartmentalized, and code is clean

Worst Pieces

- Documentation in the code
  - Docstrings in the code are somewhat sparse, more documentation would be nice to have for future maintainers
- Coding style
  - Refactoring to meet the the PEP-8 style guidelines would assist in readability
    - Something for a future class?
  - https://github.com/FOSSRIT/PyCut/issues/33

Faults and successes

Faults

- In the beginning, there were some communication issues
  - Would have been better to start using GitHub issues for tasks earlier on
  - Were resolved as semester continued and we became more organized
- Better optimization for the actual OLPC XO laptop
  - Runs well in Sugar environment on recent hardware, but pushes XO to the limit
  - Could be more efficient with some tasks, specifically with image rendering

Successes

- Creating, using, and animating art assets in the game was greatly helped by Pygame
- Successfully published a version of the game to the official Sugar Labs Activities Hub
- Project publicly listed in the Sugar Labs wiki
- Team communication towards the end, setting and achieving milestones, as well as evenly distributing workload were some of our team's strengths

Goals for the future

Future development by others

- Work to make PyCut more compliant with Common Core 4th grade Math Curriculum
- Cutting the pizza into halves/quarters, and putting ingredients only on portions
- Establishing a system where customers have a budget, and the price of toppings helps hint at what they want
- Further optimizations to improve our activity's performance on the XO hardware

Questions?
Comments?
Concerns?