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Python game design for children: Games and programming resources

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Python Game Design for Children: Games and Programming Resources

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ABSTRACT

This project is focused on helping middle and high school students learn how to program and think computationally. We are creating a set of resources that will be used by the students to understand important programming, Python, and PyGames concepts. These resources will be used for teaching two one-week summer camps through Clemson University's Pre-Collegiate programs in June and July 2014.

This interactive poster will showcase the initial games and resources created for this project.

Research & Design Objectives

Students focus on CS concepts, python, and PyGames at the beginner intermediate, and advanced levels by:

- designing games & resources to teach introductory computing concepts & Computational Thinking in a fun and creative way
- learning to program using python
- learning to design programming games
- designing curricula - videos & tutorials
- working with middle and high school students
- testing games and curricula tutorials
- iteratively designing and test games

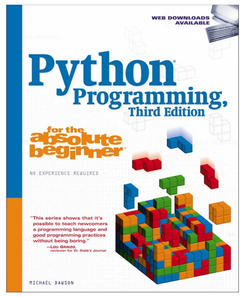
Description of Summer Camp

This program will introduce rising 7th -12th grade students to physical computing through exploring hardware and software level design and programming. Students will have the opportunity to design and build a 2D video game and game controller. In particular, students will learn Arduino and Game programming and prototype design in a hands-on interactive format.

This camp has been offered at Georgia Tech and Clemson University for two summers using a drag and drop visual programming language to help students create games. The instructors have found that the kids do not find the visual programming language to be challenging enough. Thus, we are designing and creating resources and our own games as a way to learn the language and provide examples for the summer camp students to build upon.

GOAL: Develop curricula and video tutorials to teach Python Game Programming & Game Development for Middle and High School Programs.

Python



Python is a powerful yet easy-to-use programming language developed by Guido van Rossum, first released in 1991. Creating Python programs is straightforward that it's been called "programming at the speed of thought." Python programs are shorter and take less time to create than programs in many other popular languages.

Beginner Sample

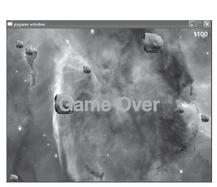
In the game of hangman, the computer picks a secret word and the player has to try to guess it, one letter at a time. Each time the player makes an incorrect guess, the computer shows a new image of a figure being hanged. If the player doesn't guess the word in time, the stick figure is a goner.

Intermediate Sample

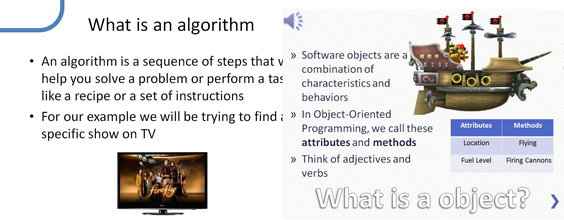
The Pizza Panic game, involves a crazy chef, a deep-dish pan, and a bunch of flying pizzas. Using the mouse, the player controls a pan that he or she maneuvers to catch the falling pizzas. The player's score increases with every pizza caught, but, once a pie hits the ground, the game is over.

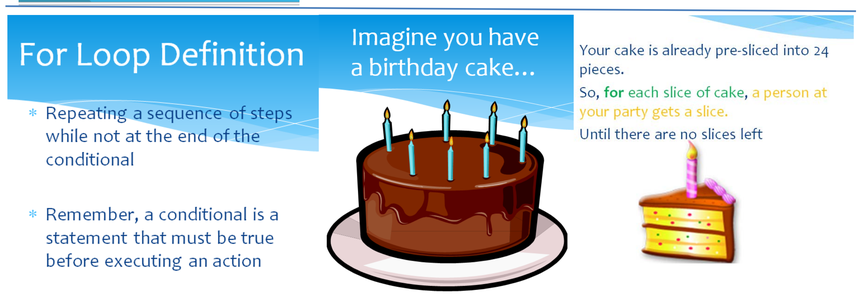
Advanced Sample

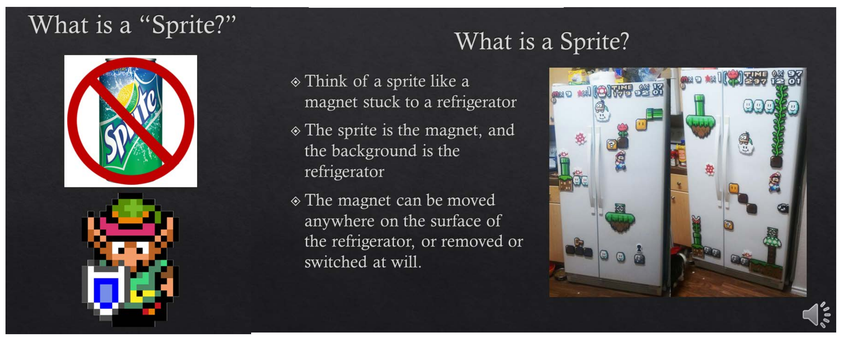
In Astrocrash, the player controls a ship in a moving field of deadly asteroids. The ship can rotate and thrust forward—most importantly, though, it can fire missiles at the asteroids to destroy them.. The player's score increases with every asteroid he or she destroys, but once the player's ship collides with a floating space rock, the game is over.



Resources







Game Development in Progress

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