Fall 2014 Train Assignment

Digital Design Laboratory
Train A should initially move in the reverse (CW) direction, and Train B should initially move in the forward (CCW) direction.
Train A moves clockwise (in reverse) on Tracks 1 & 2, but in either direction along Track 4.

It will never stop, but will change direction under conditions to be described.
Train B moves only in a counter-clockwise direction, on Tracks 2 and 3.

It will only stop in the following situations . . .
Train B stops at S2 sometimes

Train B stops at S2 when Train A is on Track 2
Train B stops at S3 sometimes when Train A is on Track 4.
There is one special case for the previous situation:

If Train B is stopped at S3 and Train A triggers S5, Train A immediately begins moving upwards (regardless of previous direction), and Train B enters Track 3.
Train A prefers to take Track 4 when possible

When Train A reaches Sensor 6 (from any direction), it proceeds on Track 4 if Track 3 is clear . . .
Train A takes Track 1 if it can't take Track 4

... but if Track 3 is NOT clear, Train A takes Track 1 instead.
Train A enters Track 2 when possible

When Train A reaches Sensor 4, if Track 2 is clear, then Train A continues into Track 2.
Train A reverses when Track 2 is occupied.

... but if Train B is on Track 2, then Train A reverses and takes Track 4.

Previous rules cover what happens when Train A eventually reaches S6 (or S5).
Additional note:

- Train B stopped at S2 counts as Track 3 being clear as it pertains to above rules. Train B stopped at S3 means Track 2 is clear.
Clarifications

- This semester, there IS one possibility of a train collision, even when correctly following these rules. But if your trains crash, make sure that it happened in this one valid situation.
- In cases where two sensors are triggered at the same time, make the decision that has the least interruption to the trains.
- If the choices are equal, you are free to choose either one.
- Any additional questions or clarifications will be addressed via Piazza.