RBE 521: Legged Robotics HW4

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Question 1:

a) Feet and leg joints on the robot are assumed to be symmetrically distributed. The notation of the legs is kept same as discussed in class. At the end of the code leg joints are printed in degrees.

Note: The hip joints angles are with respect to the top platform. For instance, for leg 3 when robot is in home position, code will give alpha of 180 degrees.

b) The joint angles are validated by performing forward kinematics with the joint angles from the leg joint of the top platform/robot. The forward kinematic solution must return the feet pose of the leg. The difference between forward kinematic solutions and feet location is considered in the code to check validity of the joint angles.

Question 2:

a)

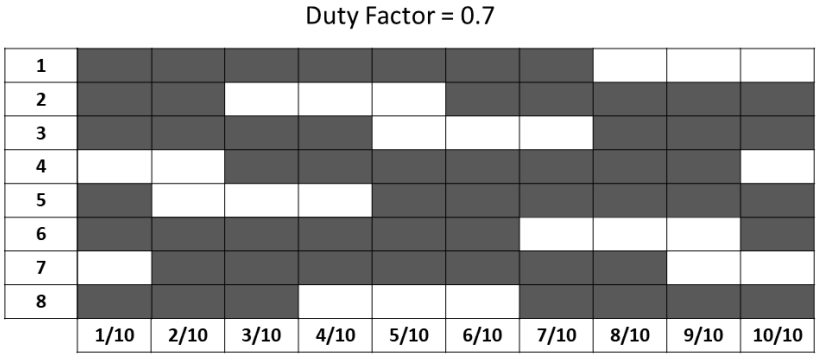

Fig 1. Kinematic phase diagram for duty factor of 0.7

b)

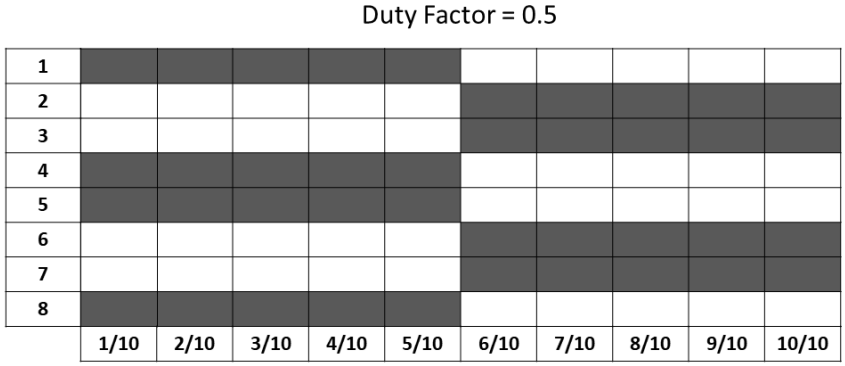

Fig 2. Kinematic phase diagram for duty factor of 0.5