**SET09109 FUNDAMENTALS OF PARALLEL SYSTEMS  
CHALLENGE DESIGN DOCUMENT  
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**Documentation**

**Data Structures**

Our design attempts to solve turn-taking by having player nodes connect to a verification process, via a buffer with an any2one connection to stop dead and live-locking. The verification process will request from the controller which player's turn it should be, and then check this against the player ID of the player trying to send a pair. If these do not match, the verification process should send a signal to the player saying, “It is not your turn.”

**Communication Structures**

Enrolment will be handled by only allowing it in-between games. The controller will be modified to ask, upon completion of a game, if another game would like to be played. If Player 1 (defined as the host of the game, in this situation) says yes, they will be asked if the game should continue with the current players or if some should be added or removed. At this time, players will be allowed to connect to the game and the 'host' player will be able to confirm that the game is ready to proceed.

**User Interactions**

Each player will have a dedicated channel between the controller and themselves (net2one); this means that to handle showing all players which cards have been flipped, plus showing when a valid pair has been found, a signal should be sent to the controller updating the game board. The controller can then send a signal in parallel to all remaining players updating them on the board’s new look. Should the pair not be valid, then the current button system will remain in place.

**Process Network Diagram**



**Channel Interaction Sequence**

