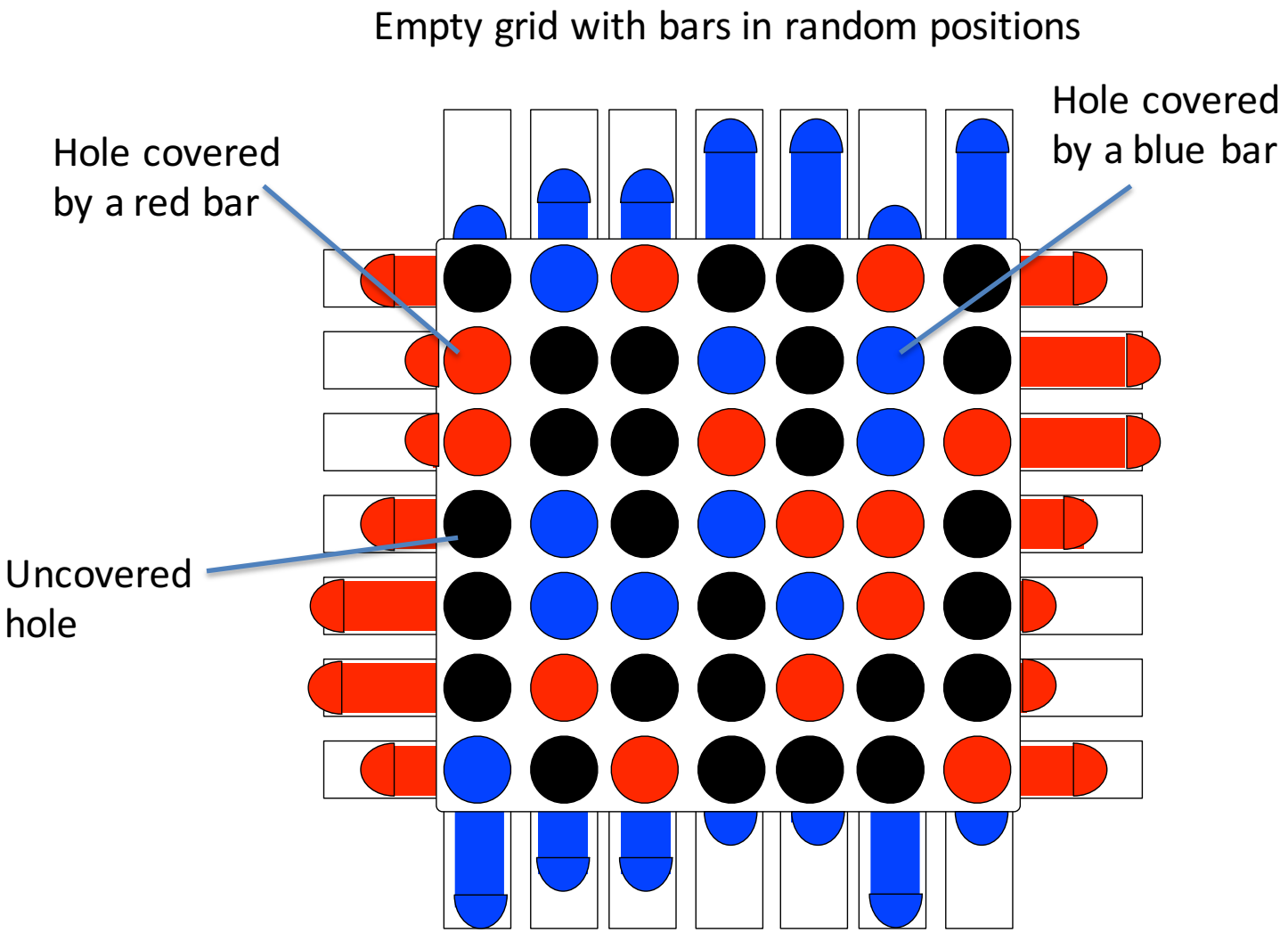
BeadMaster

A board game

- In this project you have to implement a simple board game
- The game involves two to four players
- Each player is assigned a specific color
- There is a square grid consisting of 7x7 holes
- Under the grid, there are 14 sliding bars
  – 7 blue bars placed vertically and 7 red bars horizontally
  – Each bar has 9 slots, each of which is either holed or filled
- In addition there are 20 colored beads (5 per player's color)

Game outlook



Game dynamics: a sketch

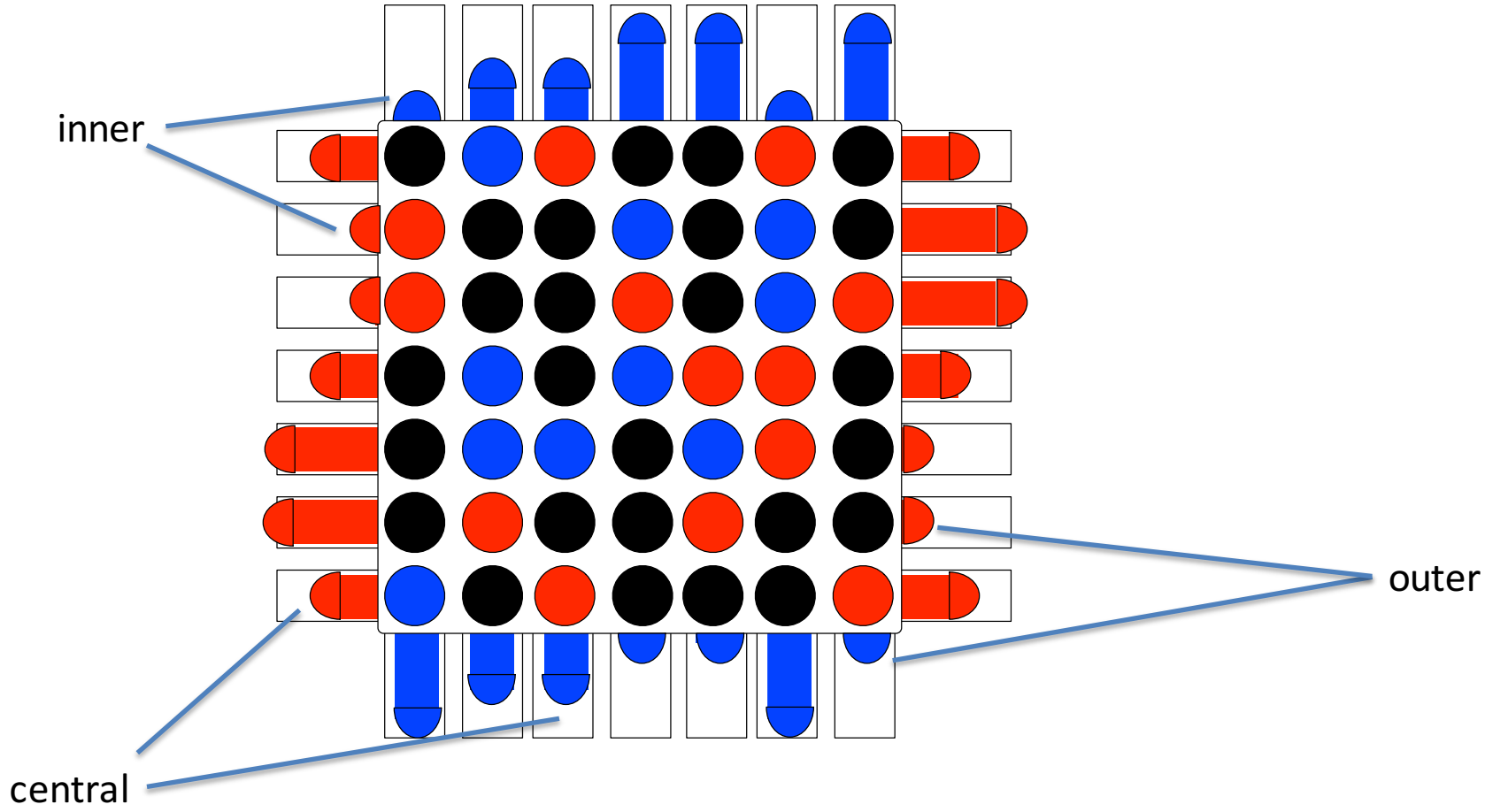
- Each player places the beads of his/her own color over the grid's holes
  - Provided that the holes are "covered" by the bars under them by at least a filled slot
- The players will move the bars
  - Some beads may "fall down" and disappear from the game
- The objective is to be the last player with one or more beads still on top of the grid

Observations

- Each bar has three possible positions: inner, central, outer
- Depending on the bar's position, the holes in the grid will correspond to 7 of the 9 slots in the bar
  - Inner = the first 7 slots
  - Outer = the last 7 slots
  - Central = the middle 7 slots
- A grid's hole is *covered* by a bar if the underlying slot is filled
- In the previous picture:
  - Holes covered by the blue bar look blue
  - Holes covered only by the red bar look red
  - Holes covered by no bar look black

Game preparation

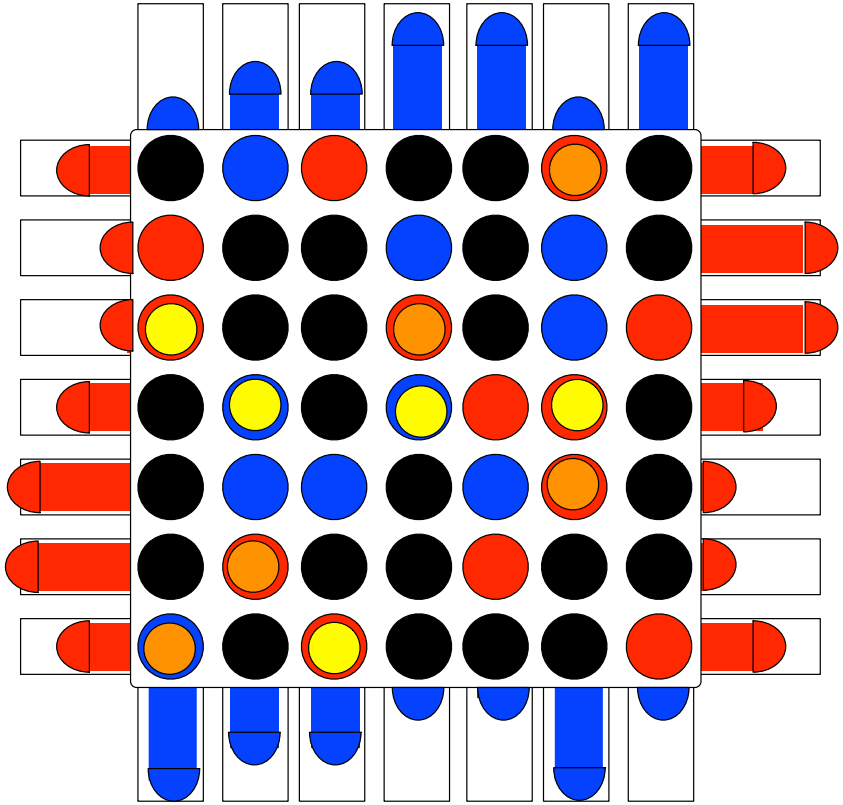
1. Move each bar in a random position (among inner, central, and random)



Game preparation

2. Each player places, in turns, one of his/her beads on a covered grid's hole, until there are no more beads to place (no two beads in the same hole)

This is an example with two players



Game rules

- Players alternate turns in a round robin fashion
- A turn consists in sliding one bar (chosen by the player) by a single position
- Sliding the bar may cause uncovered holes to appear under a bead
- A bead on top of an uncovered hole falls down and is removed from the game
- The goal is to eliminate as many opponents' beads as possible without eliminating one's own beads
- When a player loses all his/her beads, the player is out of the game

Further rules

- You can’t slide a bar that was slid in the previous turn by anyone of your opponents
  - E.g., with 4 players, up to 3 bars may be inhibited
- You can’t slide a bar directly from the inner to the outer position or vice versa
- When only two players are left, a player cannot slide the same bar for more than two consecutive turns

Who wins the game

- The last player left in the game with at least one bead wins
- If the remaining beads belong to different players, and they all fall down at the same time during the last turn, the player sliding the bar wins

Composition of the bars

- The bars' slots are fixed as follows
- Horizontal (red) bars, starting from the top, from left to right (x represents a filled slot, o a holed slot):
  - 1: xoxoxoxoxo (top bar) (Left … right)
  - 2: xooxooxox
  - 3: xoooxooox
  - 4: xoxoxoxox
  - 5: xooooooox
  - 6: xxoooxoxx
  - 7: xooxoxoxx (bottom bar)

Composition of the bars

- The bars' slots are fixed as follows
- Vertical (blue) bars, starting from the left, from top to bottom (x represents a filled slot, o a holed slot):
  - 1: xooooxoxx (leftmost bar) (top … bottom)
  - 2: xoooxxoox
  - 3: xoxooxoxx
  - 4: xooxxooox
  - 5: xxoooxoxx
  - 6: xxooooooxx
  - 7: xooxooxox (rightmost bar)