Arduino Plan Lineup

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**Lesson 6 - Variable revision - switch variable names to label button names (done)**

**1:**

* Build circuit w/ 4 buttons
* Code from image, upload (may need to use an ino file)
* Open serial monitor take note of the outputs
* Change move the specified variable names in the code so the buttons match the name on the screen
* Extra: change the wording displayed on the screen
* Keep project for next time

**2:**

* Build on 4 more LEDs onto circuit
* Code from image, upload
* Modify the code so that the LEDs match the button placements (changing variables)
* Extra activity: play a pattern
* Pack up

**Lesson 7 - Photoresistor w/ turn on light when dark (done)**

**1:**

* Build photoresistor circuit from image. A photoresistor is similar to a resistor, except the resistance varies based on how much light it is exposed to
* Code from image project that prints values to serial monitor
* Activity: create variable called lightValues with the values from the light for next lesson
* Leave build for next lesson

**2:**

* Build add-on led from image
* Given the code to turn on an LED, use an IF statement (example given) to turn on the LED if the values in lightValues are lower than a certain value.
* How can this be applied in the real world?
* Pack up

**Lesson 8 - Diffuse Bomb**

**1:**

* Build circuit from code
* Run code supplied.
* You have 2 minutes. There is a wire on the board that needs to be “cut” (removed). Use the code to figure out which wire to cut. If you pull out the wrong wire the bomb will “explode”
* Second activity, same thing
* Pack up

**2:**

* Build circuit from code
* Run code supplied
* You have 2 minutes. There is a requirement that needs to be met by one of the sensors attached. Use the code to figure out what the solution to the problem is. If the wrong thing is done, the bomb will “explode”
* Multiple activities
* Pack up

**Lesson 9 - RGB LED (fade using increment)**

**1:**

* Wire circuit from image. This is the same as three LEDs, except they’re in one housing.
* Code from image
* Change the values to find colors. Label the variables to correspond to each (green, yellow)
* Code from image code that fades the LED, change the speed of the fading
* Leave project for second lesson

**2:**

* Wire two additional buttons from circuit.
* Using the code supplied, link the button variables to LED brightness to brighten and darken different colours (darken one, while brightening another). Change the values to speed up the process
* Using second set of code, read comments to figure out how the activity works
* Pack up

**Lesson 10 - Buttons play tones (arDJ)**

**1:**

* Wire up circuit from image (three buttons)
* Code from image to print to serial monitor
* Add another button, modify the code to show a value in serial monitor (code required is supplied).
* Run code from file. It’s a game. Play the game, try and figure out what’s going on in the code
* Leave build for next lesson.

**2:**

* Wire up circuit with speaker
* Resume the editing of your code, otherwise code from image
* Here is the ino code with an if statement. Without buzzer beeps. Here is the complete code using a switch statement. Use the if statement to complete this challenge. There is also all code you will need to beep buzzer.
* Different frequencies and their keyboard names
* Extra activity: Play multiple beeps with each press.
* Pack Up

**Lesson 11 - Datalogging and Temperature sensor**

**1:**

**2:**

**Lesson 12 - Comparison operators and the potentiometer**

**1:**

**2:**

**Exam questions, multiple choice: (20 questions)**

* 1: A description of a variable is:
  + a) a type of LED that changes colours
  + b) a virtual box that information can be placed into or read from
  + c)
* 2: The difference between the digitalRead and analogRead functions is:
  + digitalRead specifies that your Arduino is plugged into a computer while analogRead specifies that your Arduino is plugged into a battery pack.
  + digitalRead reads an input that can either be 1 or 0, whereas analogRead reads an input that can be between 0 and 1025.
  + analogRead can’t be used because
* 3: True or False: a speaker can be compared to a pop-lid found on some glass jars.
* 4. Used to limit the flow of current:

a) A Light Emitting Diode.

b) An analog input.

c) A Resistor.

* 5: Emits light:
* 6: The purpose of a hook-up wire is to:
* 7: True or false: a potentiometer can determine values 1 and 0
* 8: True or false: Comments are ignored when the program is compiled
* 9: True or false: Rows a1 to row a5\*\*\* (picture needed) are connected
* 10: The piece of code “thisValue == 5” does this:
  + Assigns the value 5 to the variable thisValue
  + Compares whatever is in the variable thisValue to 5. If it is true, returns TRUE. If false, returns the bool FALSE
* 12: True or False: A diode is included in your

**Project:**

**Prep: build circuit from image. Upload code from ino file.**

**Task 1: out of 10 points.**

* Move hook-up wires from pins 8, 9, 10 to 10, 11, 12. (5)
* Modify code respectively (5)

(outcome: Lights 1 should turn on when button 1 pressed, same for button 2.

**Task 2: out of 10 points.**

* Wire up another LED.
* Program so that the new LED turns on when buttons 1 and 2 are not being pressed.