Introduction to Robotics

Lab 1

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Task 1.2

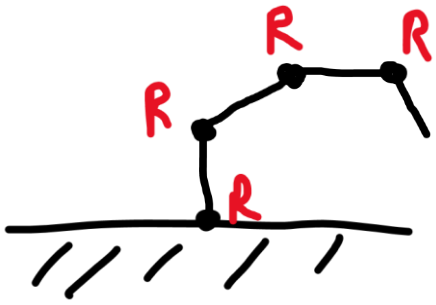
(a)

Figure 1.1: Phantom X Pincher Arm

L- Link, J- Joint

(b) 4 Joints and 5 Links

(c)



(d) Using Grubler's formula, m = 6, N = 5, and sum of constraints provided by each joint = 5*4 = 20,

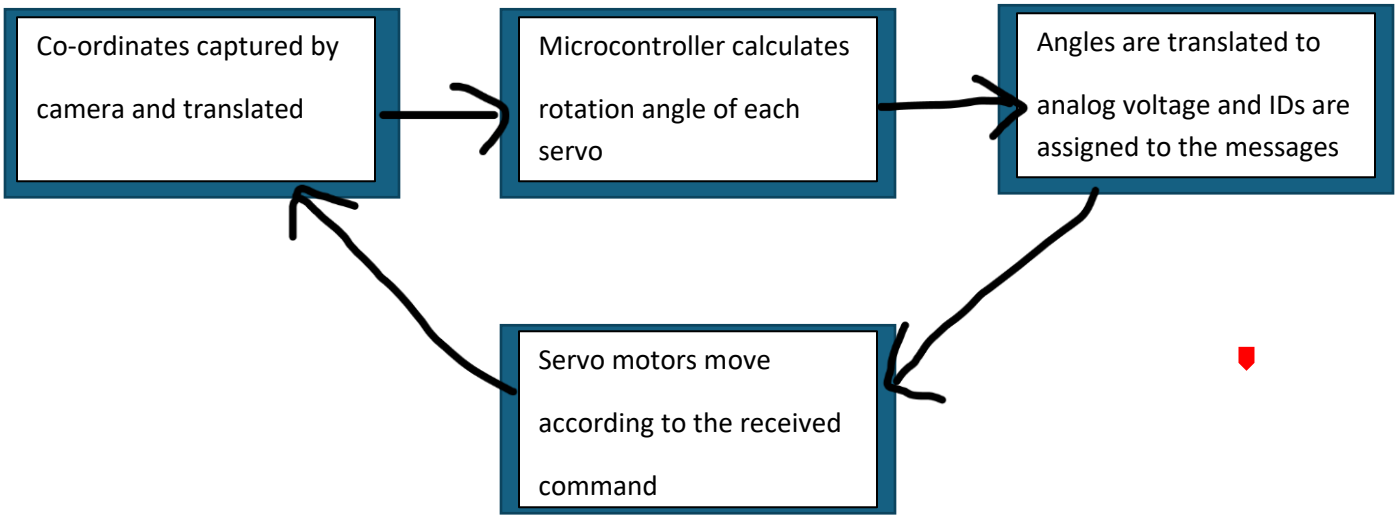
m(N-1) - sum of constraints = 6(5-1)-20 = 4. The arm has 4 degrees of freedom.

(e) When it is connected to power, yes.

Task 1.3

(a) The potentiometer provides analog voltage readings proportional to the rotation angle. So, to get the angle of rotation, the voltage reading is translated to the angle once the relationship is known.

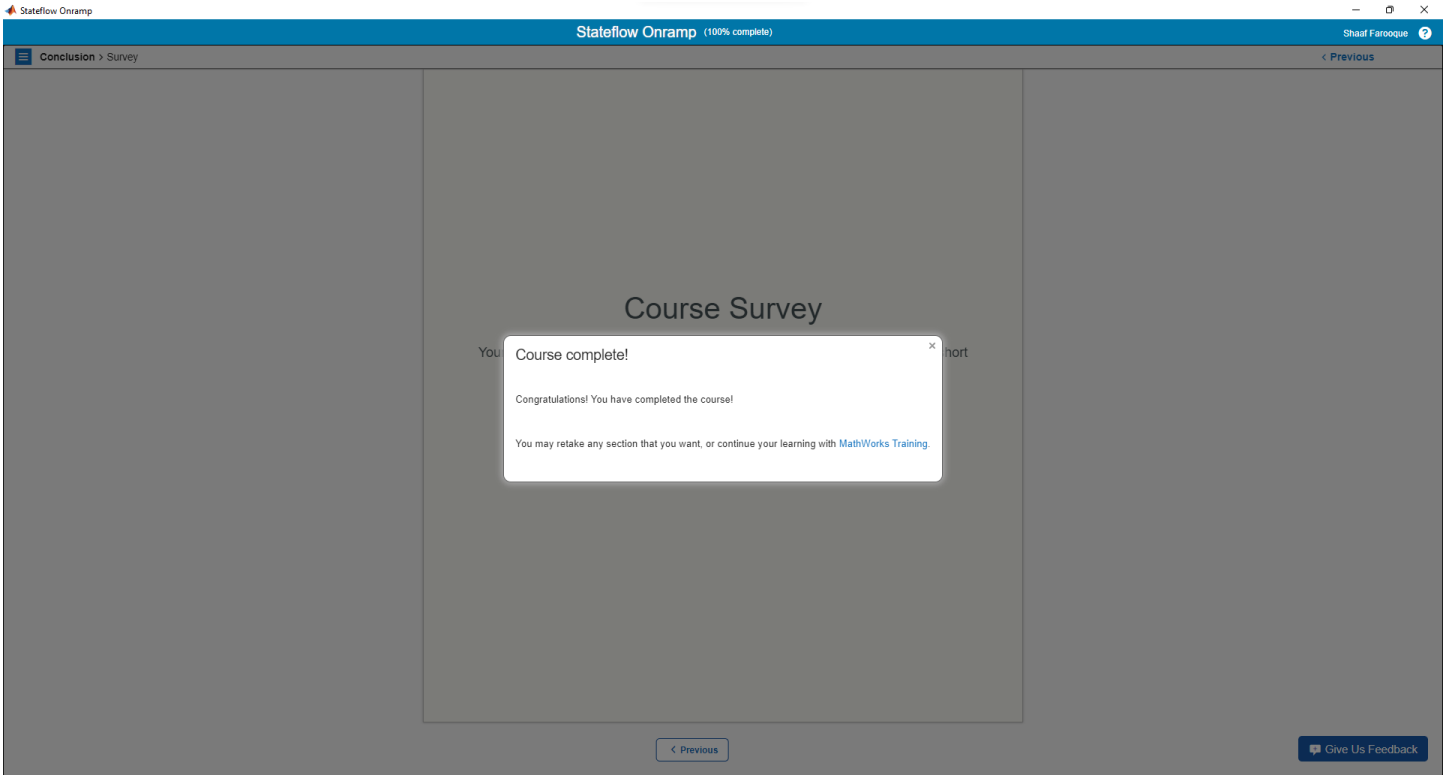
(b)



(c) We have camera as our sensor which through images senses the surroundings, servo motor as the actuator that is performing action according to the control signals and inside the servo we have a position sensor that senses the actual position of the shaft (inside the servo motor).

Stateflow Onramp Course Completion

Shaaf Farooque:



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