



## Design Choices

### Variables

**round:** The round variable keeps track of the number of rounds. It is initially set to zero. and

**com\_score:** Keeps track of the arduino score throughout the round

**user\_score:** Keeps track of the physical players' score throughout the round

**decision\_matrix:**

This is the matrix that helps to determine the winner of the round by comparing their choices. Each choice is assigned a number from 1-5 as shown below.

user_choice \ com_choice	Rock	Paper	Scissors	Spock	Lizard
Rock	0.5	0	1	0	1
Paper	1	0.5	0	1	0
Scissors	0	1	0.5	0	1
Spock	1	0	1	0.5	0
Lizard	0	1	0	1	0.5

decision\_matrix

1 - Rock
2 - Paper
3 - Scissor
4 - Spock
5 - Lizard

	0	1	0	1
1		0	1	0
0	1		0	1
1	0	1		0
0	1	0	1	

Here the columns denote the choice made by the Arduino and the rows denote the choice made by the player.

Winning choices of the player is denoted by 1 and winning choices of the Arduino is denoted by 0.

The integer choices made by the player and the Arduino are used to determine the winner by indexing the relevant position in the two-dimensional array.

Com\_choice : 1(Rock)                  user\_chioce: 2 (Paper)

Decision\_matrix [2-1][1-1] = 1    (1 is subtracted from each choice to properly index the array)

Therefore, the score is awarded for user(player)

### **Gameplay Assumptions and specifications**

- The start of a round is indicated by a buzz for 1 second.  
As soon as a round starts player gets 3 seconds to make his choice. At this time period the start/end indicator LED will light up. When the player makes a choice the indicator LED will go off.  
Alternatively if the player chooses to end the game, he can press the start/end button.  
This will immediately end the game.
- If the player fails to make a choice within 3 seconds the score will be directly awarded to the Arduino and the round will come to an end.
- If the player makes a choice, after 2 seconds the corresponding LEDs will light up to indicate the computers choice (A number from 1 -5 inclusive) in binary.

Then the scores will be updated accordingly if there is a winner and the round will come to an end. After the end of each round there will be a small pause before the next round starts. This will be indicated by a buzz sound as stated earlier.

### **Group Members B5**

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