

Challenge 1: Kinetic Sculpture

Day 1 (Tuesday, Sept. 7) With your partner, build a *very* simple “kinetic sculpture” out of LEGO parts and other materials. Your sculpture should be controlled by a *PicoCricket* and a simple *PicoBlocks* program. It should include one or more kinds of actuators (*e.g.*, motor, colored lights, sound box, or numerical display) and one or more kinds of sensors (*e.g.*, touch sensor, light sensor, sound sensor, or resistance sensor). For example, a shadow cast on a light sensor might trigger turn a motor to turn on or a loud clap might cause music to play on a sound box.

Include in your design blog a description of the sculpture (including a rough sketch and/or copies of digital photos) and the *PicoBlocks* program.

Day 2 (Friday, Sept. 10.) Here, and for almost every other challenge in the course, you should go through several iterations before you achieve the behavior you desire. This is not a bad thing, but an expected aspect of the design process that offers rich opportunities for learning. In your design blog, you should document each iteration of a design, indicating what worked well, what didn't work so well, and what you learned from the experience.

In class I will show you several “big ideas” about writing computer programs. One of these ideas is “procedural abstraction”. Another is the difference between a “level triggered” event and a “edge triggered” event. I'd like your modified sculpture to include both these ideas. That is, your *PicoBlocks* program should make use of at least one procedure call that simplifies the readability of the program, and you should explain in your design blog whether the action in your sculpture is “level triggered” or “edge triggered”. (If you're feeling ambitious, try to incorporate both kinds of triggering in your sculpture.)