## Story

Train track with n segments, and m trains (m < n). Track is a closed loop.

Controllers ensures that there are no more than one train in any segment

## Terminology

* Segment: a part of track
* Barrier: on entrance to a segment there is a barrier, if barrier is closed, trains cannot go into segment
* Sensor: after every barrier there is a sensor for detecting trains



## Algorithm

### Initial state:

* All barriers are closed

### Control:

* For every sensor i:

If sensor detects a train:

Close the barrier with index i (detected a train in segment i, therefore dont allow entrance)

Open the barrier with index i - 1 (the train came from i-1, so its free)

### Start flow

When we want to start the flow (when we turn on the system all barriers are closed), we need to “activate” manually the sensor that is “before” one of the trains

* Do we have access?
* Do we want to have a different method?

### 

## Sensors

1. E3JK-R2M2:
   1. Relay output
   2. Retroreflector
   3. 12V+

##### E18-D80NK

* 1. 5V

# E3F-DS30

* 1. 6V
  2. npn/pnp/no/nc

## Output signal to barrier

Assumption: output is a “dry contact” (barrier has 2 wires, common and signal, and we short/ open the connection between them using a relay)