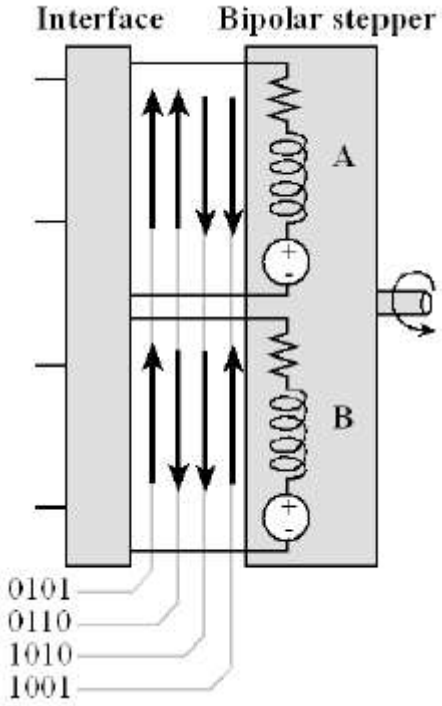
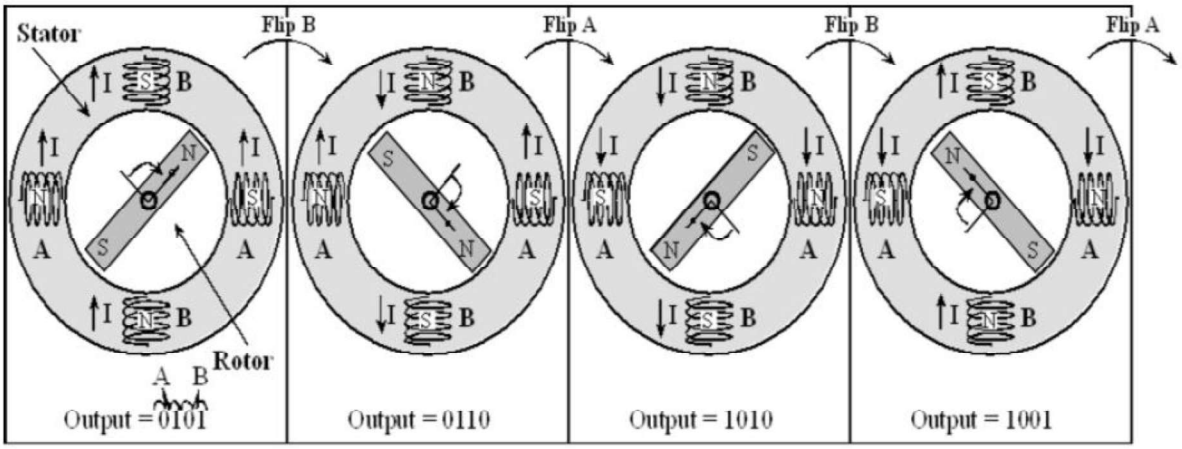
Lab 6: Stepper motor control with TIVA μC

Working:



The adjacent figure shows bipolar stepper motor energizing sequence

The figure below shows stepper motor movement in steps, to step the interface flips the direction of one of the currents



Formula:

$$Step\ angle = \frac{360°}{S}$$

$$S = mN_r$$

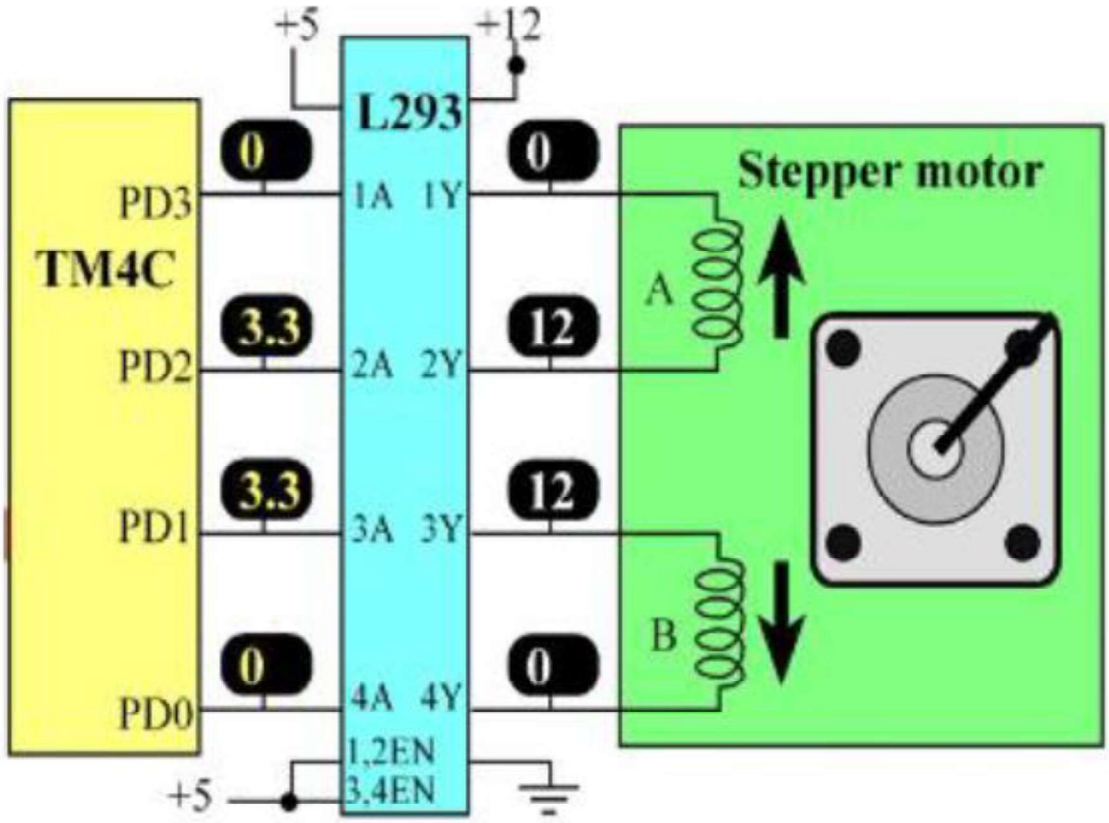
$$m = no.of\ phases$$

$$m = 1\ (unipolar\ motor)$$

$$m = 2\ (bipolar\ motor)$$

$$N_r = number\ of\ rotor\ teeth$$

Circuit Diagram:



Exercise 6-1: Write a program to interface the stepper motor with Tiva board. Energize the motor in the sequence and determine the step angle of the motor.

Exercise 6-2: Write a program which rotates the stepper motor clockwise for 90 degree, and 180 degree in counter clockwise. Provide a delay of 1s between switching from clockwise to counter clockwise.