SE101 – Lab Project Proposal

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Project Features:

- To combat early-morning drowsiness and the hassle of getting up to make coffee every day, our project will allow the user to control a Keurig coffee machine remotely. To control the machine, we plan to hook up a Raspberry Pi to the internals to simulate button presses. We also plan on building a complementary mobile alarm clock app, which will communicate with a server we plan to build and initiate the coffee-brewing process as soon as the user wakes up.

Major Software Components:

- A server built in either C or JavaScript to run on the Raspberry Pi, with the purpose of listening for requests to run the Keurig machine
- C code to simulate the pressing of buttons on the Keurig on the Raspberry Pi
- An Android (using Java or Kotlin) or iOS (using Swift) alarm clock app that can communicate with the Keurig machine when the alarm is shut off

Prototype:

- We will construct an evolutionary prototype, as the Keurig machine isn't disposable
- The prototype will hopefully have the Pi wired up to the Keurig, with the functionality of being able to simulate all the button presses necessary for making coffee
- Once we figure out how to successfully wire the machine, we can use the exact same wiring and machine for the final product

Hardware:

- Raspberry Pi
- Laptop and relevant connections to interface with the Raspberry Pi
- Keurig machine
- Wires to hook up the Raspberry Pi to the Keurig
- iOS or Android phone to run the application on

Anticipated Challenges:

- Wiring is probably the biggest concern, as we will need to break into the Keurig and figure out how the wiring within it works to connect the Raspberry Pi
- Figuring out how to interface with the Raspberry Pi through mobile application may be difficult as well, as we will have to build a server that the phone can connect to and access
- Coordinating to work on this project while having classes going on will be a challenge as well