During ‘Piscine’ Arduino Jam, the projects are designed to increase in complexity. Since the hardware components will need to be reused for each project, students will be instructed to record videos of their project working. The videos will be used for final evaluations.

The focus here is on learning to work with the arduino in a short weekend, we will not have strict norm requirements for the project. Students only need to demonstrate a working product with a recording of each project.

This documentation provides a basic list of projects to include, and hardware components per project:

1. Blink the ‘L’ LED light on the Arduino board.
   1. The Hello World of an Arduino! Figure out how to blink the little L light on the Arduino board.
   2. Hardware:
   3. Arduino & USB cable
2. Blink a single LED light:
   1. Upgrade the Hello World. Let’s light up a single external LED light!
   2. Hardware:
      1. 1 LED
      2. 1 220 Ω resistor
      3. 1 wire
      4. Arduino & USB cable
3. Create a blinking LED Wave:
   1. Let’s light up some LEDs! You will need to light up 5 LEDs in a row, in a wave light pattern. Like the TV show car KITT from *knight rider*.
   2. Hardware:
      1. 5 LEDs
      2. 5 560 Ω resistors
      3. One breadboard
      4. Bunch of connecting wires
      5. Arduino & USB cable
4. Demonstrate a Pulse-width modulation (PWM):
   1. Create a “breathing effect” on light 3 from the project above.

*Warning: If you attempt to exceed 40 mA on a single pin, or 200 mA total, then you risk per- manently damaging the microcontroller integrated circuit (IC).*

1. Demonstrate digital input
   1. Implement a button that turns on an LED for half a second when pressed
   2. Hardware:
      1. One push button
      2. One LED
      3. One 560 Ω resistor
      4. One 10 kΩ resistor
      5. One 100 nF capacitor
      6. Various connecting wires
      7. One breadboard
      8. Arduino and USB cable
2. Traffic lights
   1. Pretend there is a single lane bridge. You must implement 2 sets of three-color traffic lights at each end of this bridge. The lights will allow traffic to flow only in one direction at a time. When sensors at either end of a bridge detect a car waiting at a red light, the lights will change to allow traffic to flow in the opposite direction.
   2. Hardware:
      1. Two red LEDs (LED1 and LED2)
      2. Two yellow LEDs (LED3 and LED4)
      3. Two green LEDs (LED5 and LED6)
      4. Six 560 W resistors (R1 to R6)
      5. Two 10 kW resistor (R7 and R8)
      6. Two 100 nF capacitors (C1 and C2)
      7. Two push buttons (S1 and S2)
      8. One medium-sized breadboard
      9. One Arduino and USB cable
      10. Various connecting wires