Come up with a situation that can be described, modelled, or controlled by combinational Boolean logic. This means that

- All of the inputs and outputs are Boolean values.
- The output depends on the inputs in some way.
- The output can be defined for every combination of inputs (this is “combinational”).

Examples of inputs could be physical properties of something (temperature, color, etc.), the state of something (altitude, whether or not a key is turned, if it’s cloudy outside), or anything else that can be expressed by a Boolean value (whether or not you want to get up in the morning, if it’s time to go to the gym, if a sweater looks good on you).

Your system should have three or four inputs and one output. Also make it more interesting than just “all of the inputs have to be true for the output to be true” or “any of the inputs being true makes the output true.” Try to include at least one “not.”

Do the following in any order (whatever makes the most sense for your situation):

- Explain the inputs and the output and the logic of the system in natural language.
- Create a truth table for the system. Explain what ‘1’ and ‘0’ mean for each of the signals.
- Write a Boolean expression that matches the logic of the system.