# Desktop Fan Project Introduction

Living with the Lab Desktop fan workshop ASEE 2012 Conference

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### Primary Learning Objectives

- Assemble circuits to drive a small DC motor and a servo motor
- Control the DC motor speed with PWM
- Sweep the servo back and forth
- Control the motor speed with a potentiometer

### **Bonus Objective**

Toggle the motor on and off with a momentary button

#### What call you do with this.

### Domlout Starter Kit for Arduino



#### vilat call you do with this.

### Adafruit Experimentation Kit for Arduino



#### vilat call you do with this.

## Sparkfun Inventor's Kit for Arduino



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#### i oject ioi students

Design and build a fan to satisfy these objectives

- A desktop toy for promoting my company
- Air flow direction oscillates
- Fan has on-off button
- Fan speed is variable
- Be creative: I want to like this fan!







#### i un model of project based mstruction

### show the students an answer

- Students need to learn skills to imitate the "answer"
- Most students don't want to imitate the design
- Several aspects of the structure are left unspecified

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### To complete the project students must

- Learn how to use Solidworks (or similar tool) to draw the structure
- Measure parts in order to make the structure fit
- Learn how to write loops and other programming structures
- Learn how to debug, because it doesn't work the first time
- Learn how to make a presentation to explain their design to the rest of the class
- Work on a team, because there is too much work for one perso

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- nbled for workshop participants aser cut acrylic base and fan strut atension leads on DC motor
- C motor secured with zip ties ervo mounted with snap rivets rut screwed to the servo horn



#### i ocus on winnig and programming

### Today we will focus on

- Getting the DC motor circuit working
- Connecting the Servo
- Playing with loops and delays to control sweep speed
- Connecting a potentiometer to control fan speed
- Connecting a button or switch to toggle the fan on and off