Programming Club Proposal

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Dear Mr. Buckham,

My colleague Sebastian and I would like to discuss the potential for an extra-curricular programming club at Parkland Secondary. We are both very passionate about teaching and feel that high school students should have the opportunity to learn about computer science before attending post secondary. Our plan is to lead a group of students through an online workbook called Learn Python the Hard Way. The reason we have chosen the Python programming language over more standard first languages such as Java or C is because we consider Python to be more intuitive. Our goal is to help students understand some of the fundamental concepts of computer science, but even more so to get them interested and engaged in a new way of problem solving. We would love to talk about logistics and answer any questions you may have. Below we have included a draft of our lesson ideas.

Schedule

Week 1
- Intro to Linux, a brief history
- Basic terminal commands: ls, cd, mkdir, rmdir, touch, mv, cp, rm
- Intro to vim: edit mode vs insert mode
- Basic hotkeys: undo, redo, navigation
- First program: hello world!
- Exercise: Dice rolling simulator

Week 2
- Brief history of programming languages and paradigms, why we chose Python.
- Review of command line
- Variables and printing
- Basic math operators
- Exercise: Guess the number game

Week 3
- Printing formatters
- Strings and string arithmetic/manipulation
- Exercise: Build a simple calculator

Week 4	• For loops and while loops • Conditional statements • Modulo operator • Exercise: Sum all the multiples of 3 and 7 between 0 and 1000
Week 5	• If/else statements, control flow • Exercise: Build a rock paper scissors program that uses string comparisons
Week 6	• Intro to built-in functions and function declaration • Exercise: Revisit calculator program and add complexity
Week 7	• Intro to arrays • Prompting and passing information • Exercise: Build a dictionary that allows you to enter names and recall them later
Week 8	• Intro to files • Reading and writing to files • Exercise: Revisit dictionary program and have it read in names from a file, then create and write output to another file
Week 9	• Brief history of Cryptography, and intro to ciphers • Using the ord() function to convert chars to ints • Exercise: Build a simple caesar shift program that encodes and then decodes a message • Poll students on what topic they would like to learn about next week
Week 10	• Give lesson on student chosen topic • Talk about other languages to learn and what kinds of opportunities there are in computer science • Finish up any unfinished exercises and help students plan their own projects