**Final Project Proposal**

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**Design Topic**

* Design and implement a game called “BrainWars”.

**Input / Output Table**

|  |  |  |  |
| --- | --- | --- | --- |
| Input | Function | Output | Function |
| Button S1 | Send or accept game invitation | **LCD Display** | Display the game frames |
| Button S2 | Cancel game invitation | **Speaker** | Play music |
| Keypad 0~F | Multiple game functions (such as up, down, pressed number) | **LED Lights D1~16** | Decorative lights |
| DIP switch 1 | Music On/Off |
|  |  |
| Connector A1 | Clock Sync Signal In | **Connector B1** | Clock Sync Signal Out |
| Connector A2~4 | Game Status Sync In | **Connector B2~4** | Game Status Sync Out |
| Connector A5 | Music Sync Signal In | **Connector B5** | Music Sync Signal Out |
| Connector A6~14 | Score In | **Connector B6~14** | Score Out |
| Connector A15~17 | Dialogue In | **Connector B15~17** | Dialogue Out |

**Functions of the proposed BrainWars**

* Basic Game Operations

1. Two players play the same three game stages to see whose reaction is faster.
2. The stages will be chosen randomly from six small games without repeats.
3. Players can send some picture dialogue at stage description state.
4. Faster to finish the request, more scores will get.
5. Every game stage has its time limitation. If time is out, the game will proceed to the next stage.
6. After three stages gaming, sum up the scores in each stages to see who is the winner.

* Game Status Control

|  |  |  |  |
| --- | --- | --- | --- |
| State | Description | Input | Next State |
| Initial | Show game initial frame | Button S1 | Gaming Invitation |
| Gaming Invitation | Send game invitation to Player 2 | Button S1 | Stage 1 Description |
| Gaming Invitation | Button S2 | Initial |
| Stage 1 Description | Describe how to play the stage and send dialogue to Player2 | Keypad A~F | Stage 1 |
| Stage 1 | Choose from six game stages randomly | Keypad 0~9 | Stage 2 Description |
| Stage 2 Description | Describe how to play the stage and send dialogue to Player2 | Keypad A~F | Stage 2 |
| Stage 2 | Choose from six game stages randomly | Keypad 0~9 | Stage 3 Description |
| Stage 3 Description | Describe how to play the stage and send dialogue to Player2 | Keypad A~F | Stage 3 |
| Stage 3 | Choose from six game stages randomly | Keypad 0~9 | Game Result |
| Game Result | Sum up the scores and determine the winner | None | Initial |