Developer Documentation

Important Environmental Requirements:

- Use application in well lit room for best results with camera.
- Have robot well secured to table by either clamping it or screwing it down for best results. Clamp it so that the base pole marked with a sharpie is facing the paper.
- Clamp or screw down circuit board in a way that the motion of the robot will not be limited to wire length.
- Ensure the wiring is as out of the way as it can be and not twisted up.
- Ensure the robot is placed in the center of the paper 7.75 inches away.
- Ensure the camera is well mounted and has a view of the paper where the top and bottom of the view line up with the long sides of the paper. You can do this by opening a program that uses a webcam on a normal laptop. The ideal view for this program is seeing a physical area of 8.5 by 12.5 inch area but can be changed by changing the values of x and y in the send values function.

Start-up Procedure:

1. Power up the circuit board with both power supplies first (order in not important here).
2. Make sure the robot has plenty of room to move around during its start-up procedure.
3. Power the Arduino by plugging it into your serial port with the USB-B cord provided.
4. Wait for the robot to return to home after its boot-up procedure.
5. Plug in Camera into other USB port.
6. Begin C# code to start pick and place operations.

Shutdown Procedure:

1. Once the pick and place operation is complete and there are no more parts or you wish to no longer proceed, end the C# program on the device that runs the code.
2. Press the reset button on the Arduino while being conscious of its movements as it will run through a homing process again.
3. Cut power to both circuit board power supplies.

Known Issues:

- The C# program can either be ram with a delay command between sending values which is slightly greater than the time it takes to retrieve a part or can be ran without it. Running it without it causes the program to run to the same shape twice, helping to ensure pickup and repeatability. Running it with it ensures almost no garbage values for shape positions pass through to the Arduino but will make it run slower.