

Behavior Contracts:

User Attempts to Place a Tile;

Note:

In this design, the behavior does not require the player to select a valid Position and Rotation to place the tile; the placement will be processed as long as the player is holding a placeable tile; in the instance when the player seeks to place the tile with invalid Position or Rotation, the Game Control will return false and prompt the player to reconsider; This is by design and not a mistake;

Precondition:

1. The Game is not in the initiation state or has already ended;
2. The Game is Ready (valid initiation with correct deck and board information) and is Running in the Gameplay loop that loops on all of the players;
3. The user is holding one and only one placeable Tile card that was returned by the Game Control prior to this call; (*attribute of placeable* is a postcondition of a prior function call return, see system sequence diagram);

Postcondition:

1. The behavior will return Positive Response signaling successful placement if and only if after the placement of the specified tile at the specified position with the specified rotation, all the invariants of the Carcassonne board holds, such that 1> for all arbitrary and fixed tiles on the board, exist at least one tile surrounding such tile such that it is properly abutted to this fixed tile (aka, not diagonally touching), 2> for all undirected bituples of tiles that abut each other, the adjacent segments of abutting tiles must have the same feature types, being one of the following: road, field, city, or monastery;
2. Otherwise, the behavior will return Negative Response signaling unsuccessful placement; In this condition, the board will be exactly the same as was before the behavior is called;
3. In both cases, after the behavior is called, all the invariants of the Carcassonne board hold, such that for all meeples currently placed on the board, exist no meeples that is occupying a finished feature;