Racetrack is one of the most beautiful paper-and-pencil games ever devised. It is a convincing proof that simple games requiring only a sheet of paper and a pen can be as sophisticated and rewarding as any other.

▶ RACETRACK

Racetrack is a car-racing simulation game for several players and is played on graph paper. Based on an ingenious game principle, its origin is unknown, though it was first described by Martin Gardner in his Scientific American *recreational mathematics column.*

Racetracks should be made as curved as possible to make the race more interesting when played out. This will be made obvious by studying the sample game.

Each player has a pen of a different color as shown at the start line. At each turn a player moves his or her car forward to a new grid intersection point, according to these simple rules:
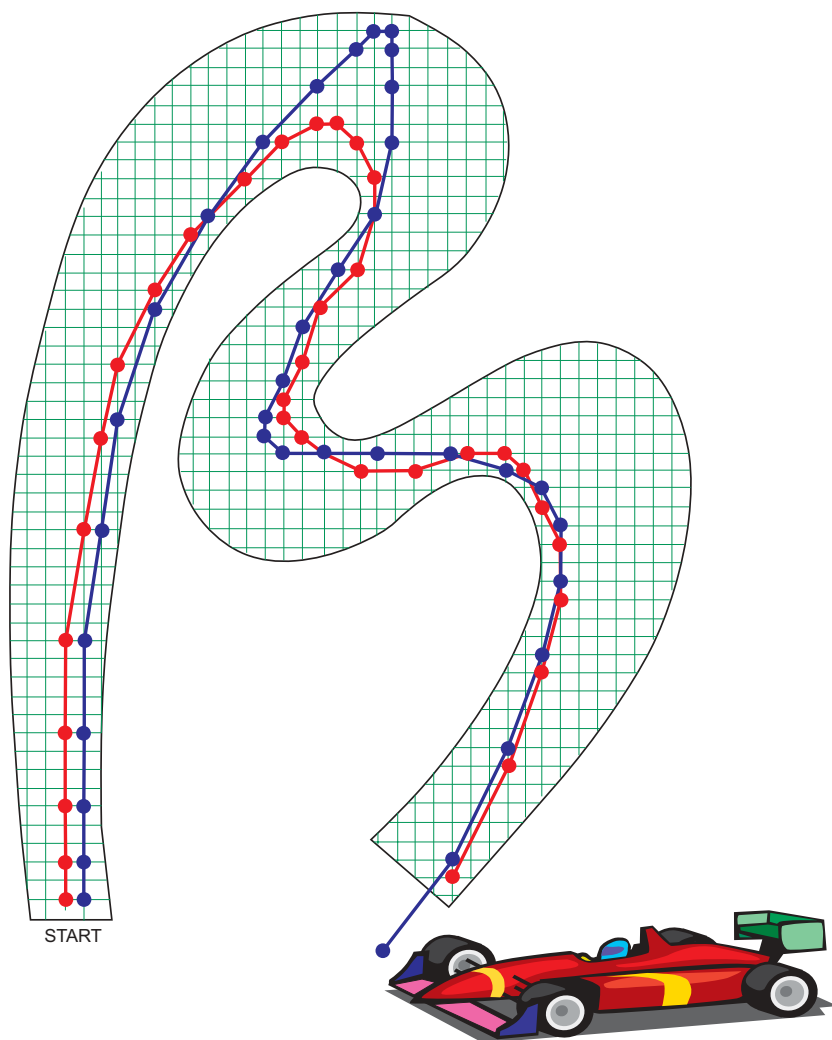
1. The new grid point and the straight line segment joining it to the preceding point must lie entirely within the track.

2. No two cars may simultaneously occupy the same point.

Acceleration and deceleration are simulated in the following ingenious way:

Assume that your previous move was "x" (straight forward) and "y" (left or right) units. The absolute difference between your straight move must be either 0 or 1, and the same for your left or right move. This means that a car can maintain its current speed or vary it by one unit distance per move. The first move according to this rule is one unit left or right, or forward, or both. A car that leaves the track loses two turns. The first car to cross the finish line wins.

▼ SAMPLE GAME

In the sample game below, blue slows too late to make the first turn efficiently. He narrowly avoids a crash. He takes the last curve superbly, however, and wins the race.

START

▼ **THE TRACK**

Finish

Start

Racetrack

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