Title: Teaching Python in APCS Principles

Short Desc: We will discuss a supplemental curriculum that I created on how to teach students to code an arcade game in Java.

Description:

Many students take APCSA because they want to be able to write their own games. That interest can be a powerful motivator for them to master the essentials of Java necessary for such a project. We will discuss a fun, supplemental curriculum with lecture notes, videos, labs and solutions that teachers can adopt for their class.

The curriculum will walk students through coding an entire game using an object-oriented design. Along the way, they will learn and understand concepts such as:

1) conditionals

2) loops

3) arrays and arraylists of custom objects

4) 2D arrays

5) inheritance and polymorphism

6) basic collision detection and resolution

7) even recursion!

Participants will be able to select specific labs from the curriculum to supplement their classroom instruction.

Learning Outcomes:

1) Participants will be able to analyze a specific lab from the curriculum and develop a lesson plan to incorporate it into their APCSA curriculum.

2) Participants will be able implement code to solve one of the arcade game labs.

3) Participants will be able to select specific labs from the curriculum that can supplement their own classroom instruction.

4) Participants will be able to analyze specific sections of code from the arcade game on a topic and develop three or four strategies to incorporate it in their instruction.

Sesssion:

1) Preview of the arcade game including all of its features. (10 minutes)

2) Overview of the curriculum. (10 minutes)

3) In-depth walkthrough of each of the labs including the learning objectives and goals. (20 minutes)

4) Try to code a lab. Participants will be asked to code a solution to a lab. (20 minutes)

5) Questions and Answers (15 minutes)