

CSCI 3308 Software Development Methods and Tools  
Project Part 3: User Tests

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**Title:** Robotic Arm

**Vision Statement:** A robotic arm built from scratch.

**Automated Tests:** We did two types of testing. Python Koans was one of the testing methods we did. The video links of us completing the first 39 koans are as follows:

\*\*\*For optimum viewing please use HD quality on YouTube  
about\_asserts: <https://www.youtube.com/watch?v=B1PRyaOzG1U>  
about\_strings part 1: <https://www.youtube.com/watch?v=JRes24vtfZA>  
about\_strings part 2: [https://www.youtube.com/watch?v=qTeCa\\_dsXH4](https://www.youtube.com/watch?v=qTeCa_dsXH4)  
about\_none: [https://www.youtube.com/watch?v=fAZr\\_hxPA8E](https://www.youtube.com/watch?v=fAZr_hxPA8E)  
about\_lists part 1: [https://www.youtube.com/watch?v=jVHCAf\\_CQyE](https://www.youtube.com/watch?v=jVHCAf_CQyE)  
about\_lists part 2: <https://www.youtube.com/watch?v=tfDPj7U6cCc>

The second type of testing was Arduino code testing. The code and libraries we used for this are on the github repository under “arduino\_libraries\_testing”

**User Acceptance Tests:** In the document below

**VCS:** github  
[https://github.com/candeladd/Methods-Tools\\_ProjectFall2015.git](https://github.com/candeladd/Methods-Tools_ProjectFall2015.git)

Use Case ID:	US-01.1
Use Case Name:	Claw Operational
Description:	Claw opens and closes using the potentiometer. User should easily be able to adjust the potentiometer to the desired claw angle

Users:	Robot Operator		
Pre-Conditions:	Claw is assembled, power is established, code is uploaded to the Aduino, potentiometer is connected to the claw		
Post-Condition:	Claw has performed the movement that the user has given the claw via the claw potentiometer dial		
Frequency of Use:	Any time you need to pick up an item, the claw will be used		
Flow of Events:	Actor Action	System Response	Comments
	1. Ensure potentiometer is at 0		
	2. Turn dial until claw opens	Claw opens	
	3. Turn dial back until claw closes	Claw closes	
Test Pass?:	Pass / Fail		
Notes and Issues:			

Use Case ID:	US-01.2
Use Case Name:	Elbow operational
Description:	Elbow articulates using the potentiometer. User should easily be able to adjust the potentiometer to move the elbow on the arm

Users:	Robot Operator		
Pre-Conditions:	Arm is assembled, power is established, code is uploaded to the Aduino, potentiometer is connected to the elbow		
Post-Condition:	The elbow has performed the movement that the user has given the elbow via the elbow potentiometer dial		
Frequency of Use:	Any time you need to pick up an item, the elbow will be used		
Flow of Events:	Actor Action	System Response	Comments
	1. Ensure potentiometer is at 0		
	2. Turn dial until elbow extends	Elbow extends	
	3. Turn dial back until elbow contracts	Elbow contracts	
Test Pass?:	Pass / Fail		
Notes and Issues:			

Use Case ID:	US-02
Use Case Name:	Robotic arm easy to control
Description:	Controls for the robot arm work properly and are intuitive to the user

Users:	Robot Operator		
Pre-Conditions:	Arm is assembled, power is established, code is uploaded to the Aduino, potentiometer is connected to the elbow, potentiometer is connected to the claw, potentiometer is connected to the base, potentiometer is connected to the shoulder		
Post-Condition:	The arm fully functions according to the user inputs via the potentiometers, and is uncomplicated to use		
Frequency of Use:	Any time you the arm		
Flow of Events:	Actor Action	System Response	Comments
	1. Ensure all potentiometers are at 0		
	2. Using all 4 dials, move the arm to pick up the block	Arm moves, claw grasps object	
	3. Once picked up, move object to the desired location	Arm moves, claw hovers over destination, claw opens to release object	
Test Pass?:	Pass / Fail		
Notes and Issues:			