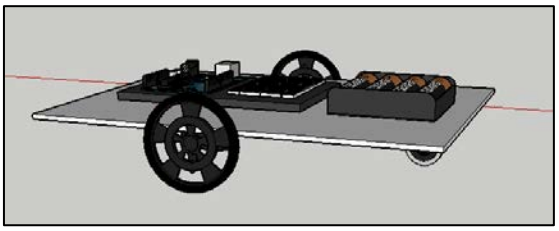
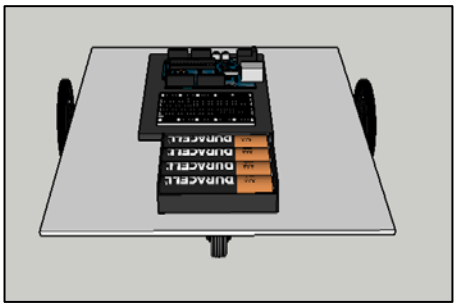
**Project 5: Arduino Servo Vehicle**

**Description:**

We will build a two wheeled Arduino vehicle using Servos.





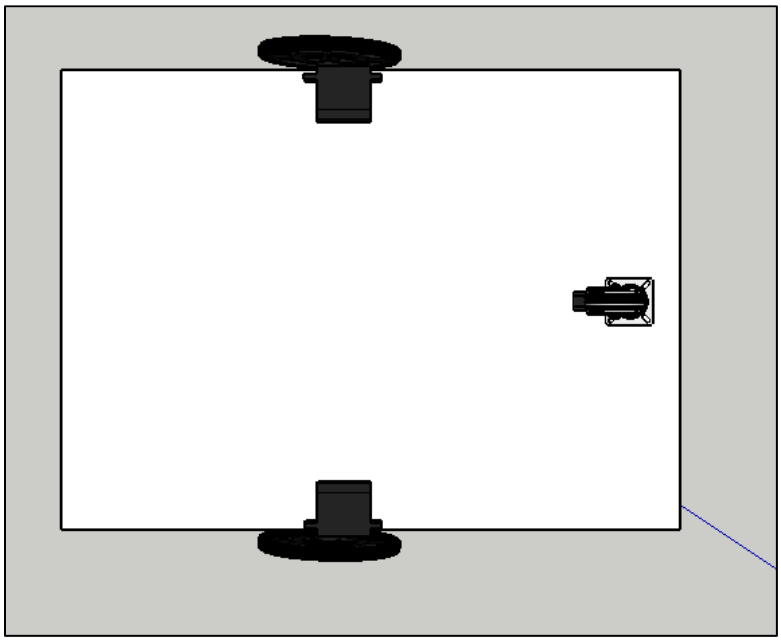
**Building Plans:**

You will need:

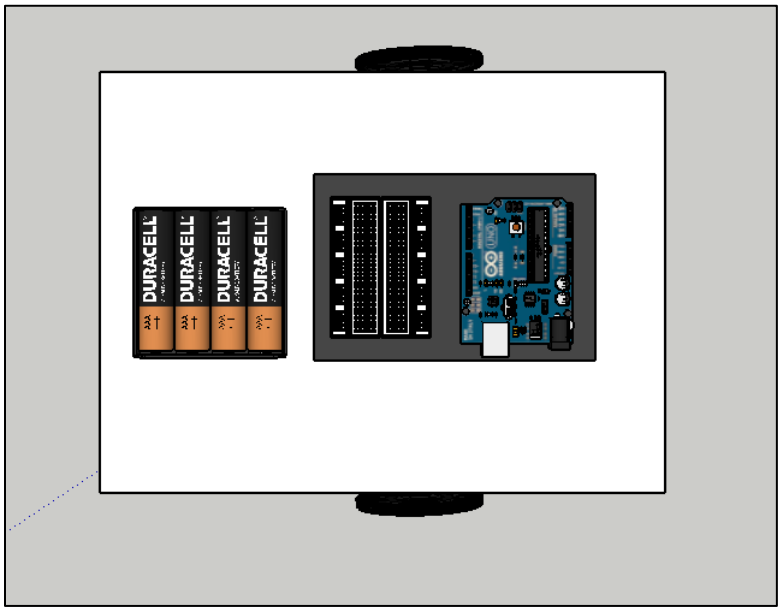
1. 9 x 12 inch Rectangular Foam Board
2. Two Servos with Wheels
3. Castor Wheel
4. Four Angle Brackets
5. Various Screws and bolts
6. Tape
7. External Battery Pack with Tip
8. Optional: External Battery Pack with raw wires
9. Arduino Board and Breadboard
10. Various Decorations to make it cool!

**Process:**

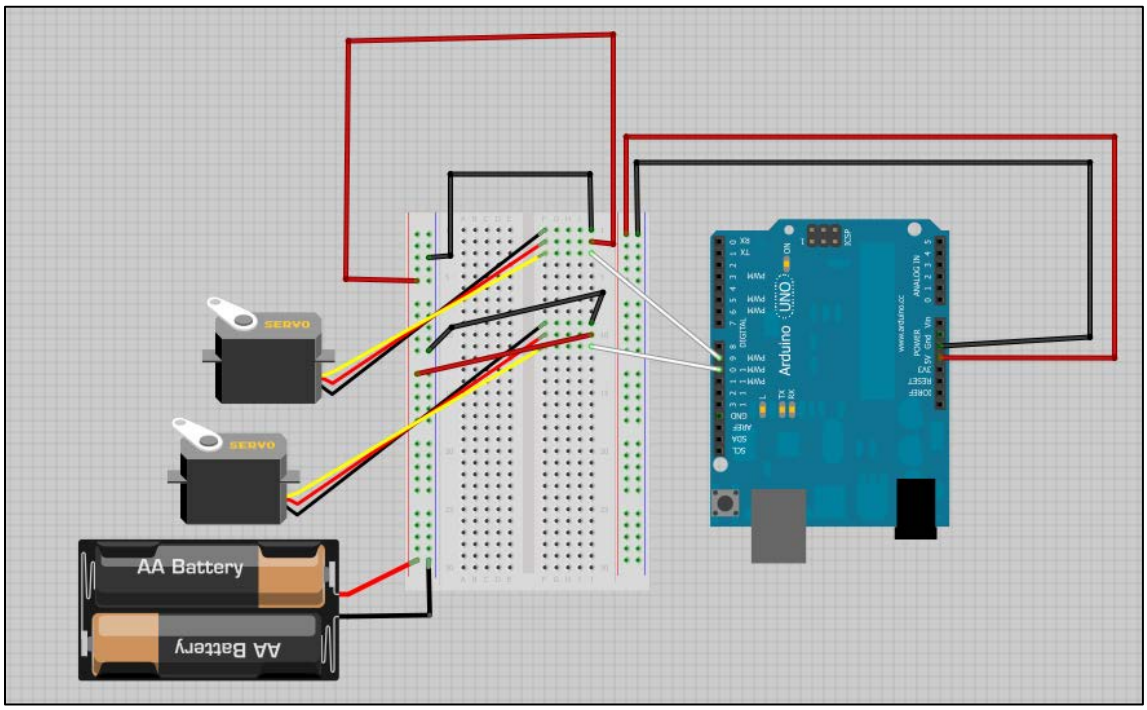
1. Attach the Servos and Wheels as shown in the below view:



2. Place the Arduino / Breadboard, and battery pack on top. Use electrical tape to secure the elements.



3. Wire the device based on the following diagram:



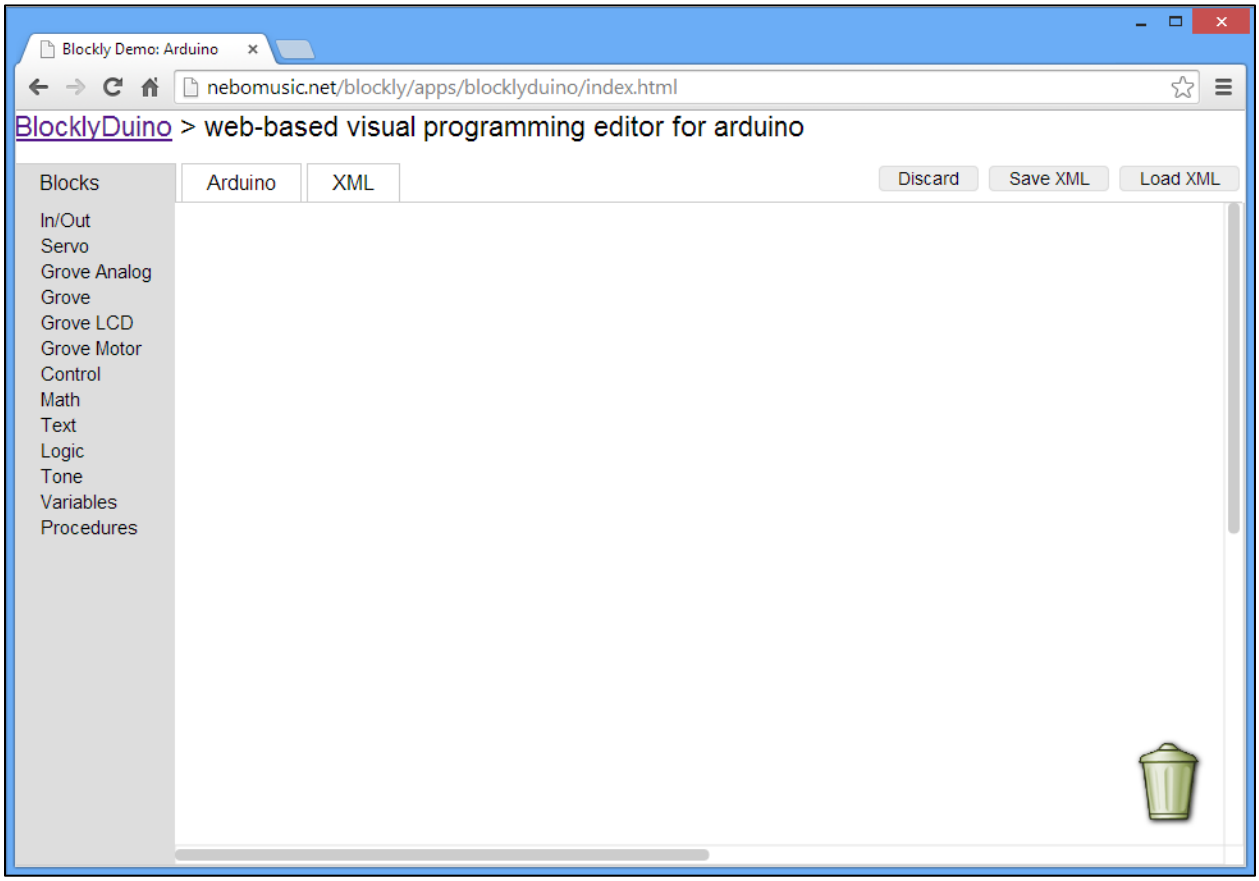

4. Wiring Details:
   a. Right Servo will plug into port 9.
   b. Left Servo will plug into port 10.

**Blockly Code:**

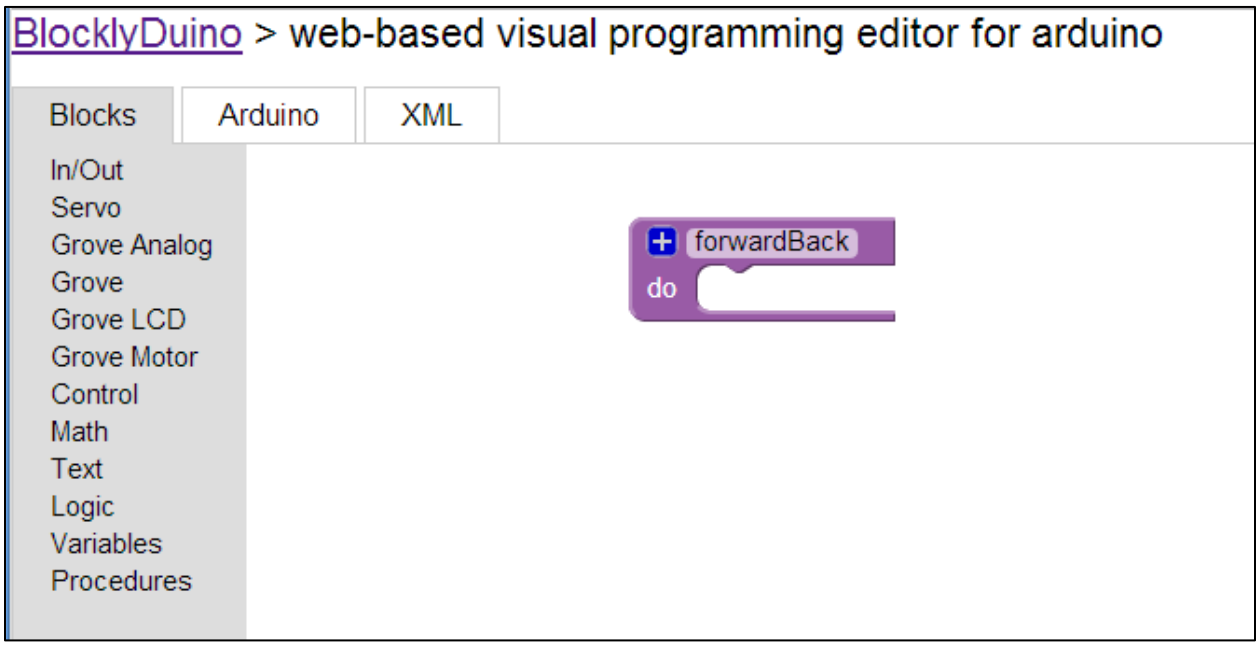
We will program the vehicle to:
-Drive forward for 1 second
-Stop for 1 second
-Drive backward for 1 second
-Stop for 1 second

**Process:**

1. Go to http://nebomusic.net/blockly/apps/blocklyduino/index.html and remove any blocks in the programming area.

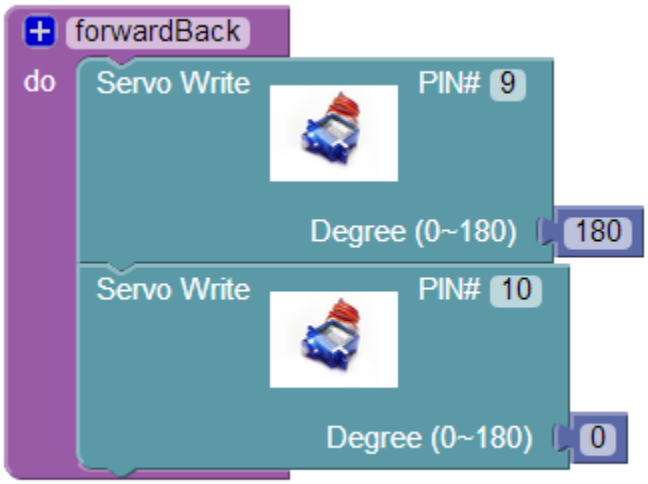


2. Drag a procedure block to the programming area and call it ‘forwardBack’

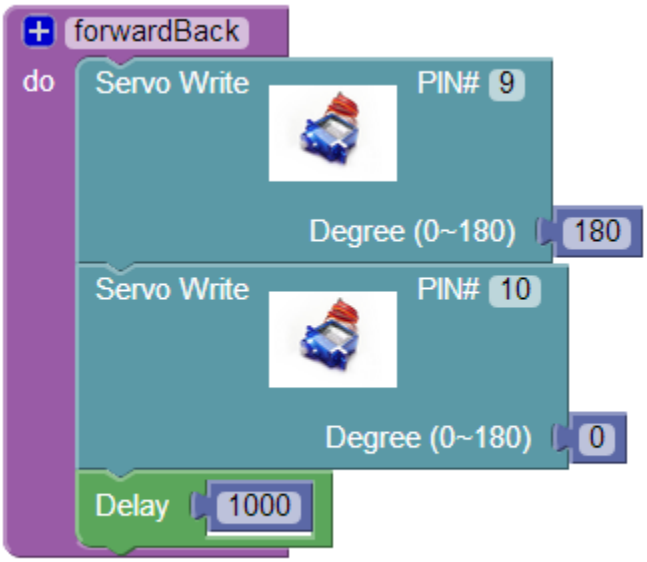



3. Place a ‘Servo Write’ block into the ‘forwardBack’ procedure. Change the Pin value to 9 and Degree to 180. This will drive the right servo.

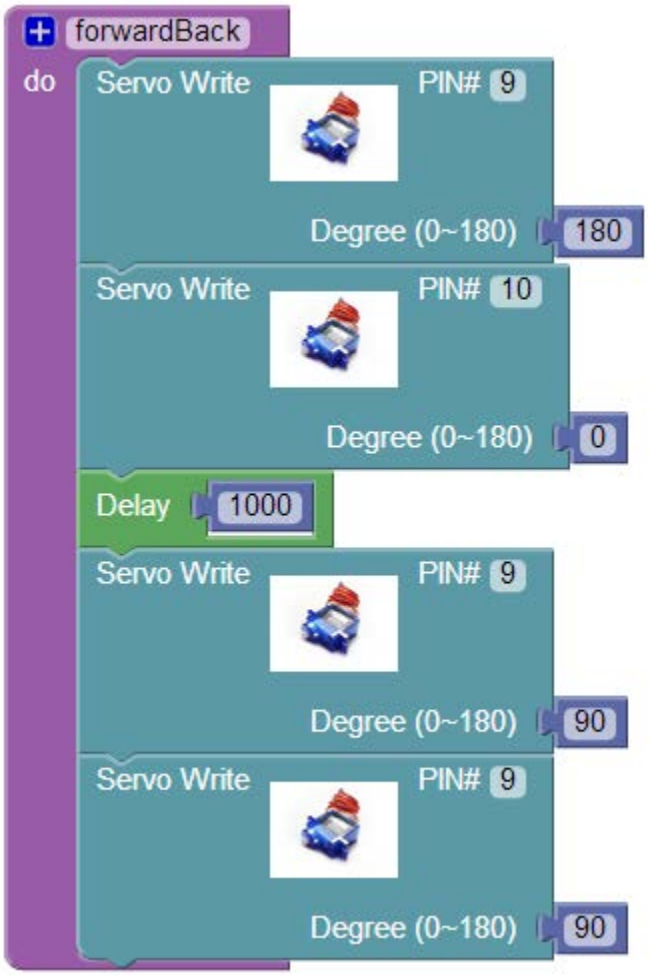
4. Place a second 'Servo Write' block in the 'forwardBack' procedure. Set the Pin value to 10 and the Degree to 0. (The wheels need to turn in opposite directions for the vehicle to move forward).



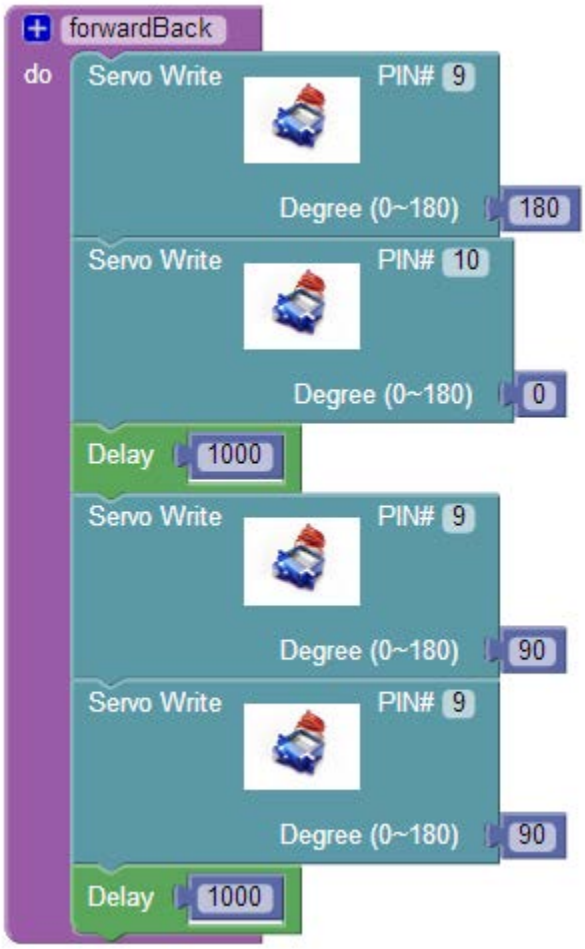

5. Place a 'Delay' block below the 'Servo Write' blocks and set the value to 1000 milliseconds.



6. We will now place two ‘Servo Write’ blocks and PIN# to 9 and 10 and the Degree values to 90. This should stop the motors.



7. Place an additional ‘Delay’ block under the ‘Servo Write’ blocks. Set the value to 1000.



8. To call the function, drag a ‘do forwardBack’ block to the programming area. Copy the code from the Arduino tab into Sketch and download and run on your vehicle.