**Requirements**

-have pretest to test out of levels

-save the current state of the game if user leaves

-need a username or email option to login

-password should not be remembered

- need a recovery for password and username

-Email:

           -levels that are completed

-skills that they have mastered

-Some sort of certificate of completion at the end

-Need instructions on how the app works

-some hints

- level of topics:

*Elementary Programming*

*Selections*

*Mathematical Functions, Characters, and Strings*

*Loops*

*Methods*

*Single-Dimensional Arrays*

-\*\*\*\*NO TIME LIMITS\*\*\*\*

- Customer service and feedback

-app is \*\*FREE\*\*

**Basic Information**

* Target audience are **college level novice programmers**
* Gamification used to motivate target audience to practice reading and hand tracing code
* Teach using Java programming language and pseudocode
* Assume users have no prior programming knowledge
* Customize the app for VCU
* For educational purposes
* Provide user documentation on how to use the app
* App is free to download
* Compatible with both phone and tablet users

**Account**

* Email
* Name
* Username
  + Forgot username option that will email the user its username
* Password
  + Has to be at least 6 characters in length
  + Option to recover password
* Have an option to erase data to start fresh
* Optional leaderboard
* Option to delete account

**Email**

* Give information on completed levels, and mastered skills
* Certificate of completion when all levels have been **completed**

**Login**

* Checkbox option to remember the user’s username
* Users can login with either their username or email address
* Resume to last activity

**Security**

* App timeout after inactivity
* Offer user to reset their password through email after incorrectly typing in the password 3 times.

**Programming Concepts** (covered in order)

* Elementary Programming
* Selections
* Mathematical Functions, Characters, and Strings
* Loops
* Methods
* Single-Dimensional Arrays

**Levels**

* Higher levels visible, but locked until previous levels are completed
* Option to test out of a level (will not allow the user to “master” the skill)
* Levels can be repeated for extra practice
* Show how much the user has completed in a section with a **progress bar**

**Lessons/Lectures**

* Give an introduction to the skill to be learned when starting a new level
* Lectures can link to Youtube videos and other useful websites
* Short tutorials given before challenges

**Challenges**

* Variety of types of challenges
  + Fill in the blank
  + Multiple choices (answer choices will be randomized)
  + etc.
* Include hints to help users, but only on **some** challenges
* A score of 80% or more allows the user to master the skill pass the level
* 100% score on all challenges awards a “Perfectionist Medal”
* No time limits
* Cannot be skipped to proceed to next level/challenge unless the user completes the challenge
* Short, pleasant, and fun sessions
* Show answer after a few incorrect tries

**Skills**

* Basic programming skills

1. Debugging
2. Reading code
3. Tracing code
4. Predicting the outcome of a method call
5. etc.

**Quitting/Closing**

* Save current state of the game

**Storage**

* Student information stored on the phone

**Support**

* Customer support
  + Reporting bugs or inaccuracies
  + Frequently asked questions page
* User feedback system for suggestions on improving the app

**Optional Features**

* Login with github, google, facebook, etc.
* Head to head challenge
* Final exam at the end of each level
* Ability to bookmark/favourite lessons
* Night mode
* Lockout option with repeated incorrect entering of username/password