

# Digital Hunger Games Arena

Minters World

# Idea

- Arena containing 4 gladiators, each one has different values of statistics and game strategy
- Gladiators can initiate fight between them, they fight to death
- Arena contains damage buffs which gladiators can pick up
- Arena is shrinking every few rounds
- Last man standing wins

# Betting system

- User can bet on a gladiator before the game starts
- Funds from all bets are sent to one big prize pool
- If user won the bet, he wins percentage of prize pool equivalent to size of his personal bet in comparison to other bets placed on a winning gladiator

Problem:  
Fair randomness on  
chain generator

# Potential solution

- Before executing instruction which needs random value, we pull id of latest on-chain transaction
- We convert hexadecimal id to decimal number
- Despite of range of the output we use appropriate modulo of decimal id to output a random number and use it in algorithm

# Gladiator Statistics

- HP => number of health points
- Damage => damage dealt by gladiator during battle on each hit
- Defense => reduces taken damage on each hit by its value, but it decreases by one after every hit taken until it reaches 0, restarts to initial value after the battle
- Speed => number of gladiator moves per round

# Strategies

**Green:** Heads for big damage buff, than approaches weakest gladiator

**Blue:** Heads for small damage buffs, than approaches weakest gladiator

**Red:** Always approaches closest gladiator

**Yellow:** Picks randomly one of 3 strategies above

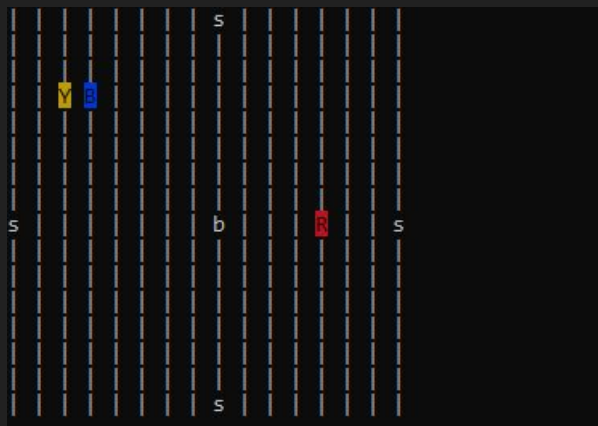
# Battle

- If gladiator enters a field occupied by another gladiator, he initiates fight as an attacker
- attacker makes first hit, dealing  $\text{attacker.damage} - \text{defender.defense} + \text{randint}(1,6)$  damage
- If defender survived the attack, he makes his move and attacks back dealing  $\text{defender.damage} - \text{attacker.defense} + \text{randint}(1,6)$  damage
- If attacker survived, next battle round starts. Battle lasts as long as both gladiators are alive



# Arena Prototype (Python)





Y is attacking B . Prepare for battle!

Round: 1

Y dealt 7 damage, B HP = 45

B dealt 8 damage, Y HP = 92

Round: 2

Y dealt 9 damage, B HP = 36

B dealt 8 damage, Y HP = 84

Round: 3

Y dealt 13 damage, B HP = 23

B dealt 6 damage, Y HP = 78

Round: 4

Y dealt 13 damage, B HP = 10

B dealt 10 damage, Y HP = 68

Round: 5

Y dealt 10 damage, B HP = 0

B died in a battle, Y is victorious!

Amount of Gladiators: 2



## Project continuation

Based on delivered python prototype we plan to fully implement The Arena on StarkNet in the future.

# Contact

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