Boulder Rube Goldberg Trap Company

Scenario

Having just graduated from CU, you feel like you can tackle the world, so you decide to start your own tech startup! You have teamed up with Alice, an expert in mechanical engineering, and Bob, a brilliant friend from high school who just graduated from Rhode Island School of Design. Together, you start the "Boulder Rube Goldberg Trap Company", and develop custom intruder deterrent systems. Alice develops several mechanical components, each controlled by a small microcontroller. Alice made sure to build a nice API for every component she created. Bob's job is to provide a specific design for individual clients. You've trained Bob on basic programming, but Bob is complaining that he is spending way too much time writing complicated code, and not enough time refining his designs. Bob has given you three examples of code he has written, and Alice has provided you with the API for her devices. Looking at the three examples, you notice that Bob seems to be writing the portions of the same code in each case.

Problem

Determine a way to make Bob's job simpler, based on the existing code. Bob should be able to use your solution for future projects as well. Your solution should not impede use of Alice's existing API.

Deliverables

1. Identify the design pattern you used to solve this problem, and the participants (i.e., the roles each class takes).
2. An implementation in a language of your choice.
3. Rewrite Bob's three examples using your improved system, so that Bob has examples to mimic in the future.