

Computer Science Proposal

Mission

My purpose is to emphasize the ability to code as 1) undaunting and 2) the newest frontier of literacy. This document seeks to serve as a resource for planning a Lv. 0 computer science program which empowers students to become Lv. 0 - Lv. 1 app developers.

Lv. 0: Can implement, modify, and understand existing code snippets and functions to produce an application which augments or answers a real-world job/need.

Lv. 1: Can develop an application which augments or answers a real-world job/need from scratch. For Android, object-oriented programming, existing library and API methods, and Material design are well understood and elegantly implemented.

Course Overview

Over the proposed 6 month period, students will create deployable projects to tackle mastery of topics such as class declarations and subclass inheritance, debugging methods and tools, primitive Java data types (eg. `int`, `double`, `boolean`), data storage and manipulation (eg. `SQLite`, `ArrayList`), and moral/ethical questions about computing and technology (as recommended by the AP Computer Science A exam). A list of recommended resources is provided at the end.

Timeline

Prototype Timeline

Project 0: Hello World App

- Explore: development environment (Netbeans and AndroidStudio).

Project 1: Happy Birthday App

- Explore: Android XML libraries, res folders, `Views`, `ViewGroups`.

Edhesive Timeline (for comparison)

source: https://edhesive.com/courses/apcs_java

Term 1:

- Unit 1: Intro to Java
- Unit 2: Strings and Loops
- Unit 3: Strings and One-Dimensional Arrays

Project 2: User Input App

- Explore: `int`, `double`, `String`, global and local variables, custom methods, Android Buttons, Intents.

Project 3: Unity Platformer Game

- Explore: Unity2D and VisualStudio development environment, `bool`, `if`, `else`, `else if`.

Project 4: Waiter/Waitress App

- Explore: RecyclerView, AsyncTask, Data Storage and Manipulation (SQLite, ArrayList).

Project 5: Weather App

- Explore: Background Tasks, Connecting to the Internet

- Unit 4: Methods

Term 2:

- Unit 5: User-defined Classes
- Unit 6: Advanced Classes
- Unit 7: Algorithms
- Unit 8: Two-Dimensional Arrays
- Unit 9: Exam Prep

Recommended Resources

The following list is curated from the resources I have found helpful in my own computer science journey. Practicality, thoroughness, and removal from academic jargon are the traits I have come to value most.

[Udacity.com](https://udacity.com)

(Android Basics Courses) [Free]

[Bluestacks.com](https://bluestacks.com)

(Android Emulator for deploying apps where an Android phone is not readily available to students) [Free]

2013 Programming with Java I

mooc.fi/en

(University of Helsinki Java course. Invaluable for learning Java basics in a challenging environment) [Free]

Mimo: Learn to Code

(iOS and Android app for an introduction to coding. Java course is a valuable primer that students can complete on their phones) [\$9.99]

Jair Olivares: Once discouraged from continuing his computer science pursuits after using 100+ lines of code to solve a problem that took his college friends only 4, he has come back to CS to show that “anybody can do it” and “if it works; it works” - both lines being some of the best advice given to him by professional coder Fritz Onion and his mother and father.

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