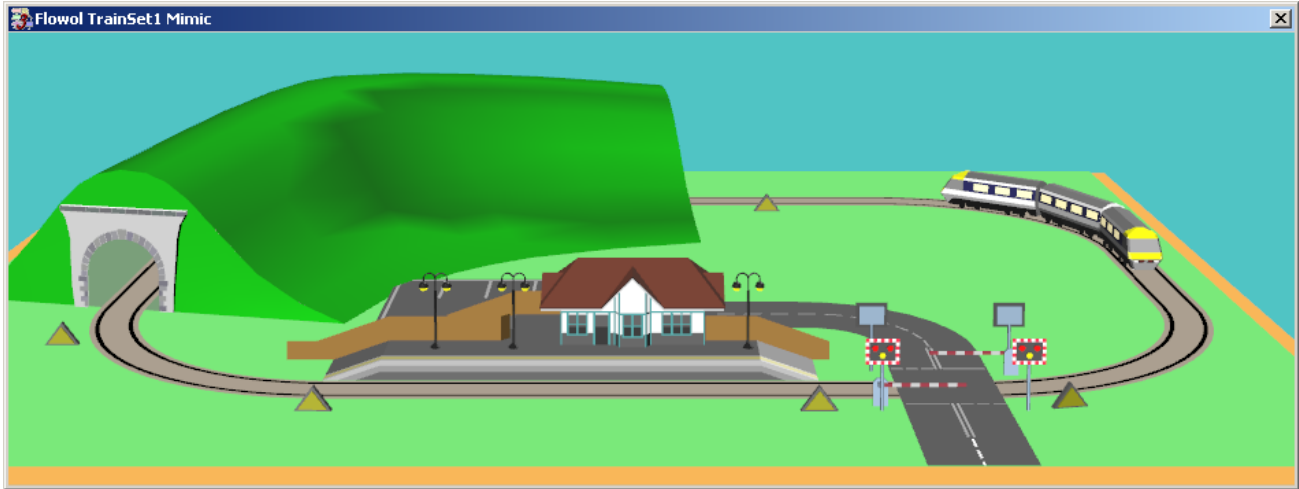


### The 'Model Train Set1' Mimic

Open the mimic, add the labels and use the Output and Motor monitor bars to explore what the mimic can do.

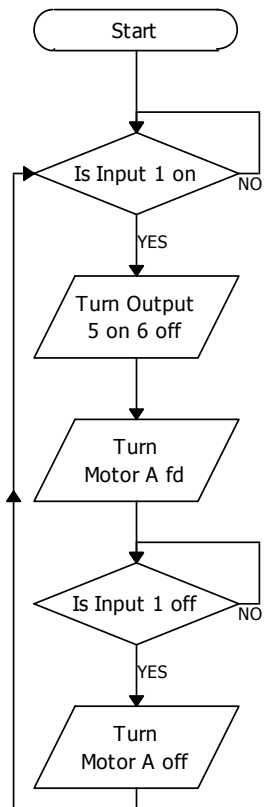
- Train Motor - - - - Motor A
- Barrier Motors - - Motor B
- Left red light - - - Output 1
- Right red light - - Output 2
- Amber light - - - - Output 3
- Station platform lights - - - - - Output 4
- Train (front/rear) lights (clockwise) - - - -Output 5
- Train (front/rear) lights (anti-clockwise) -Output 6
- Carriage (passenger) lights - - - - -Output 7



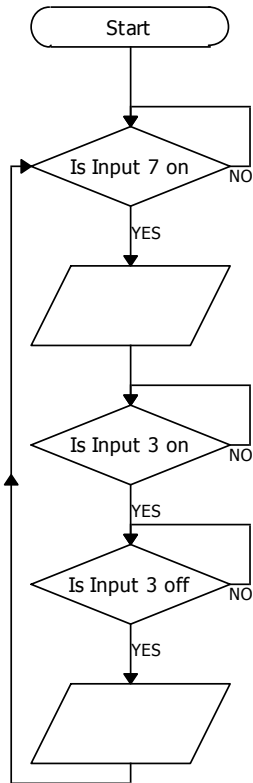
Now imagine you are the engine driver, the guard, the signal operator and station manager and manually control the train, its lights, the station lights, the crossing lights and of course the barrier gates! How easy did you find that?

You would probably be more successful, and safer, if you are just the engine driver and the other functions are controlled automatically by a system created by you using Flowol3.

**Activity 1:** Since you are the engine driver, build this flowchart allowing you to use Input 1 on the input monitor bar to control the clockwise movement of the train. Note: Why is the [Turn Output 5 on, 6 off] command included?

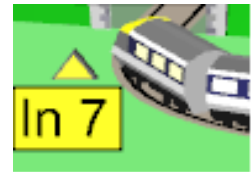


**Activity 2:** Now build a similar program to control the anti-clockwise movement of the train by using Input 2 on the input monitor bar.



**Note:** For the next activities we will assume the train is moving clockwise around the track.  
**Also,** you may have noticed that the moving train turns several input switches on automatically when it passes over them. [The 'triangles' light up].

**Activity 3:** To be energy efficient, build a program to turn the passenger carriage lights on automatically only while the train is passing through the tunnel.



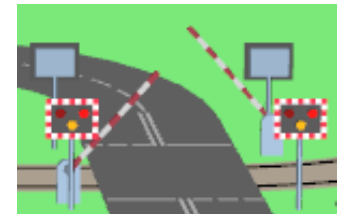
**Note:** the carriage lights should go on when the **front** of the train enters the tunnel and go off again when the **back** of the train leaves the tunnel.

**Activity 4:** Now build a similar program to turn the station lights on only while the train is passing or stopped at the platform.



For the train to cross the road safely the traffic must be given sufficient time to stop before the crossing barrier gates close.

**Activity 5:** Build a program to control the barrier lights. The lights should give a warning [using the amber] and then indicate that vehicles should stop [red lights] before the barriers close and stay red until the train passes over the junction.



**Activity 6:** Create another program to close the barriers while the train is passing over the junction. [Note: introduce a delay in this program so the barriers close after the lights have turned red].

**Activity 7:** Perhaps you can add an air horn sound to your program when the train passes through the tunnel. [You could produce your own sound using the Sound Recorder or find a suitable wav. file off the internet].