Python game design for children: Games and programming resources

J. Calzadilla
C. Harmon
K. Haynie
L. Housie
R. Flair

See next page for additional authors

Follow this and additional works at: https://tigerprints.clemson.edu/foci

Recommended Citation
https://tigerprints.clemson.edu/foci/67

This Article is brought to you for free and open access by the Research and Innovation Month at TigerPrints. It has been accepted for inclusion in Focus on Creative Inquiry by an authorized administrator of TigerPrints. For more information, please contact kokeefe@clemson.edu.
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.

**ABSTRACT**

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.

**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.

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.

**Description of Summer Camp**

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

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

**Resources**

**What is an algorithm?**
- An algorithm is a sequence of steps that help you solve a problem or perform a task.
- For example, you will be trying to find specific show on TV.

**What is an object in programming?**
- An object is something that corresponds to a real world object that has a set of properties and behaviors.
- In Python, instead of the words properties and behaviors, we use attributes and methods.
- This is the same thing.

**For Loop Definition**
- Repeating a sequence of steps while not at the end of the conditional.
- Remember, a conditional is a statement that must be true before executing an action.

**What is a “Sprite”?”**
- Think of a sprite like a magnet stuck to a refrigerator.
- The sprite is the magnet, and the background is the refrigerator.
- The magnet can be moved anywhere on the surface of the refrigerator, or removed or switched at will.

**Game Development in Progress**

**Acknowledgements**

Dr. Christina Gardner-McCune, Assistant Professor
Darryl McCune, MBA in Entrepreneurship & Innovation Student