**Arduino Game "NIM"**

The Nim is a game with 12 balls, If is your turn you can pick 1,2 or 3 balls and then your opponent plays. The winner is the one who takes the last one. So basically, this is a simple math game.

From Arduino project by Dzefri ([Arduino Game "NIM" : 17 Steps (with Pictures) - Instructables](https://www.instructables.com/Arduino-Game-NIM/))

There are some system limitation of the prototype that he made. One of it is the controllers are wired, the player can play it in short distance. Besides, it can be play by two players only. There also has no sensor when the ball goes down, so there will be problem for the system.

The improvement that I want purpose are make one wireless controller that have 3 LED indicator that can tell which player turn to play. One controller only because we can cut down the price, we can make more that one, but it will be expensive. Another than that, we should put sensor at the ball goes down, to know the correct number of ball that player choose.

https://www.instructables.com/Arduino-Game-NIM/ alt text

**System Limitation**

* LED indicator for winner - show limited player win
* Controller wired - to much wiring, and can be played short distance.
* No sensor to count the ball - safety and fair
* No sound indicator for winner - not fun
* The ball are showing - make the game easier

**Improvements**

* Change to LCD Display that can show how many time player win
* Make wireless/bluetooth controller using HC-05 bluetooth model, also can be control using phone, more than 2 players
* Put sensor to make sure right number of ball goes down as player choose, can use ultrasonic sensor or colour sensor
* Put speaker/buzer to play the music for the winner
* Make the ball hidden or make machine to release random number ball at start of the game