**Agile User Story**

This system is developed as an autonomous pick and place robot that quickly and accurately identifies and sorts shapes. After reviewing the environmental requirements and other developer documentation, the user clicks the Start button on the Visual Studio Forms Program, beginning the shape recognition sequence. The C# code sends one array of information to the Arduino board containing the X and Y coordinates of the center of the shape in pixels and the shape identification (1 for triangles and 2 for squares). The Arduino then calculates the rotation angle for the base servo, and rotates to the shape. The Arduino will then calculate the distance of the shape from the edge of the rack in inches, and activate the DC motor to extend the arm over this distance. The Arduino will drop the electromagnet by rotating the mini servo, activate the magnet, and then raise the magnet. The robot arm will then return to its original extension by reversing the DC motor, move forward a short distance to clear the side of the base, and then swing to either side of the base depending on the shape passed to the Arduino. The magnet will lower to the table, deactivate, and drop the part. The base servo will then rotate back to the home position, and the DC motor will reverse to the original position. The Arduino will continue this process until there are no remaining shapes on the paper. After all shapes are retrieved, the user is free to either place more shapes or stop the program.