

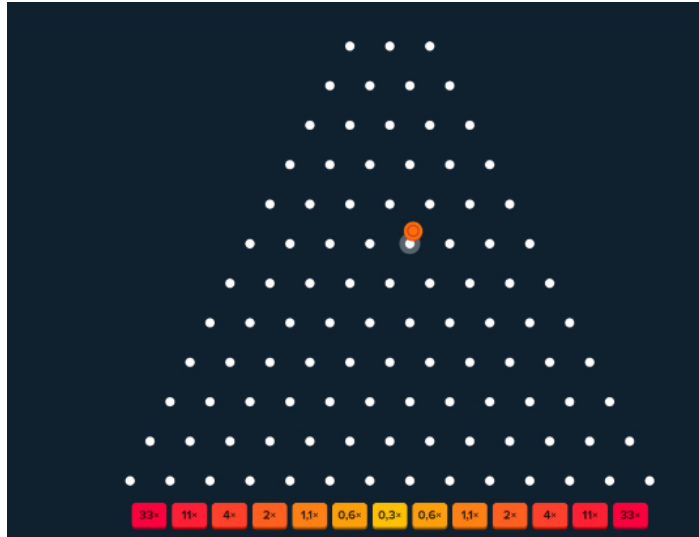
<b>Team 6</b>	<b>Project: Plinko Game</b>
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### **Project Description:**

Implement a popular arcade game Plinko Game (**Figure 1.1**) using what we learned from this semester. We would like to create our Plinko Game for our final project to be just like an arcade game for the class to try. So, the flow will be just like any other arcade machine when you insert a coin, it gives you a ball. Once you receive the ball, you can play!

#### **1. Design**

When given a player inserts a coin, it will give out a ball to play (or multi-ball). After the player rolls down the ball in our designed course (made by hand with cardboard and each white pole will have LEDs to make it more pleasing to a player), it will land on one of the squares (ours will have 5 different landing zones for the ball to land on). Then the FPGA will output the score depending on where the ball lands. Some landing spots have the same points, but the farther away from the center, the more scores the player will get. In addition, there will be background music during and end of the game.



(Figure 1.1 Plinko Crypto Online Game)

**Description:** We want to remake this game with our knowledge from this course.

## 2. I/O Devices

- Audio and speaker, and LEDs for the game.
- Reset the button on the FPGA to restart and start the game.
- 7-segment display to output the player score.
- 5 different landing zone censorship.
- Sensor for the coin, ball machine.

## 3. Timeline

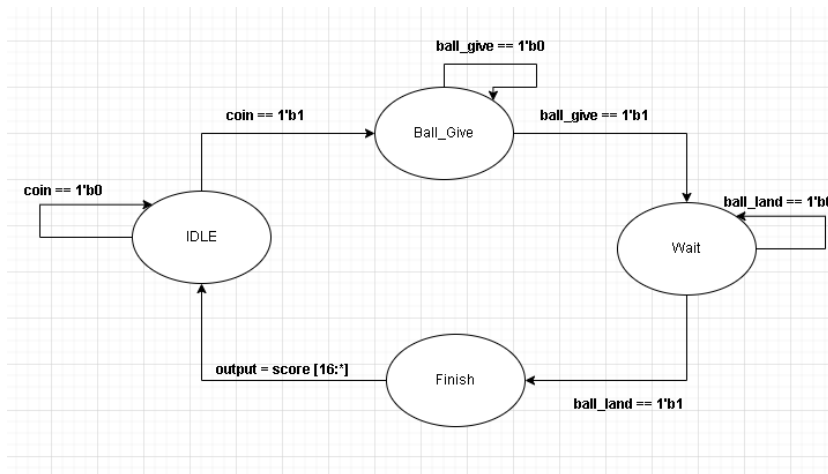
- a. 12/15 Finish designing the LED board.
- b. 12/29 Finish Code implementation.
- c. 1/5 Start putting everything together
- d. 1/12 Demo

## 4. Possible difficulties and solution

- a. Connecting censorship to FPGA. Solutions would be youtube, google, and StackOverflow.
- b. Coding the FPGA would be a hard task, but if we give ourselves enough to research and debug, we think it is possible.

- c. The most challenging part of our project would be configuring the sensors of the landing spots of the game board to the FPGA to output the correct score of the player.
- d. We are still figuring out how to detect the coin when it is inserted.

## 5. Main State Diagram (Our thought process)



## 6. Pseudo Code

```

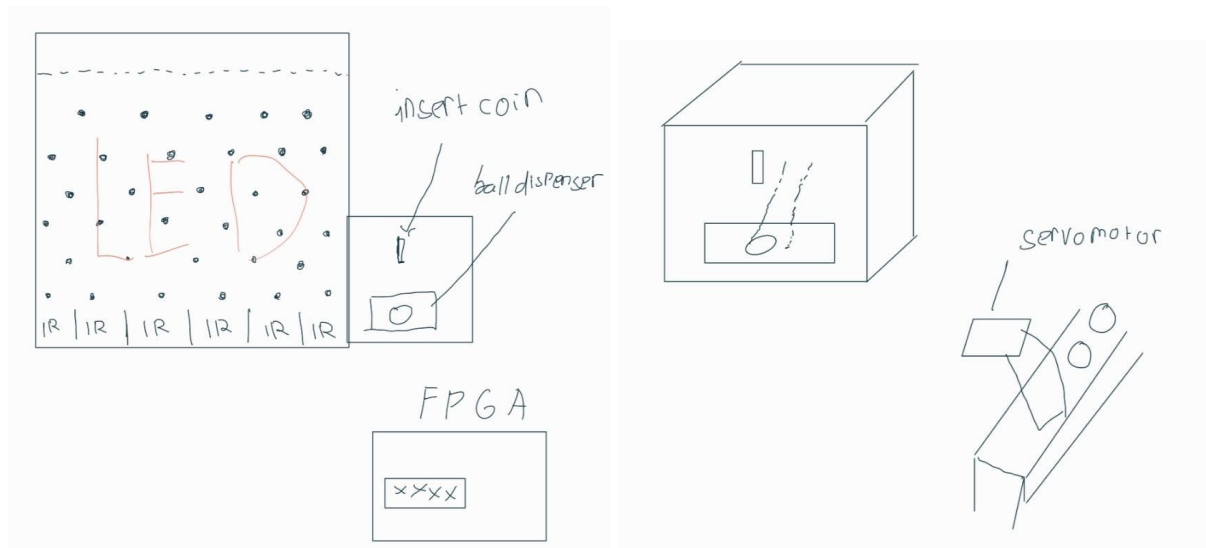
Function top()
    if(coin == 1'b1)
        while(ball_land == 1'b0)
            next_state = WAIT
        do: |
            play music

        if(ball_land == 1'b1)
            next_state = FINISH
            //output score, change music
    Else
        next_state = IDLE
  
```

## 7. Sketch of the Final Product

If there is no product for the LED panel for the backboard, we can use LED strips to put at the sides. “XXXX” on the FPGA 7-segment display represents the scoring of the

player. A player can only once per coin. If the player wants to play again, they will need to insert another coin.



## 8. Estimate Budget

This estimate budget is very bare because we do not know the market price for Taiwanese Electronic Markets which we heard it was more expensive than our home countries.

Name of item	Price of item
LED's for board	200 NTD
IR censor	5u * 30 NTD
Motor for filtering balls	150 NTD
Board	100 NTD
Extras (cables, coin, ball, shipping fee)	100 NTD
All	700 NTD