SSEP 2024: Intro to Programming with Python

Summer 2024

Assignment 07: Application Development

*This is a **pair programming assignment find another person to work with on the assignment.***

Assignment Goals:

- Put your skills to use! Imagine and create an application that you think will be useful to someone

Notes

It is your responsibility to write a program that is well structured (i.e. modular), and easy to read. Your file should start with a header that has your name(s), the date, and a brief description of what your program does. Variable names should be descriptive. Comments should be used appropriately to document your code.

Quick Programming Tips:

- ***Not sure what to do?*** Talk through the assignment instructions with your partner and write out in English what specific tasks your program needs to do. Then, pseudocode.
- ***Stuck on how to program your solution?*** Try out 2 different ideas then ask for help if you are still stuck!
- ***Have a seemingly invisible bug?*** Use print statements throughout your code. Before running the code, think about what you expect to print if the code is working. Then see if what you expected is what prints.

Program Specification (AKA Spec)

In this assignment, you will create an application of your choosing. The application you create will be what you demonstrate to your peers and parents on the last day of SSEP.

Be creative and design iteratively!

Part 1: Ideation

1. Topic
    a. What type of application will you build? Why is this type of application important/interesting?
    b. Broadly speaking, what is the purpose of your application?
    c. If your application were to be released to the public, who would you expect to use it?
2. Building Blocks
    a. Broadly speaking, what tasks will your program need to accomplish? How will these tasks translate into functions?
    b. What previous assignments or examples will you use as starting points for your application?
3. Roadblocks
    a. What roadblocks do you anticipate as you develop your application?
    b. Detail your plan for dealing with these roadblocks. How will you overcome them, or if you cannot, how will you modify your application?

Part 2: Prototyping

1. Persona
    a. Describe the hypothetical person for whom your application is designed. Be specific – name, age, job, other demands, etc..
    b. Discuss this person's relationship to technology.
    c. What specific needs does this person have that might affect how they interact with your application?
    d. Why will this person interact with your application? What will it help them do or provide to them that they cannot get elsewhere?
2. Paper Prototype
    a. Create a paper prototype or an electronic equivalent.
    b. The paper prototype must clearly show what your application will look like from the perspective of the user. In addition, it must show examples of how the use can interact with the interface and how the interface will update / change in response to the user.
    c. Pair up with another group and test each other's prototypes. Keep notes on what your test users find confusing or unintuitive so that you can modify your design.

3. Architecture Diagram
    a. Name at least three tasks that you program must accomplish.
    b. For each task, what functions will you need to implement to complete the task?
    c. Think about the main function of your program – what will this function need to do?
    d. Pseudocode each function, and your main function.

Part 3: Implementation

1. Code
    a. Using your pseudocode as a starting point, write the code your application.
    b. As you code, be sure to iteratively debug (write a function, test it, write a function, test it, etc.)
2. Test
    a. Once you have a working version of your application, pair up with another group and ask them to test it for you. Keep notes on what your test users find confusing or unintuitive so that you can modify your design.

Submission

Be prepared to demonstrate and discuss your code with the class. After giving every one time to work we will come together and discuss:

1. Solutions you came up with
2. Roadblocks you hit along the way
3. What you would do differently if you were to do the assignment again