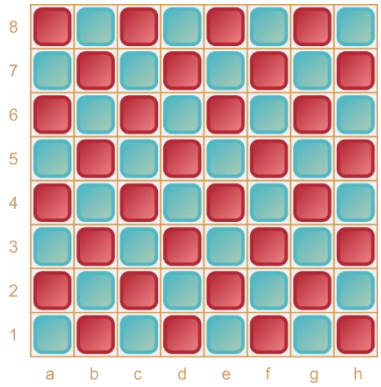
Rapid Transit

2022, Phil Leduc

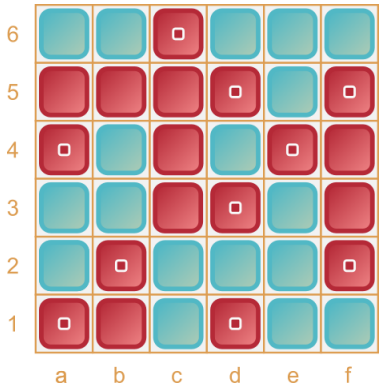
Rapid Transit is an abstract strategy game of unification for two players. In this game, players swap pieces in adjacent networks to create larger networks. The game ends when both players pass. The player with the largest network wins.



initial setup: each player has 32 pieces of their color

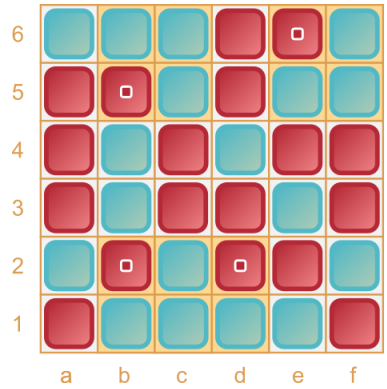
Game Concepts

- **Network**: A network is a set of like-colored orthogonally connected pieces. **Singletons** are networks. Networks may contain loops *if each loop surrounds at least one opponent piece* (2 x 2 formations of a single color are *not* allowed). A network's **size** is the count of the pieces in the network.
- **Adjacency**: *Any two pieces* are adjacent if the cells containing them are orthogonal. Two *networks* are adjacent if they contain at least one pair of opposing pieces that are adjacent.
- **Terminal**: A terminal piece is a piece with zero or one like-colored adjacent piece.
- **Cornering**: A piece is **cornered** if it is part of a 2 x 2 formation and the other three pieces are opponent pieces.



Terminals

Terminal pieces have zero or one orthogonally adjacent like-colored piece. Here Red has 10 terminals and Cyan has 11.



Cornered Pieces

Cornered pieces are part of a 2 x 2 formation shared with three opponent pieces. Here Red has 4 cornered pieces whose 2 x 2 formation are highlighted in yellow. The two lower formations overlap (c1 and c2). Cyan has 5 cornered pieces.

Game Play

Player turns alternate. On a turn, a player must swap two opposing pieces from adjacent networks or pass if unable to swap. The following swap restrictions apply:

1. The player must use one of his or her *terminal* pieces but can swap with *any* opponent piece in an adjacent network.
2. A player may not create a 2 x 2 arrangement of like-colored pieces.
3. After moving, *both* pieces must have two or more corresponding friendly adjacent pieces, that is, they must no longer be terminal pieces.

Ending the Game

The game ends when both players pass consecutively.

Winning the Game

The player with the largest network wins. If there is a tie, the player with the second largest network wins, and so on. If network sizes fail to determine a winner, the last player to swap two pieces wins.

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