Lab02 – Reading Barcodes

Introduction:

Traditional barcodes consist of parallel lines of varying width and spacing. The barcode pattern we will be working with in this lab includes dark and light bands. The **dark** ones are represented with **masking tape** and the **light** ones with the **background mat**. The width of the light lines is constant and the same throughout, but the width of the dark lines could be equal to or double the width of the light lines. The reader should be able to read the lines and produce a series of L/D for Light/Dark lines. This means that the dark lines with twice the unit width will translate into DD.

We now introduce a pattern where a logical 0 is encoded as LD, and a logical 1 is encoded as LDD. This is where a finite state machine comes in handy to translate any given sequence in terms of L's and D's into logical 0's and 1's. The state machine should be in a state of **Wait** as long as receiving L's (seeing background mat). As soon as it receives the first Dark line (D) it should realize the barcode has started.
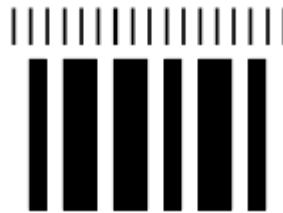
Figure 1: Tick marks at the top represent each single width

In this lab you are given barcodes, the meaning of each code, and a set of simple actions such as speed up, turn left, turn right, play a song etc. Your robot must be able to read the barcodes, find the code, and using the predefined actions perform a task.

Barcode	Action
1010	Turn Right
1100	Turn Left
1110	Speed Up
1111	Stop

Challenge: establish a TCP/IP connection with a given a server to communicate your barcode

Deliverables:

- Detailed state machine of your design
- Demo