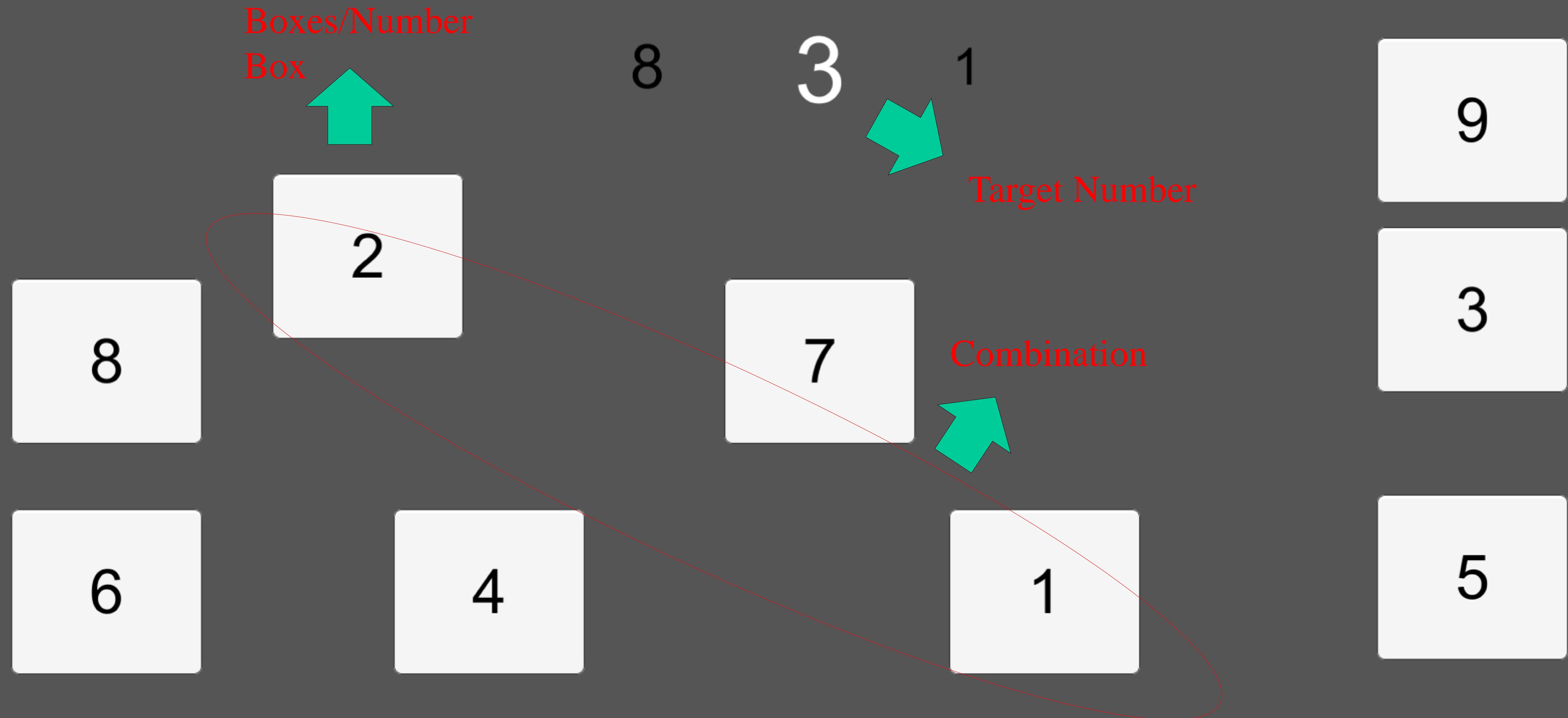


# Key Terms



Combinations (Only one is correct from the following combinations):

If target number is 7:  $4+3=7$ ,  $5+2=7$ , and  $6+1=7$  are all wrong with the exception of one.

# One Combination Series

**Team members:** Ahmed Fadhel (100058802), Shaikha Alkaabi (100059904), Humaid Alnuaimi (100053090), Hamad Alhosani (100059897)

**Client:** Khalifa University

**Instructor:** Athra Ibrahim

## Problem Statement

We have to make a series of games to with the purposes of strengthening cognitive skills. Examples of these skills: Sustained attention, Selective attention, and Divided attention, etc.

## Conceptual Design

In the first design, we planned on making the target number a riddle that you need to solve before finding the correct combination of boxes.

The second design is pretty similar to the chosen one but with moving boxes/numbers.

The third design is also somewhat similar, but it is a multiplication game rather than an arithmetic one.

## Objectives & Constraints

**Objectives:** Developing games for assisting cognitive skills such as memory, attention, and processing.

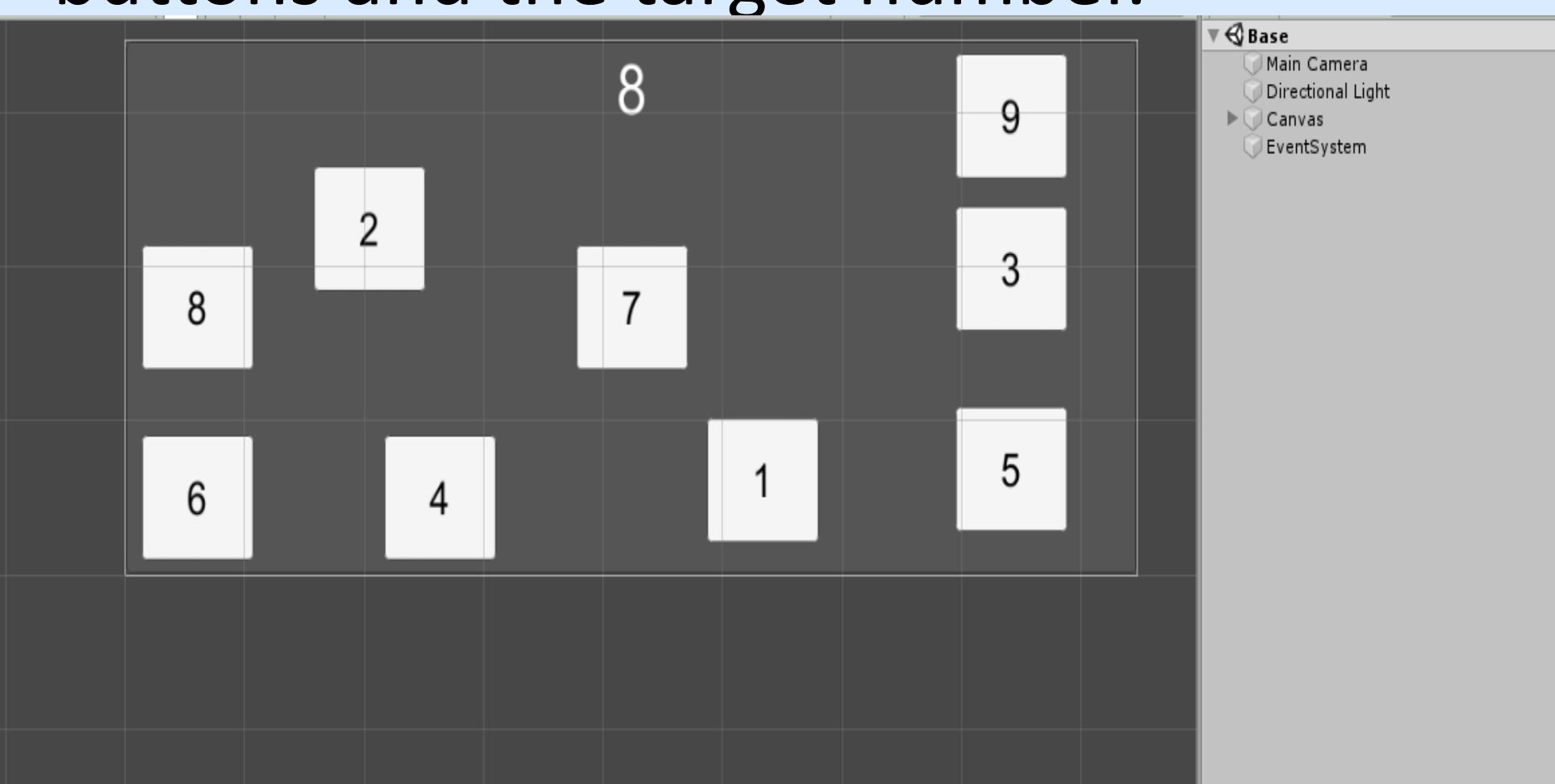
**Constraints:** A minimum of one category of games. One serious game targeting at least 2 cognitive skills. It should be capable of making 3 difficulty layers (easy, medium and hard). Score per user and statistics should be included.

## Design Selection

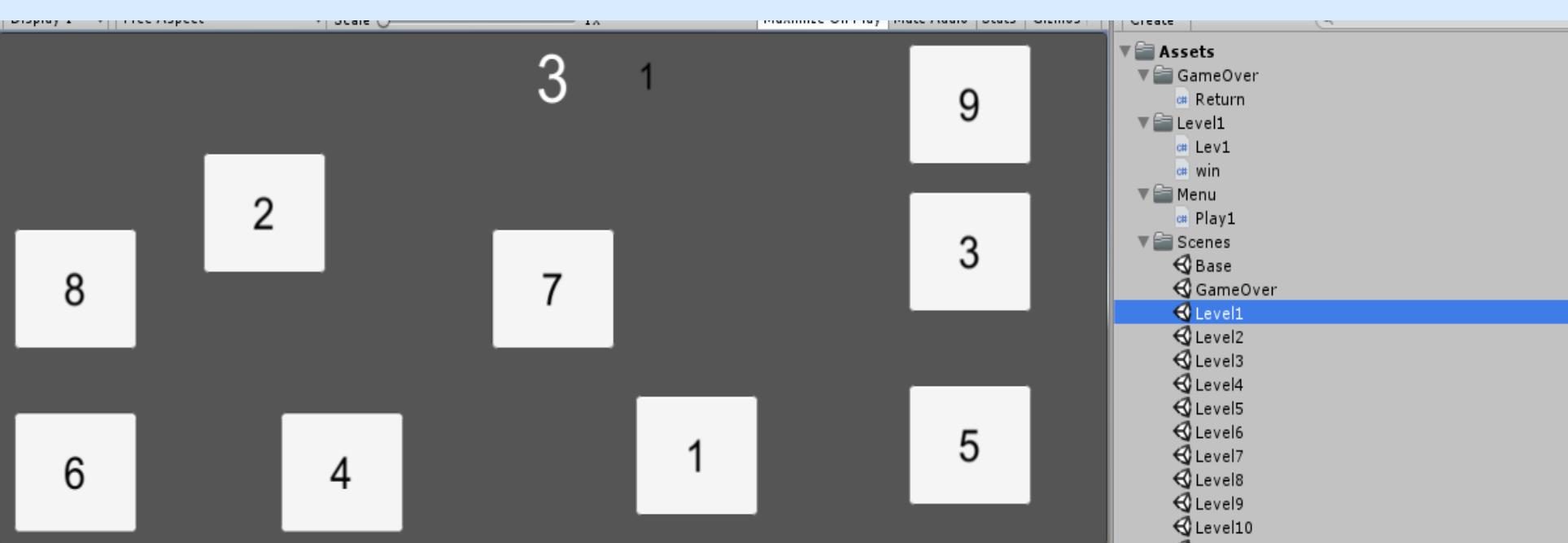
We have chosen the design with a direct target number and fixed boxes/numbers using arithmetic, not multiplication. Riddled questions would require experts in the field to create. Moving boxes would complicate the game and is a mess to optimize for potential operating systems. Finally, using multiplication rather than arithmetic will destroy the purpose behind the game. We are supposed to choose one combination from many. Multiplication lowers the number of possible combinations in comparison. Making a never-ending game requires experience with artificial intelligence, which we do not have.

## Prototype Development

Creating a sample stage with unfunctional buttons and the target number.



Using the sample stage to create the other stages.



Writing scripts, creating a timer, and making everything functional.



## Acknowledgment

We would love to thank God, firstly, and Brackeys for his YouTube tutorials. Finally, we thank our parents for their moral support.

## Cost Analysis

The game is pretty simple and did not require purchasing assets from online stores, so it was free to make. It did not cost anything other than time.

## Results & Conclusions

The results are satisfactory. From the users' comments, it looks plain and simplistic but a bit confusing when starting. There are three skills present in both games. Long-term memory: you need to memorize the correct combination for each question because you are bound to choose a wrong answer. Logic and reasoning: checking whether a combination of numbers results in the target number. Processing speed: there is a time limit of ten seconds for each question. Divided attention: From logical thinking in finding the combination to memorizing the correct combination. We learned how to implement codes we write in actual projects and how to develop games on unity for future opportunities.

## References

<https://www.verywellmind.com/top-websites-and-games-for-brain-exercise-2224140>

<https://www.braingymmer.com/en/>