**Design Scenario**

Joshua has an idea for an improved security system for automatically locking and unlocking the front door to his house. His idea is as follows:

* He wants his front door to automatically unlock when he drives his car into his driveway
* He wants his front door to automatically lock when he backs his car out of his driveway
* He wants the lock on his front door to remain unchanged if his car is just parked in his driveway.
* For extra security, Joshua only wants his car to trigger the front door lock. Joshua plans to “flash” a secret Morse code using his headlights.

Joshua has the following sensors and devices in his design box.

* A USB lock interface for locking / unlocking his front door.
* LEDs of various colours.
* A Photo Light Detector which returns a number value depending on the light reflected by his car.
* A Motion Sensor which triggers if his car moves.
* A Rangefinder that returns the distance to his car.

**Joshua needs you to help him specify (using words not program code) a design for his Arduino Controller as follows:**

1. Provide a wiring diagram and a list of sensors and devices that you will use in the design.

* Note: The Wiring diagram can be a rough sketch and does not need to be an exact diagram of an Arduino board.

1. Provide a specification for constants, variables, devices and sensors that will be initialised in the “setup()” code block.
2. Provide a specification for the main “loop()” code.

* Note: Use wording like “Read the value of sensor XXX and store the result in a variable called YYYY”
* Note: Use wording like “IF the value of variable YYYY is ZZZZ THEN do the following steps….”
* Note: Use wording like “FOR (some condition or number of times) DO the following steps…”
* Note: Be sure to specify all of the important things that could happen regarding Joshua’s car and the locking / unlocking of his door.
* Note: Be sure to specify things in a logical order ./ sequence.