ZKU Final Project

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repo: https://github.com/elmol/zk-guess-who

video:

Proposal - ZK Guess Who Game

ZK Guess Who Game

The game is a variant of the "**guess who"** game https://en.wikipedia.org/wiki/Guess_Who%3F .
A two player game where they try to identify the other's chosen character. Zk proofs is used
to keep the characters and the game privacy

Proposal Overview

The objective of the game is making yes/no questions about the characteristics the player
tries to guess the character. The player who makes the fewest attempts to discover the
character wins.

To initialize: players select their character from the board and keep it secret (for final project,
next version could create or mint the character)
The boards: For the final project is fixed, but the next version should be randomly generated
including the character created.
To play: In turns, the players ask questions (of the type yes or no) related to the
characteristics. The game finishes when some player guesses the character of the opponent
and wins the round.

The broads are 6x4 = 24 characters to select.
The character is defined by a set of *4 characteristics* with *4 variants* each.

For the final project these characters are defined by numbers and the characteristics by
the positions in the number as a proof of concept. For example in a character **2310,** the **first**
characteristic is **2**, the second 3... And the questions are for example: ***is the first***
characteristic a 3?

It's out of scope for the final project, but the idea is to have graphics characters like a red
cat smiling with glasses and boots, and different categories, and these characters could be
NFT and could make players bet their characters. Of course, the game would be
meaningless if the players or NFTs were public or not anonymous.

Use Case

It's a very funny game where the players can stake their NFT characters.
This game could be used for teaching see this paper Playing, learning, extending: Educational "Guess Who" game that is renewable by a teacher
 This game could not be possible on-chain without zk technology. For academic purposes.

Competitive Landscape

I've not yet seen a game on-chain with these characteristics, where you need to discover the NFT that your opponent has and you win it or lose your NFT. I think this is the biggest differential. As is known, NFTs are popular among digital artists, gaming companies, etc and are being used as commodities. Other games allow you to mint a new NFT if you win (**zkGame**), or use the NFTs as an attribute or modifier in the game, or in case of **zkSujiko** is used as appreciation of the creators. The adrenaline and surprise generated by betting your prized kitty in boots for another to be discovered is unbeatable. Thinking outside the box, with *zkGuessWho* game we could allows to bet differents NFT collections like **Sorare Cards (Sorare** is a NFT game where players collect footballer cards and they can build virtual teams in order to earn points based on the performance of the real life football players).

About disadvantages, one disadvantage that I see is that it is an interactive game between two participants and this could make the adoption a bit difficult in the early stages, also players are required to pay gas on every interaction, and being a game that can be extended in time makes it very little dynamic.

Proposal Scope

For the ZKUC03 final project proposal: As I mentioned above, the *zkGuessWho* characters board is hard coded to **6x4** numeric characters. Characters are defined by a set of **4** numeric characteristics. Characteristics contain **4** numeric variants between **0-3.**

Random board generation, graphical characters, and NFTs are out of the scope.

Road Map

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