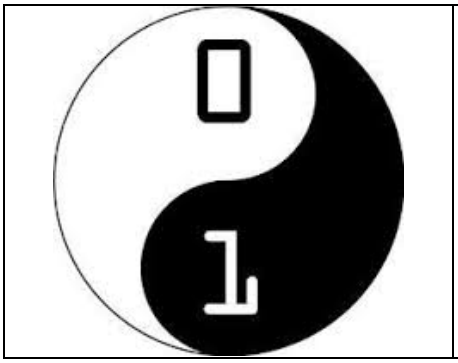

Dalkey Dojo

Arduino Lamp Project
Spring 2014

- What am I doing here? ... What you are going to build
  - In this 4 week project we are going to build a lamp that can shine 6 different colors.
  - We will use the coolest piece of electronics kit known to man. It is called the **Arduino**.
  - It was built by some scientists in Italy to help us learn lots of different scientific principles without the boring stuff.

- But that's a just a lamp, right? ... What you are going to learn.
  - You will learn the basics the most important programming language. It is called **C**
  - You will learn some simple electronics.
  - You will learn how colors are created in electronic devices.

- Fine, where do I start ... What you will need.
  - Arduino – The blue thing that looks like it fell out of a computer.
  - Bread Board – The white plastic thing with lots of holes in it.
  - One each Red, Green & Blue Light Emitting Diodes (LEDs) – The clear plastic blobs with two legs.
  - Resistors – the tiny sausages on a metal stick.
  - Jump leads – bits of coloured wire.
  - Potentiometer – can you spot which piece it is?

- When do you get there ... The schedule.
  - Week One - The RGB Colour Model & a bit more C
    - The Red, Green & Blue Colour Model (how to make 256 colors from 3)
  - Week Two – Electronics
    - Current and Resistance. (how power moves around)
    - Symbols. (drawing like an Egyption)
  - Week Three – C Programming Language
    - Functions. (Special tricks Ardi can perform)
    - Program Flow. (Talk nicely to your Arduino)
    - Keywords. (Special words Ardi understands)
  - Week Four – Bringing it all together

- Are we finished yet ... Week One

Listening
- the RGB Color scheme - show and tell

Doing
- install the arduino software on your laptop
- launch the arduino IDE
- connect the Arduino to you computer
- get blink example running
- connect any led to ardi on pin 13 (what way round does it go)

Doing a bit more
- change the frequency of the blink to half second
- continue to change the frequency of the blink until it appears to be always on (what number is that)

- This is fun lets do more ... Week Two

Listening
- electronics intro - the current and river simile

Doing
- get red LED blinking on the breadboard
- get blue and green blinking on the breadboard at the same time

Doing a bit more
- get them blinking one after the other
- get them running randomly (to the google machine!)

- I just can't get enough ... Week Three

Listening
- an intro to C - speaking Ardi's language

Doing
- get the following sequence running
  - red
  - green
  - blue
  - yellow
  - magenta
  - cyan (reminder of the RGB scheme)

Doing a bit more
- reverse the sequence
- use a different resistors to get one of the lights dimmer or brighter than the others

- Cancel my application to law school I'm gonna be a scientist ... Week Four

Listening
- a recap of the core topics
  - RGB
  - Electronics
  - C

Doing
- dismantle the project and recreate what you did in week 3
- dismantle again and get the potentiometer to control blink speed for just one LED on the bread board
- SURPRISE component

Doing a bit more
- get all 3 LEDs running the sequence from week 3 with the potentiometer

- Where do I sign up for NASA ... More cool stuff on line