CS452 Train Tracking

Since each sensor implies a direction, if a train goes over sensor `A1` as an example, we know what direction it is traveling, and can calculate how far it has traveled since the sensor. By including switches which involve two options for the direction a train is moving, we determine the exact position all the time. The rules for layout are as follows:

1. If a train has most recently gone over a sensor, the trains current position is defined as the sensor most recently traveled over, plus the distance traveled in centimeters since that sensor. *A1+4 = 4cm since the sensor A1*

2. If a train has most recently gone through a merging of two tracks, it maintains it's position relative to the last sensor (or splitting of track) traveled over.

3. If a train has most recently gone through a splitting of the track due to a switch, the trains current position is indicated as an offset and branch relative to the beginning of the switch section of track. *5C+8 = 8cm since the beginning of switch 5 along the curved path.*

This method is described through the following illustration, where the black dot's indicate 0 offset.

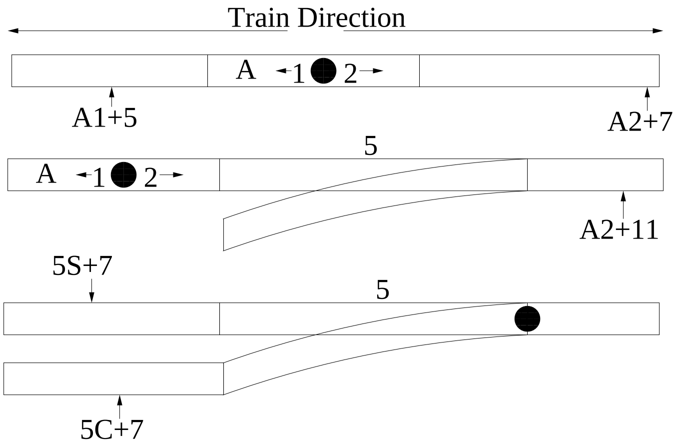

Figure 1: Position Calculation

This method allows for precise specification of not only location everywhere on the track (including between multiple switches) but direction if required. Distance is always measured to the last piece of a the train to be activating a sensor as the train travels over. There are no negative numbers, and even the two dead ends in the center of the layout can be precisely identified (using point 3).