Code Kihei Charter: Pathways

Gaming

Description:

➢ Do you love video games and wish you could build your own? Then this is the pathway for you! We will dissect the mechanics of various games and build some of our own simple games. This is a great place to start if you're an aspiring game designer.

Main Topics To Learn:

Lesson Plan Outline:

Part 1: Play a game.

★ Lesson 1: What makes a good game scientifically. Brief history of game design. Suggest Crash Course games videos that would elaborate on games and game philosophy[1]. The art, sound design, etc. of games

★ Lesson 2: Taking apart the code of some games
   ○ Generating a city with Minecraft
     (https://education.minecraft.net/lessons/gen-city/)
   ○ Kano Hack Minecraft
     (https://world.kano.me/projects/category/make-minecraft)
   ○ Play with Pong's code
     (https://www.codecademy.com/en/courses/kano-pong/0/1)
   ○ Take a look at Make Pong with Javascript. We will be doing this later in the course.
     (https://medium.com/@hershybateea/how-to-make-pong-with-javascript-1a6bd6226ea1)

★ Lesson 3: Play a few games (1 puzzle, 1 storytelling, 1 classic. At least one level.) Think about what makes a good game to you. Start brainstorming ideas for your own games. You'll have many opportunities to create games throughout this course. Games to choose from:
   ○ Puzzle/logic
     ■ CodeCombat (https://codecombat.com/)
     ■ Monument Valley[2]
   ○ Storytelling
     ■ Monument Valley
   ○ Classic
     ■ Pong

Part 2: Make a game.

Project 1: Make a game with GameMaker[3] (https://www.yoyogames.com/education)

★ Lesson 1: Intro to drag and drop programming language
★ Lesson 2: Intro to syntax & art
★ Lesson 3: Build game using a tutorial & publish/play it on your computer. Publish to github pages website.
★ Optional Lesson 4: Make your own game with GameMaker.

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[1] For the teacher: Study Crash Course Games to really get a grasp on how to teach this.

[2] Add students to 'Family Account' on Google Play?

[3] Get GameMaker for education. Get an educational license.

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Project 2: Make games with Javascript
- ★ Lesson 1: Intro to Javascript.Learn basics of how Javascript works, Learn some syntax, Receive Syntax Helpsheet
- ★ Lesson 2: Learn basics of game making with Javascript by making a simple game according to a tutorial.
  - ○ Make Pong with Javascript
  - ○ Then make something more complicated...
- ★ Lesson 3: Making your own JS game. Looking at the science, planning out the game, creating the sprites/graphics, coding it all and putting it on your github pages website.

Choose a Project 3: Make a game with Unity OR Make a game with JMonkey
Unity:
- ★ Lesson 1: Get Unity. Introduction to C#, Unity Javascript, or Boo? Learn some syntax and structure. Syntax help sheet
  - ○ Homework: Use Codecademy or some online course to practice syntax for whichever language they chose.
- ★ Lesson 2: Getting started with actually making a game. Game tutorial, get 3D models from Unity. Learn how to export.
- ★ Lesson 3: Make own game. Plan, get 3D models from Unity or build own. Code it all and attach to github pages portfolio as a file or using a plugin or something.

JMonkey:
- ★ Lesson 1: Get JMonkey. Introduction to Java. Learn some syntax and structure. Syntax help sheet
  - ○ Homework: Use Codecademy to practice Java syntax
- ★ Lesson 2: Get started with actually making a game. Game tutorial. Learn how to export.
- ★ Lesson 3: Make own game. Plan, get 3D models or build own. Code it all and attach to github pages portfolio as a file or using a plugin or something.

Programming Reality

Description:
- ➢ Are you a fan of robotics, home automation, or the internet of things? In this pathway, we will learn about how programming is now being connected with physical objects in the real world. We will use our programming skills and electronics kits to control real world objects and make cool stuff.

Main Topics To Learn:
Lesson Plan:

Storytelling

Description
- ➢ Did you know that code is an excellent medium for storytelling? This pathway will show you how use programming to make your narratives come alive in technicolor! For the aspiring writer or storyteller, we will learn unique, beautiful ways to fully immerse your audience (or yourself) in a story. We will also see how we can use code to present information and ideas in a compelling way.

Main Topics To Learn:

Code Kihei Charter: Pathways

Lesson Plan:

Creative Programming

Description

➢ Programming is an inherently creative hobby and an excellent medium for self expression. This pathway is a whirlwind tour of the various ways we can use code to express our creative streak. From programming our own music to painting with code, we will see the many ways that programming is connected with the Arts.

Main Topics To Learn:

Lesson Plan:

Design

Description

➢ If you have an eye for aesthetics, are detail oriented, and become fascinated by the interactions between humans and digital products, this pathway is definitely for you. We will use code to make attractive user interfaces and intuitive user experiences. We will mostly be focusing on web and app design.

Main Topics To Learn:

Lesson Plan:

Entrepreneurship & Product Development

Description

➢ Do you have a brilliant tech idea that you want to get into the hands of consumers? This pathway is specifically tailored for you! Here, we will learn about various ways you can use programming to boost your personal brand and to make your ideas a reality. You will learn about website making, and have a choice to learn how to make other products such as apps. We will specifically focus on how to efficiently and effectively develop products and bring them to your audience.

Main Topics To Learn:

Lesson Plan: