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# AVOID THE TRAPS

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CS101 Project

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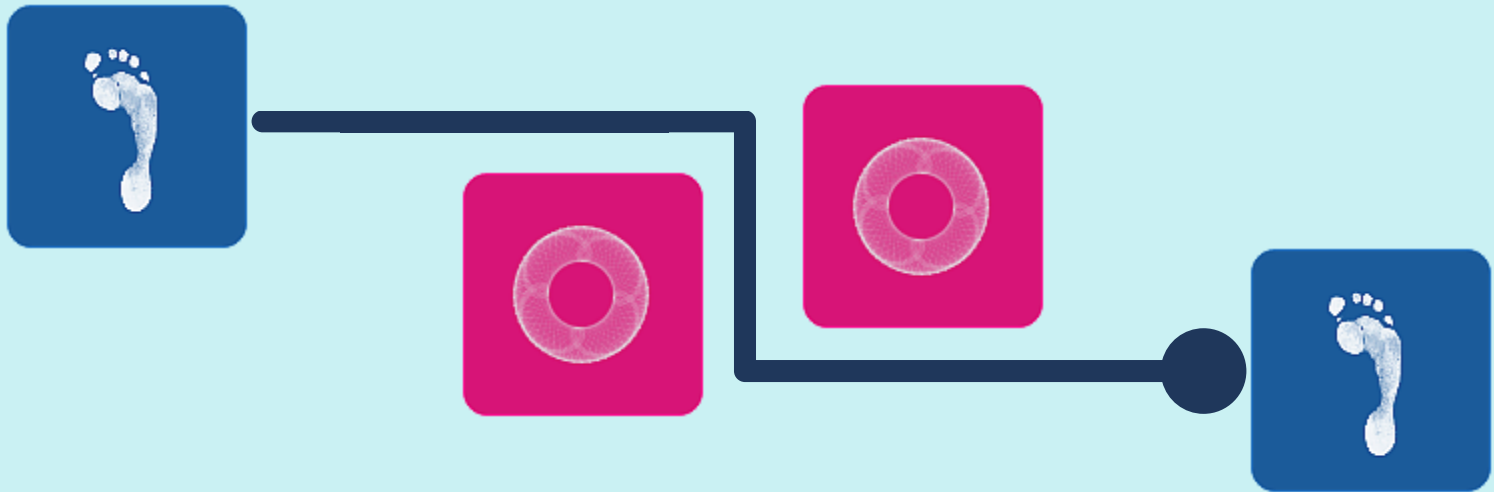
# Problem Specification

**This game enhances and sharpens your memory performance by testing you to memorize paths and places. It is inspired from the mobile application Peak, which is a brain training application that contains some challenging games.**



# The idea

This game's goal is to try to connect the two feet together without passing through any trap.



# Analysis

## Input (by mouse clicks):

- Start.
- Reset the game.
- Navigate path.
- Play again.
- Exit.

## Output as GUI + audio:

- Start page.
- Game board.
- Audio effects when navigating the path.
- Winning and losing announcements and audio effects.

# Main formulas

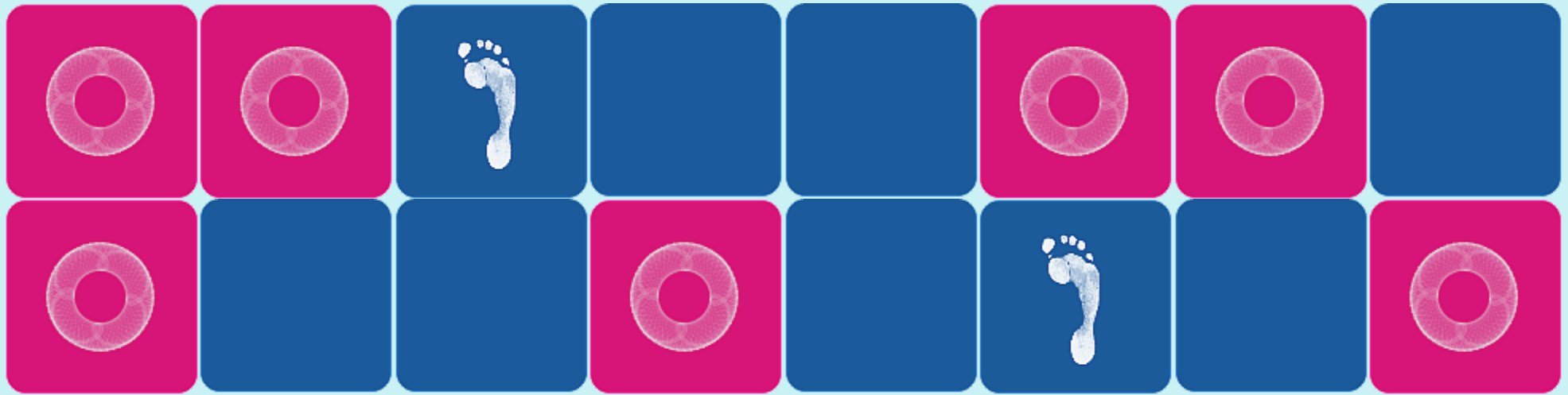
## Timer:

```
time = 15.0 - (((int) System.currentTimeMillis() -  
Game.sTime)/1000);
```

## Score:

```
int score = (int) Math.ceil(time/3.0);
```

# How to play



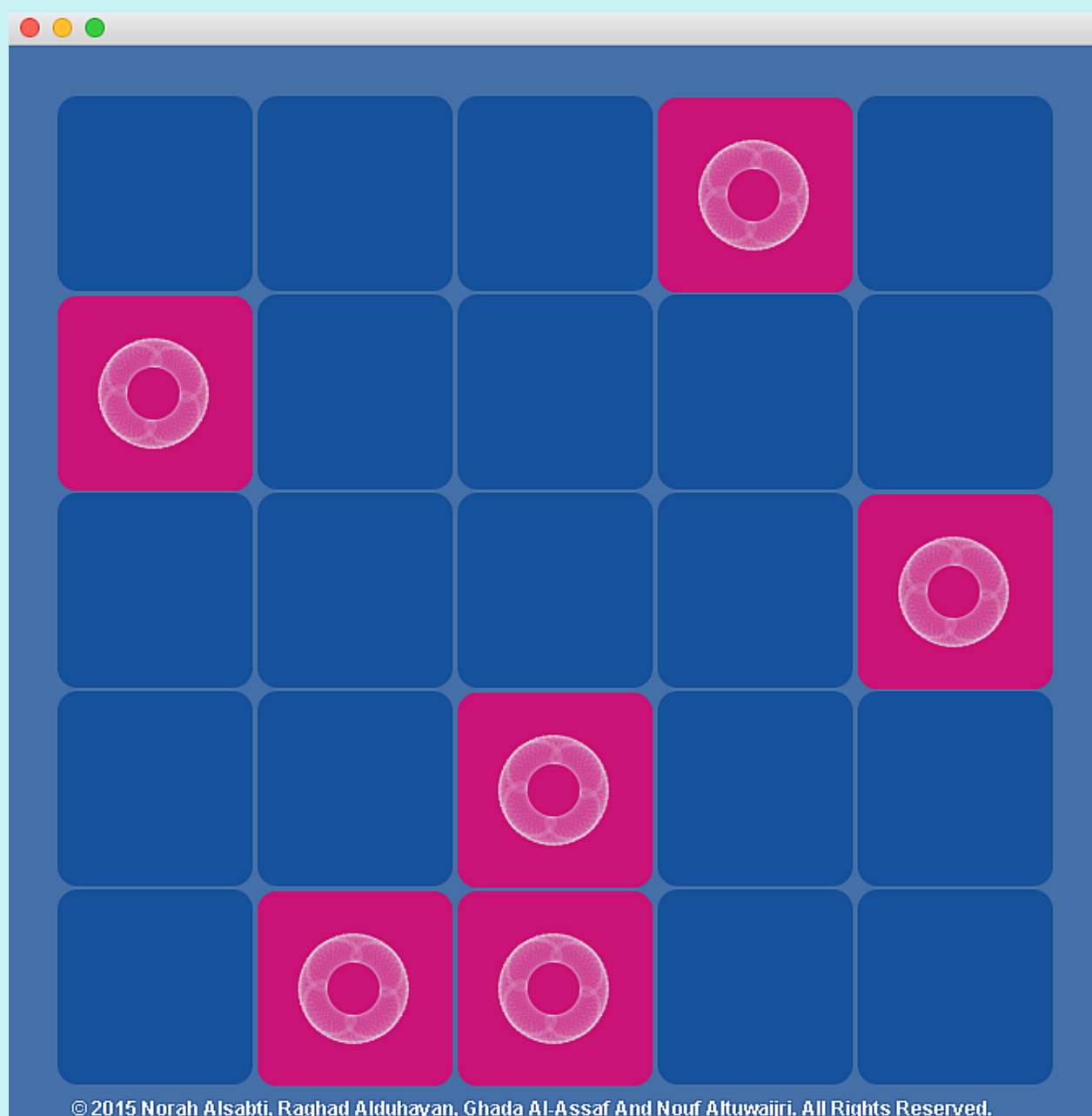


# Avoid The Traps

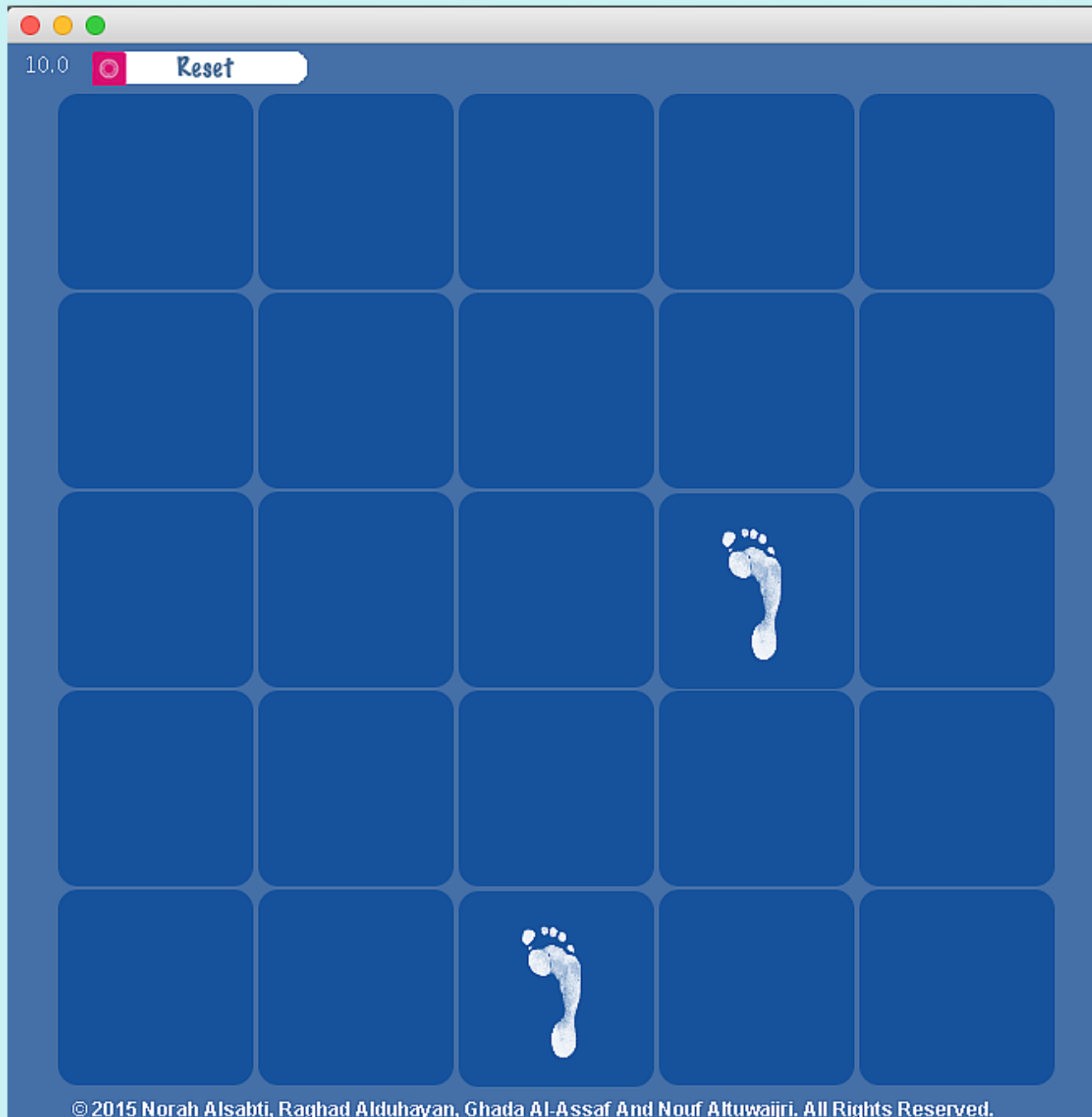


After running the java file, the main screen will display. Game starts when pressing on PLAY button.



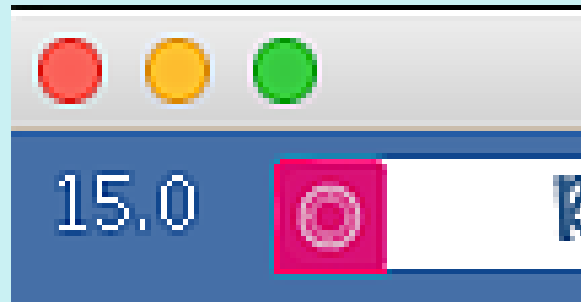


**After running the file, the game will display a random shuffled traps to memorize for 3 seconds.**

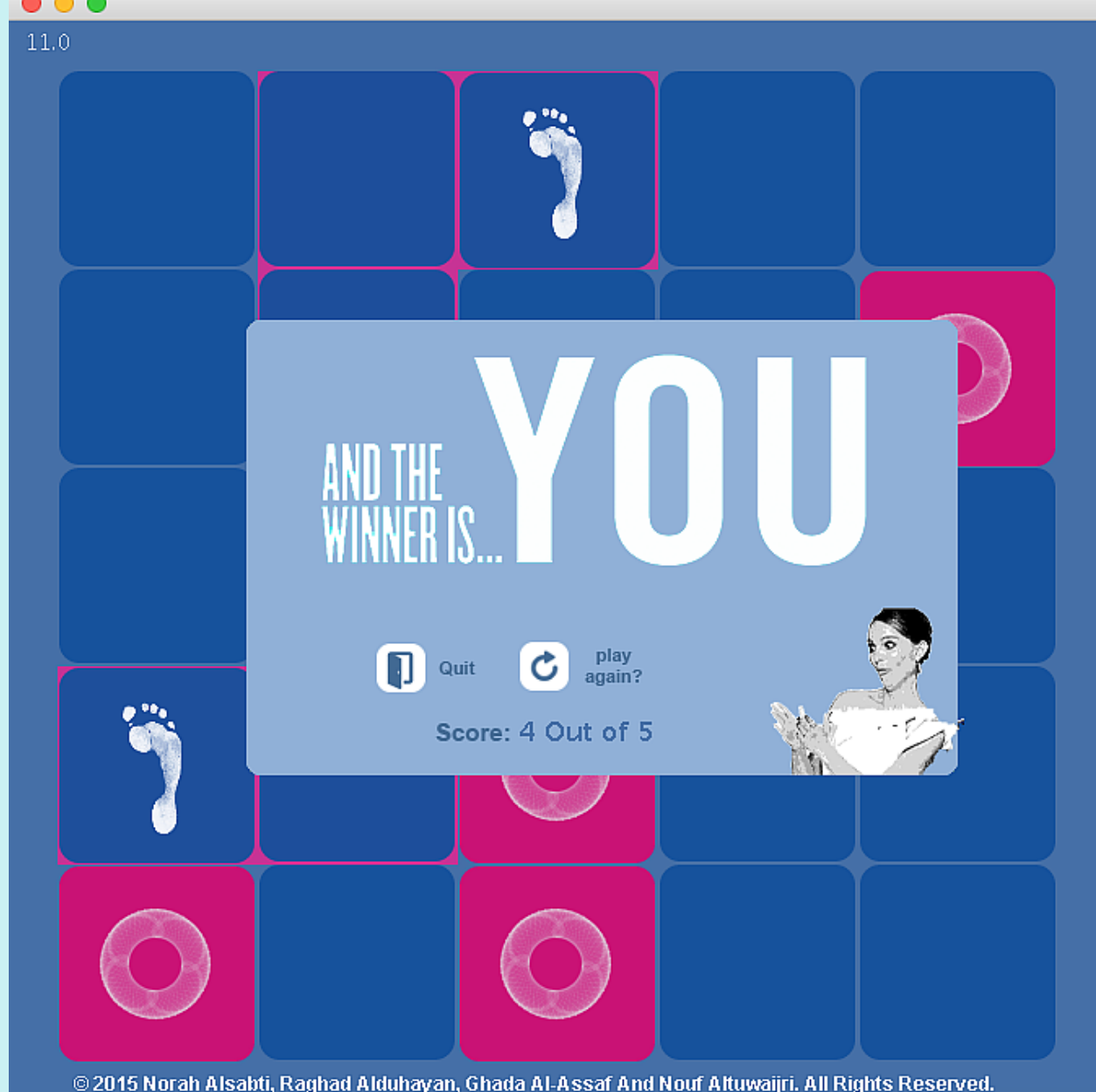


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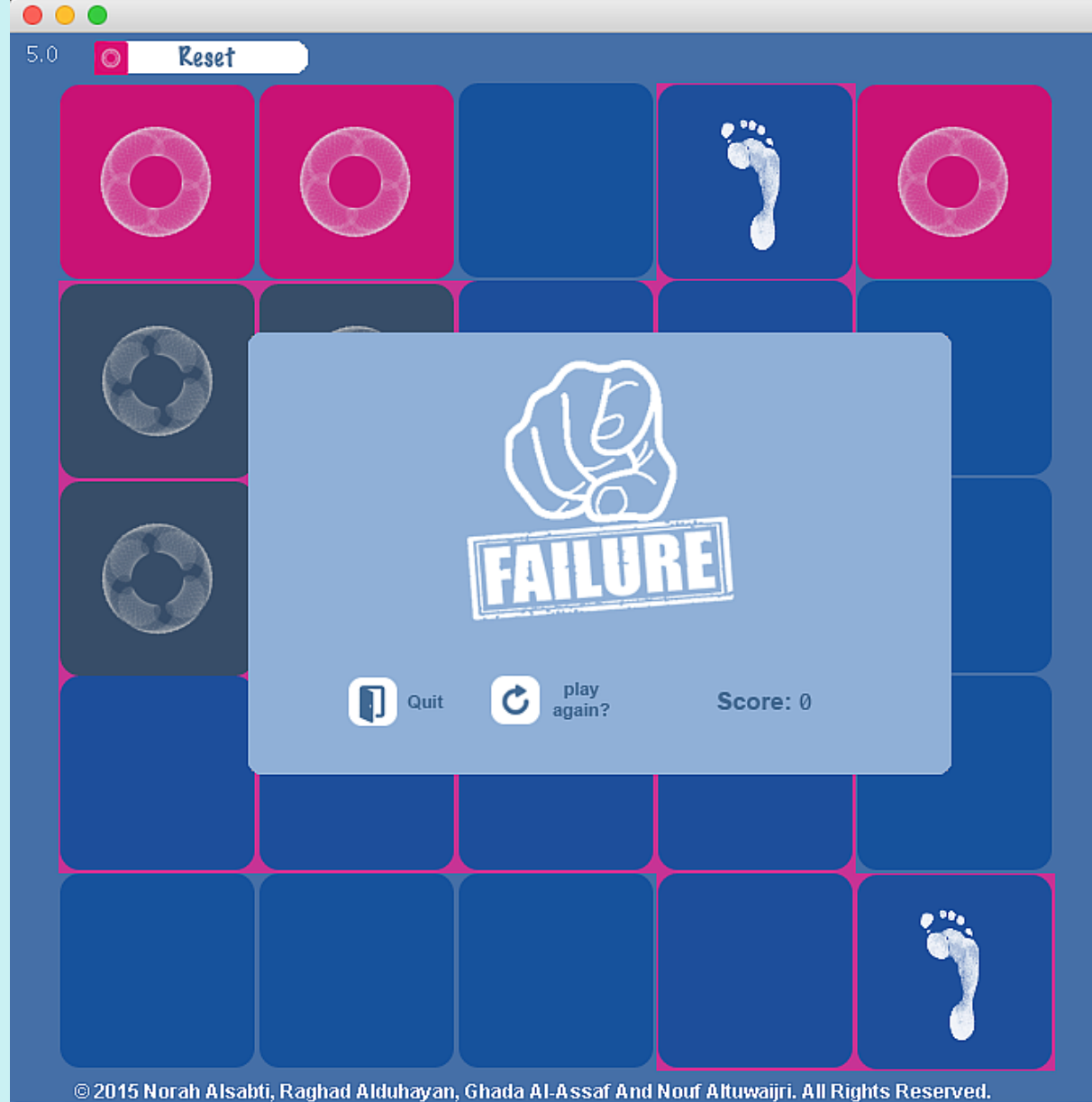
**3 seconds later, the traps will disappear and the two feet will be displayed.**



As soon as the feet are displayed, timer starts ticking on the upper left side of the game for 15 seconds and the score will be calculated. Original score is out of 5. Each 3 seconds pass, score decreases by 1 point.



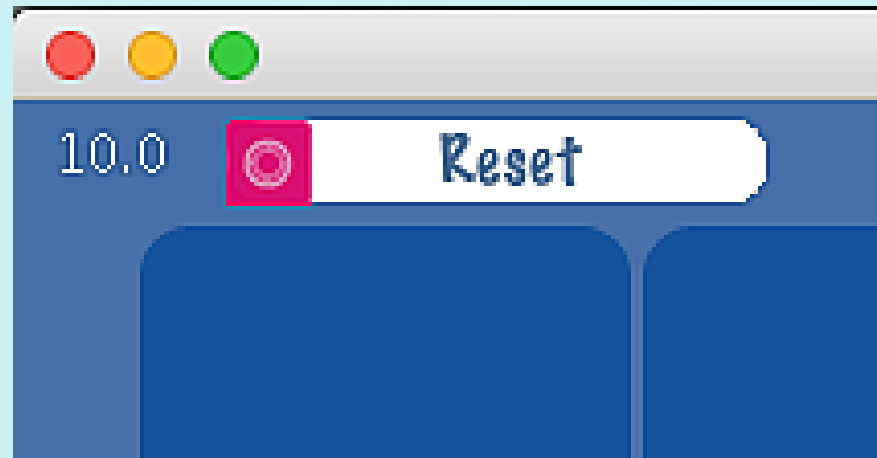
**When the player has successfully connected the two feet together, a winning announcement will display the score and a cheering sound effect will play**



Additionally, a losing announcement will display along with a glass ping sound if the player has passed through a trap while connecting the feet together or when the time is up. Score will be zero.



**After the winning or losing announcements are displayed, the player has the choice to either continue or quit by clicking on either buttons.**



**Lastly, If the player thinks that the result of the shuffled traps is impossible to solve, then all what he/she has to do is click on the reset button on the upper left side to start again with a different arrangement of traps.**

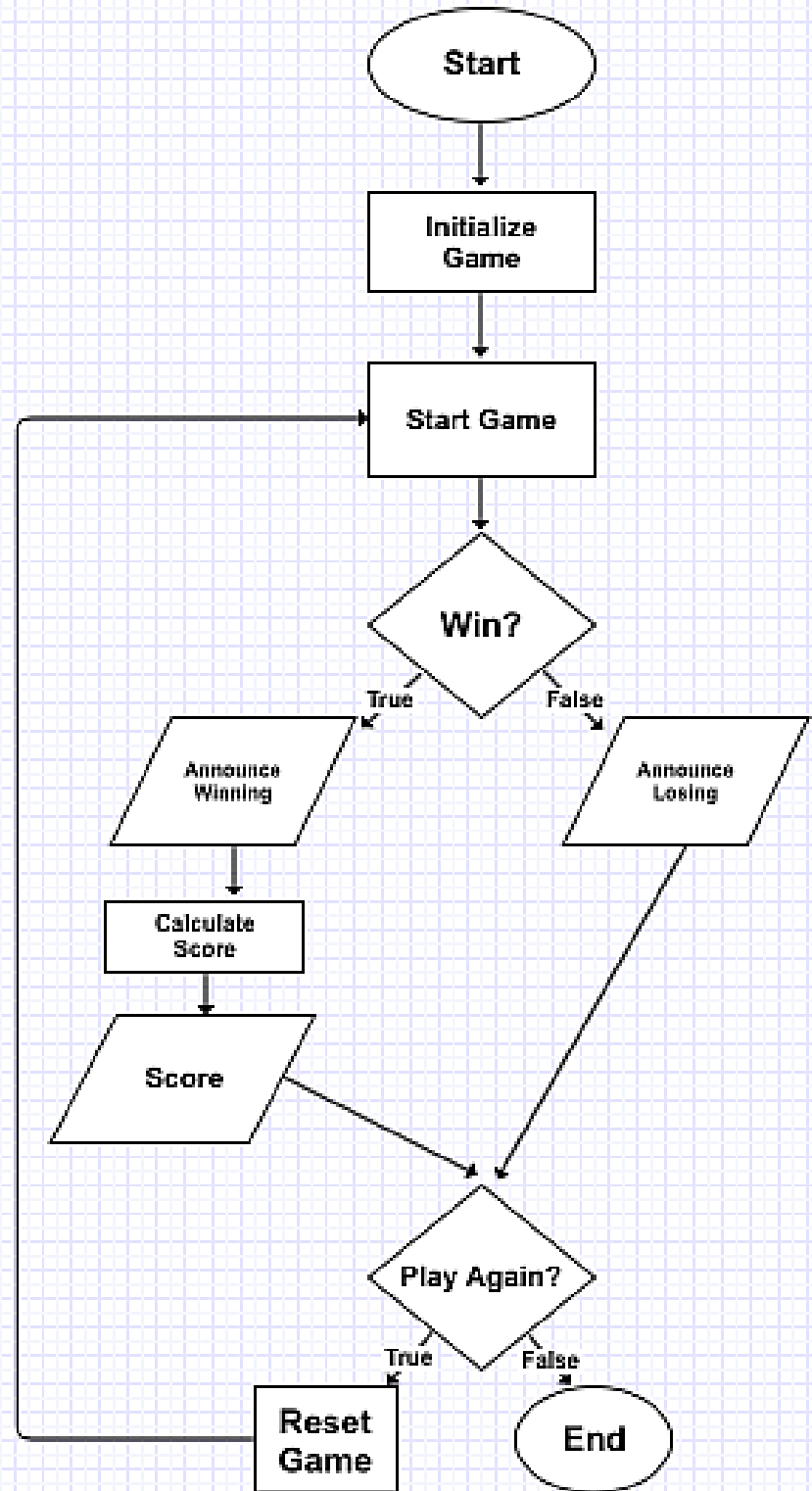
# Algorithm

1. Start the program.
2. Wait for user to click to start the game.
3. Initialize the board with 25 boxes.
4. Randomly choose 6 boxes as traps.
5. Hide the 6 boxes after 3 seconds.
6. Randomly choose 2 boxes as destination boxes.
7. If the game is impossible to solve:
8. Reset.
9. End if.
10. Set timer
11. While (the game did not end):
12. Mark the trap boxes (player navigates his/her way from and to the destination boxes).



13. End while;
14. If (player win)
15. Announce winning.
16. Prompt the user if he/she want to play again or quit.
17. End if;
18. else.
19. Announce losing.
20. Prompt the user if he/she want to play again or quit.
21. End else;
22. If user wants to play again:
23. Reset the game and go back to step 3.
24. End if;
25. Else.
26. Exit the program.

# Flow chart



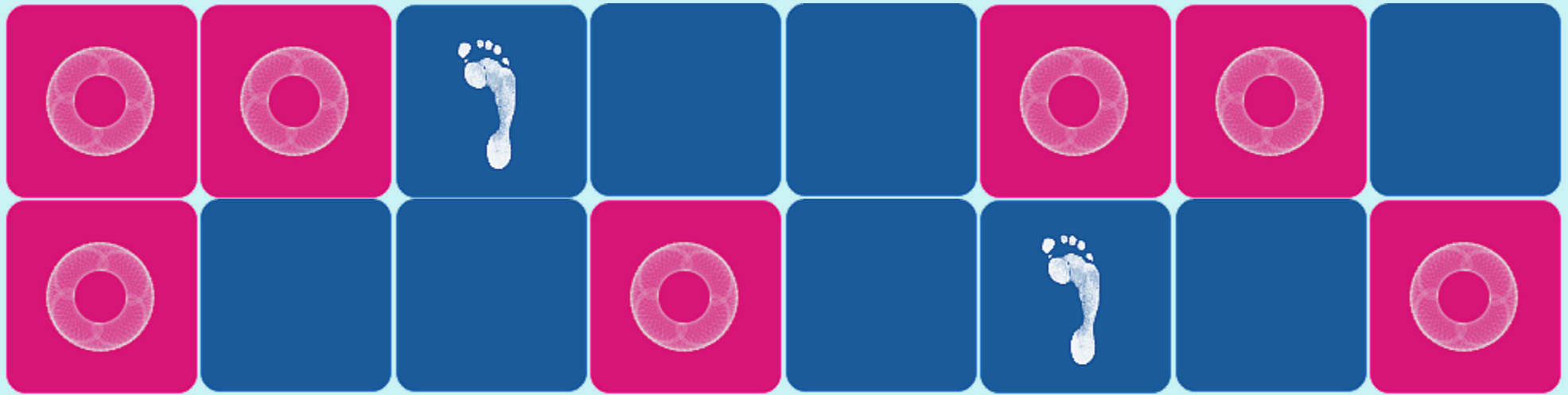
# Implementation

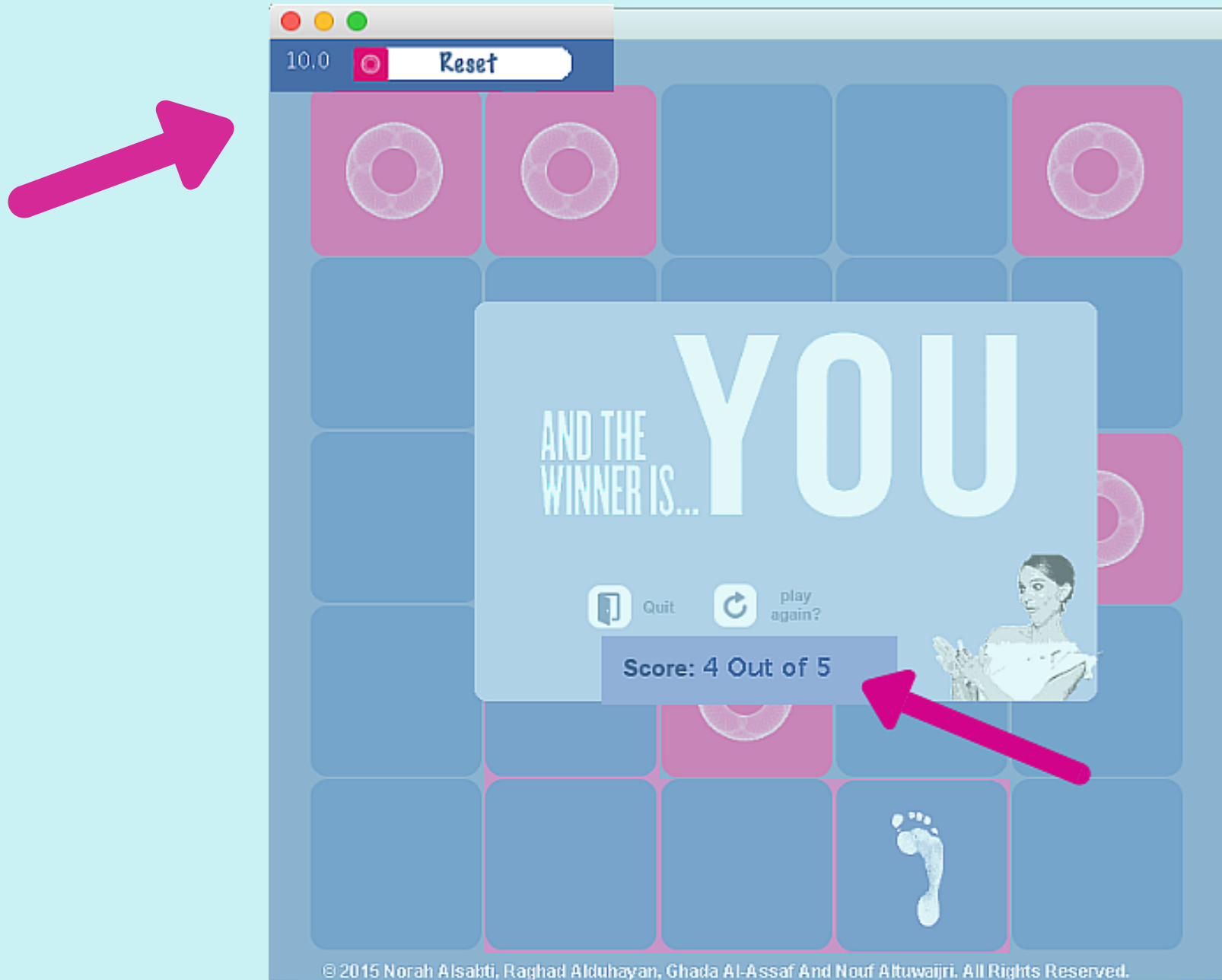


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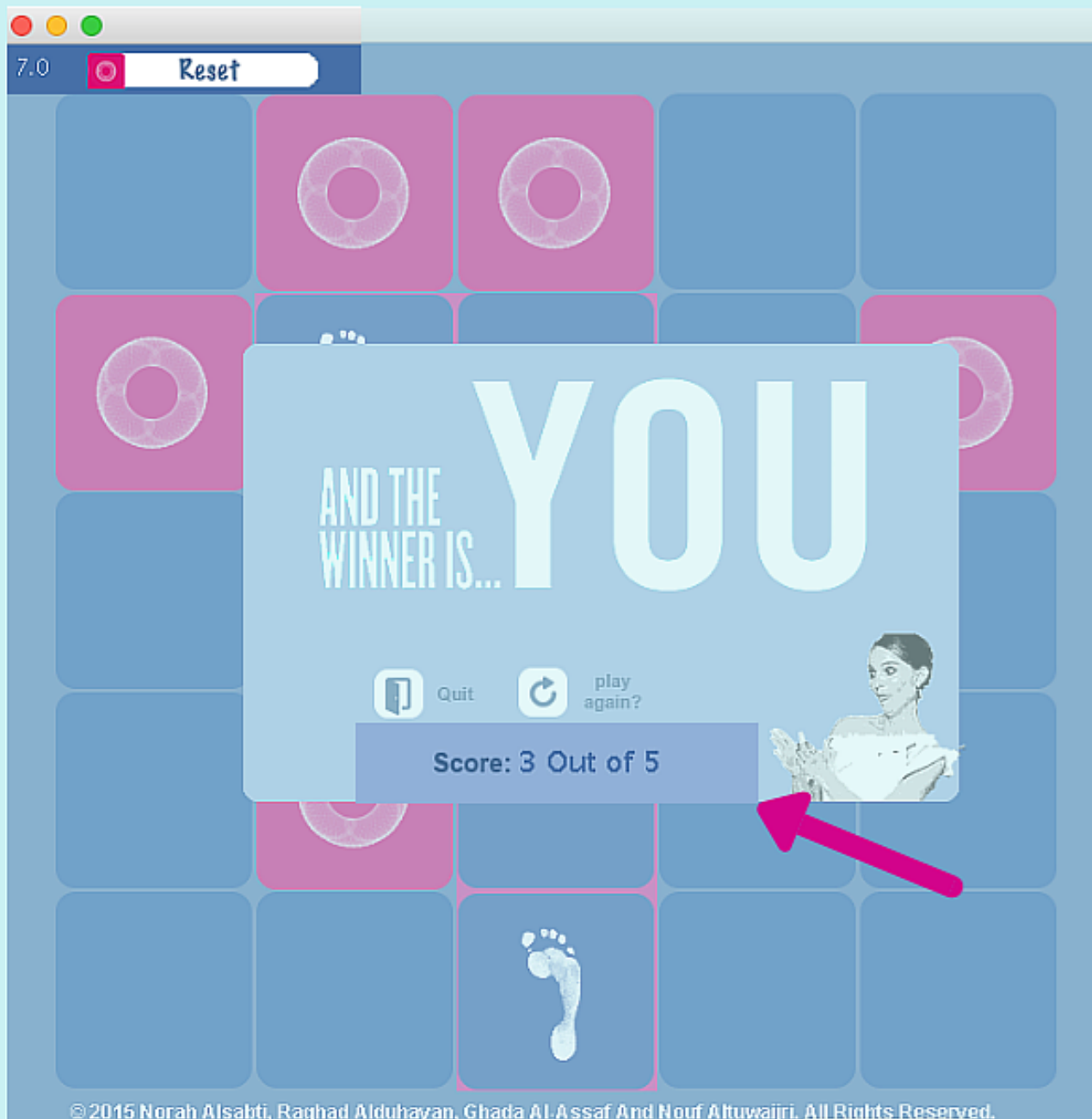


# Testing

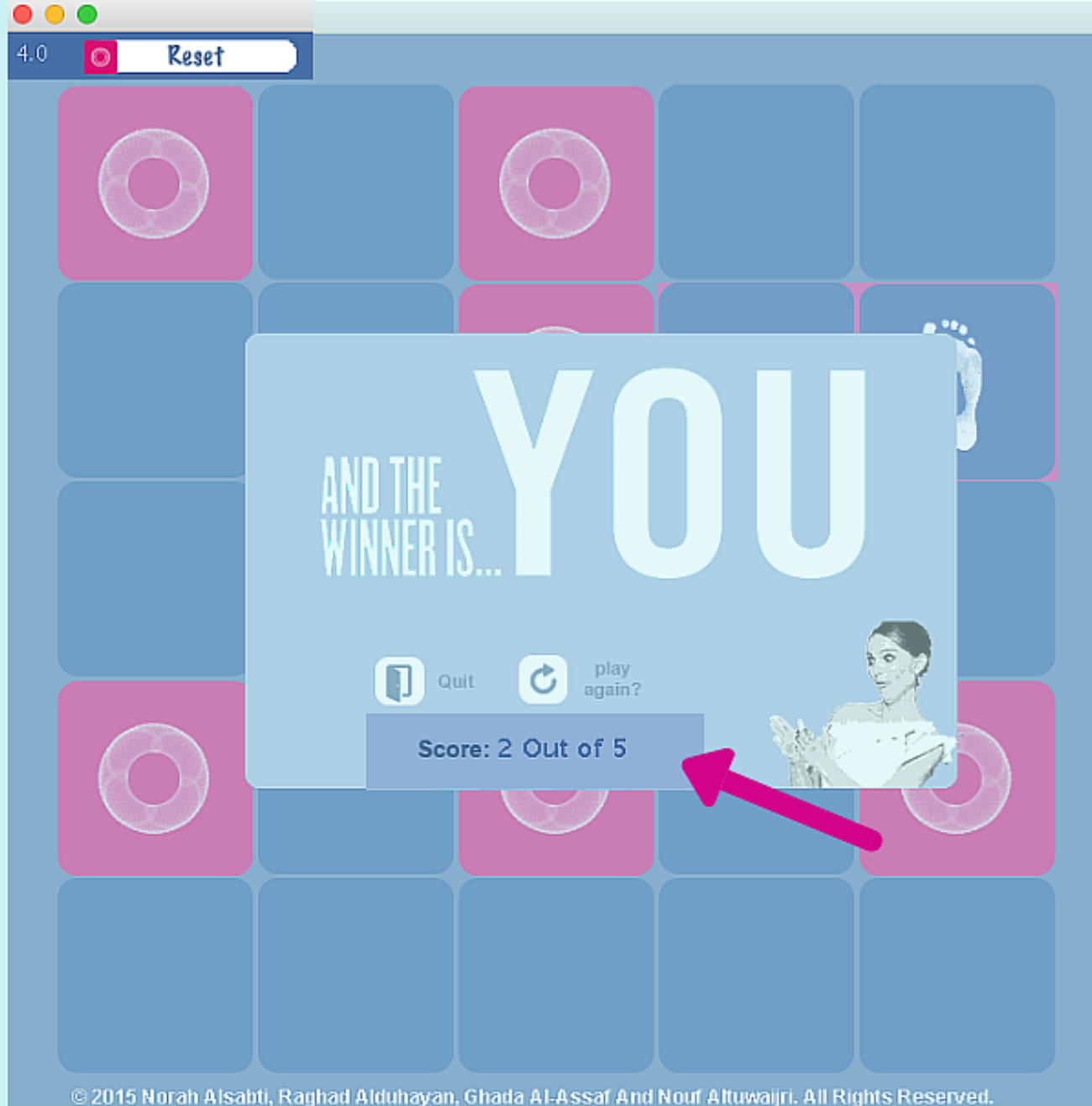




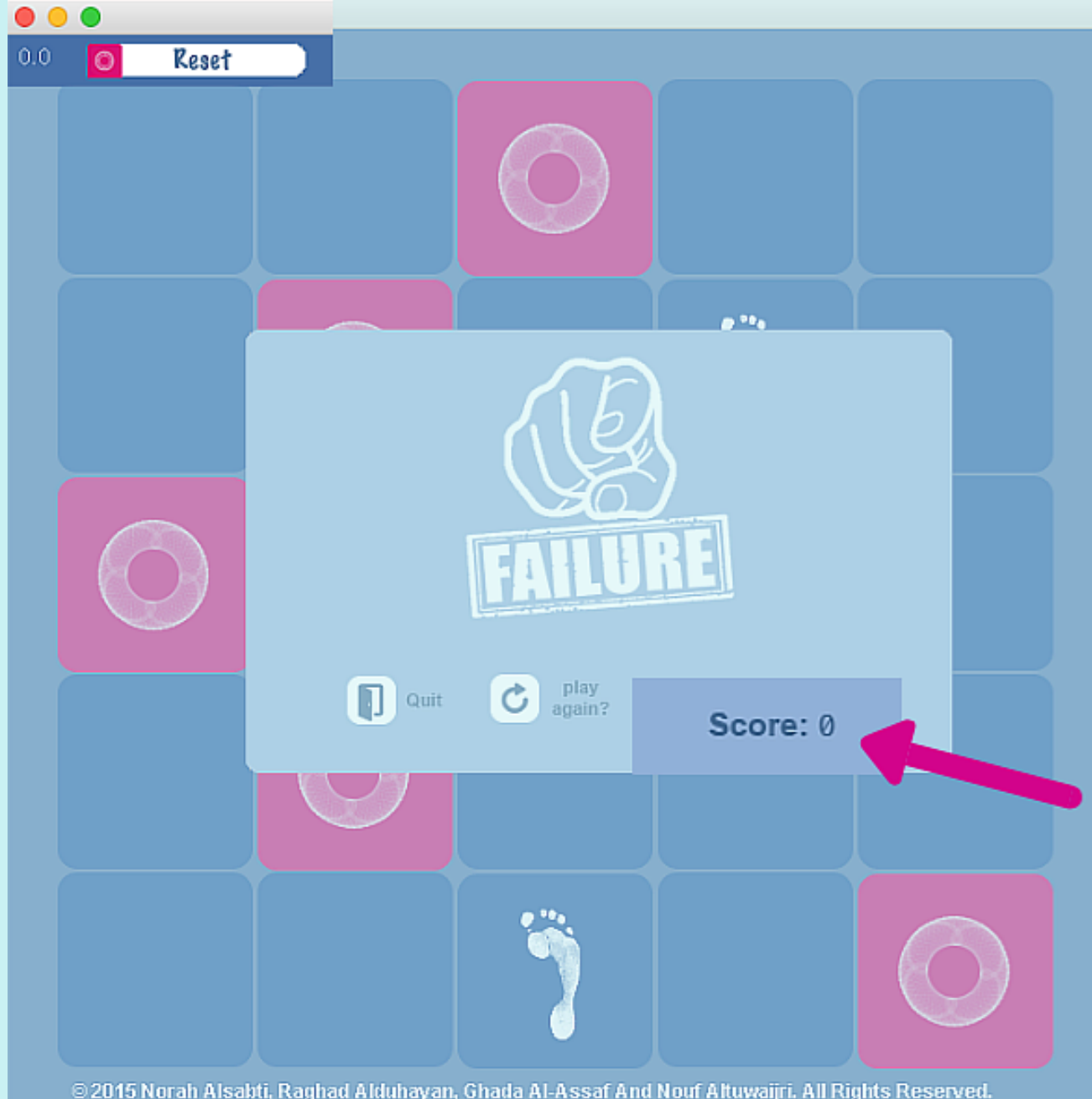
**When the player wins the game in 5 seconds, score decreases by 1 point.**



When the player wins the game in 8 seconds, score decreases by 2 points.

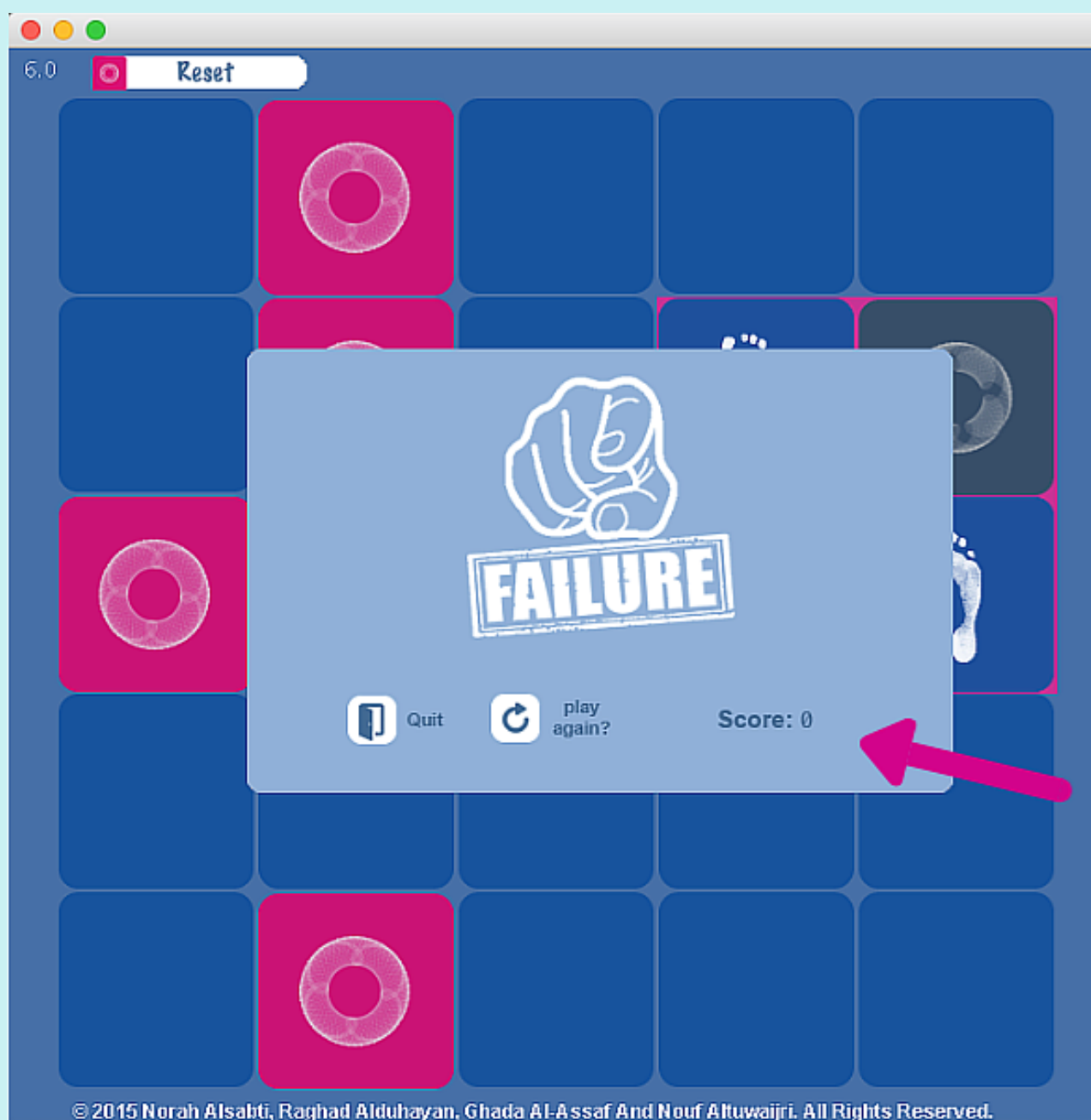


**When the player wins the game in 11 seconds, score decreases by 3 points.**



**When the player did not connect the two feet together on time, score will be zero.**



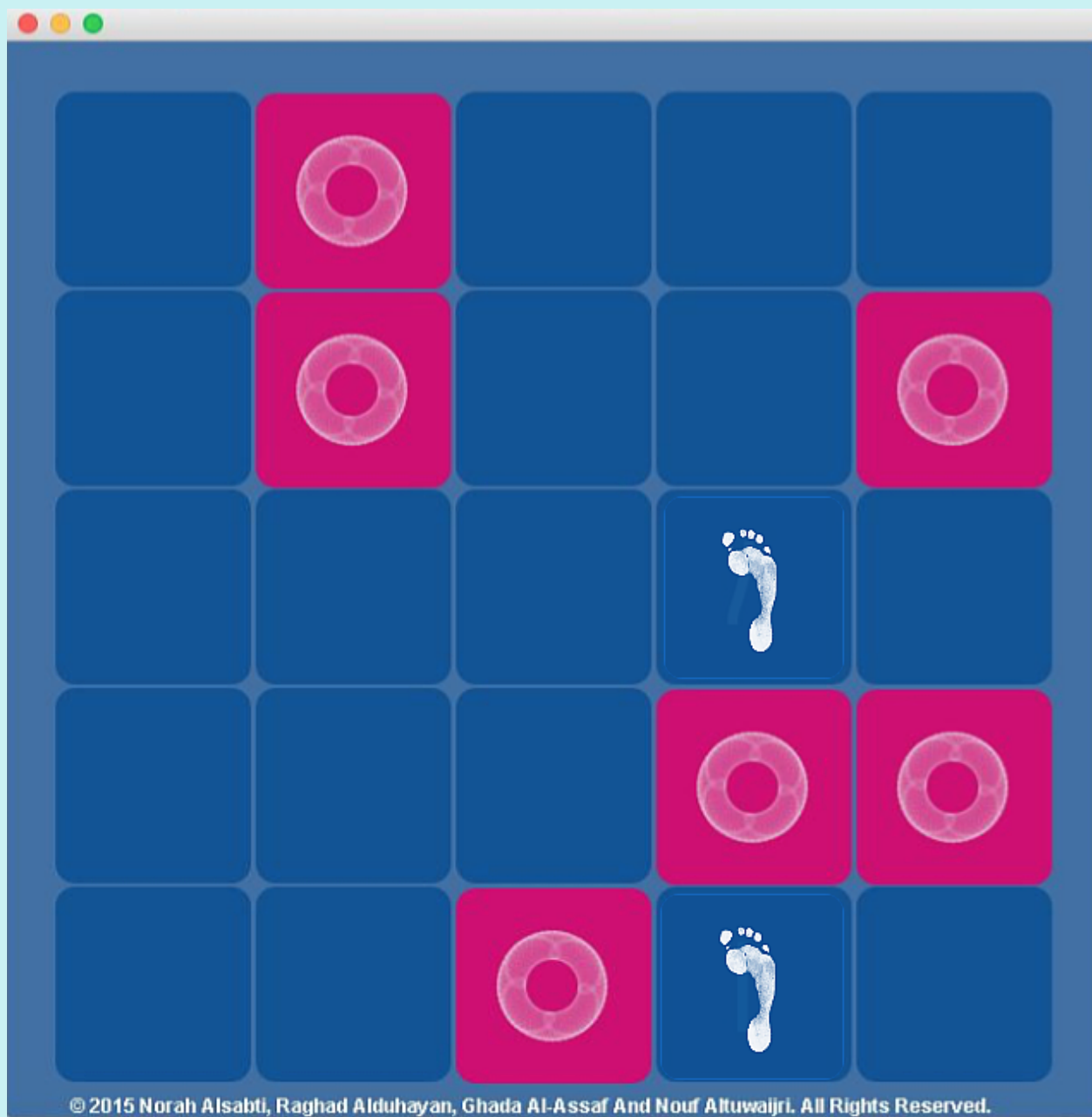


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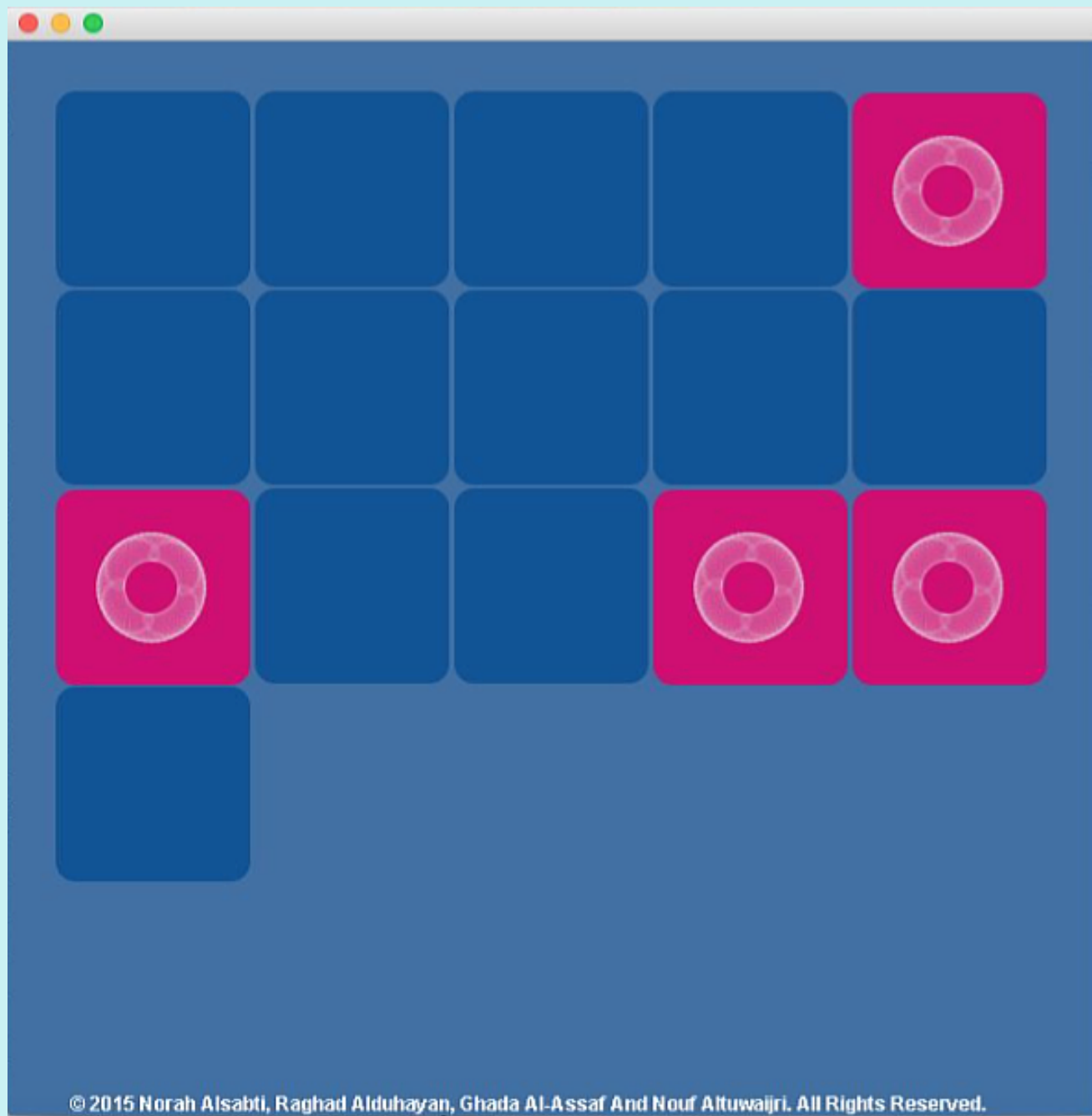
The score will be zero as well if the player passes through one or more trap. The pressed traps will appear in a different color.



**Limitations**



**Generating unsolvable cases, which can be resolved by using  
Pathfinding algorithms.**



**Poor graphics utilities and lag.**

# Our future plan

- Create more levels with upgraded difficulty.
- Improve and enhance the performance of the game.
- Create more features to the game such as creating user profile and playing online with friends.
- Develop different platforms distributions such as IOS and Android version.
- Provide different themes to the game to make it more entertaining and enjoyable.