Arduino Lab Introduction

Arduino:

- Arduino is a common Italian boy's name.
- King Arduin was a famous King of Italy from the years 1002 to 1014.
- The root of Arduino is "Ardu" which in Latin means hard or tough or durable, as in the the English words arduous or durable.
- And "-ino" of course means "little" or "dear". Thus we have Arduino = tough or hardy little boy.
- King Arduino was born in the Italian city of Ivrea.
- There is in present time in the city of Ivrea a cafe called "Bar di Re Arduino" which means "King Arduino's Cafe".
- Also in the city of Ivrea is a school called the "Interaction Design Instutite".
- In 2005, students from this school, who frequented this cafe, designed this little computer system as a class project, and called it Arduino.
- I imagine that many of the discussions that led to Arduino and developed Arduino took place in this cafe: Arduino's Cafe! Hence, "Arduino"!
- This little computer became very popular and is currently a world-wide success!

So Arduino is a small computer system.

What makes it most interesting to us is that it is most useful in the field of Arts and Crafts, rather than Electronics or Computer Science.

It is very good at connecting actual "things" like switches and lights and motors, and requires very little electronic knowledge or computer programming to do so. Arduino can easily sense things, like a person approaching, or a hand touching, or a button being pressed, or a window or door or box cover being opened, or a bell ringing, or a whistle sounding. It can sense temperature, humidity, soil dampness. And Arduino can easily light up lights, turn electrical things on or off, open or close water pipes, push or pull things, unlock doors, start motors, and in general: create motion.

For example, I have seen a beautiful artificial flower which opens its petals when you pull a hidden string. It is essentially a puppet. Then with an Arduino and a simple motor and a motion sensor, it became automatic: when someone approached it, the flower opened, and when they left, the flower closed! After doing this lab you will learn enough to be able to do that. A simple motion sensor and a motor can automate a million-and-one things. How about a doorbell that rings when someone approaches the door? And with a real bell that is swung back and forth to make it ring!

Arduino makes it easy to turn a crafted object into some sort of an *automatic* object, which senses when something happens and reacts with motors or fans or valves or lights or whatevers.

Arduino requires very little knowledge of electronics. You don't have to solder anything or do a lot of wiring. Most devices, like sensors and motors, connect simply by plugging in. And Arduino requires very little programming. It uses a simple subset of a common programming language, requiring far less knowledge than actually studying the full language (C++). But in neither of these areas, electronics and programming, does Arduino limit you. It actually does have the full programming language available to you if you want to learn it. But that is for another course. In this one, we will keep to the simplest of basics.

The purpose of this Lab is to expose you to the various possibilities of what an Arduino can do to enhance your arts and crafts projects.

You will then be encouraged to "Go out and Create!" The last lesson in this course will point you to a number of websites like "instructables.com" and "arduino.cc", which have hundreds or perhaps thousands of Arduino projects. These give detailed step-by-step instructions. This lab will bring you up to a point where you will be able to follow and accomplish just about any of them, and with a little experience, start creating your own!