Final Raid: Byte Fights

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Addressing A Problem

- Teaching programming reveals students' struggles:
  - Don't know how to start
  - Limited common method knowledge
  - Confusion about object oriented program structure

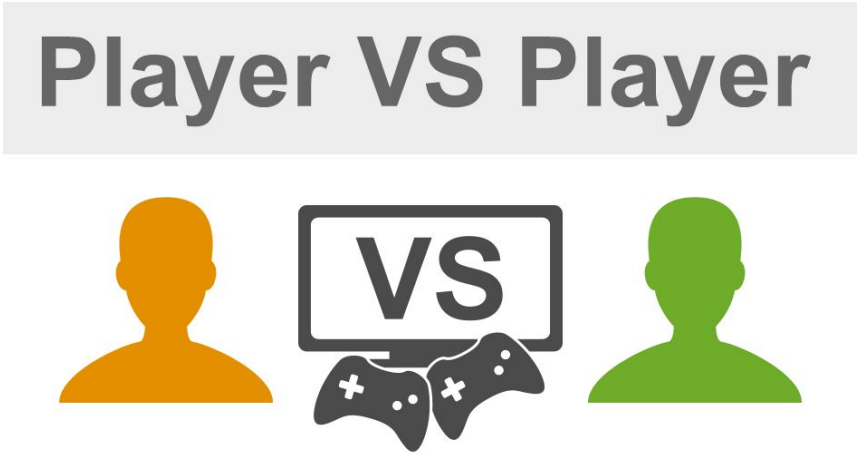
Research

- Anders Berglund and Anna Eckerdal (Uppsala University of Sweden)
  - “In learning to program, there's is a complex interplay between the learning of practice and the learning of theory.”
    - Practice
    - Theory
  - Players learn the theoretical aspects of coding through game mechanics
  - Reinforce practical aspects of coding through code syntax printed on cards

- https://www.researchgate.net/publication/283637460_Learning_Practice_and_Theory_in_Programming_Education_Students%27_Lived_Experience

Audience/Platform

- Middle school/high school students
  - Ages with small amount knowledge about programming
  - Teach/introduce programming at young age
- Tabletop card game - player versus player
  - Aim to teach without tediousness of typing/writing
    - Too much to ask of younger kids
  - Use cards with methods/pre written statements
    - Focus on understanding concepts/code



Baseline Story

- All players are malware
- Compete to be the more efficient/malicious malware

Goals

- Capture - steal RAM from other players and computer
- Stop other players from accumulating RAM
- Accumulate the most RAM by the end of the game

Procedure

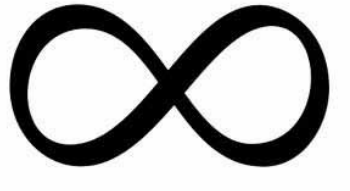
- Dealt 5 cards
- Player plays as many cards as can/want
  - End turn and then replenish deck
- Next player takes turn
- Players take turns until no RAM left to steal from computer

Rules

1. Players must compete for RAM until the computer’s RAM is completely used up.
2. Pick up cards after completing turn until the player reaches their hand size specified on their mat.
3. Player cannot shuffle their cards without playing the shuffle card.
4. Players can only have one for loop in play at a time.
5. Popped cards go on the bottom of the player’s deck.
6. If you try to steal RAM from another player and they have less than that amount, you cannot go through with the action and must discard the played card(s).
7. If statements execute once, discard the if statement and the cards played with/inside the if statement after the statement is triggered.
8. Breaks only work on loops.

Resources

- RAM
  - Unit used for point system
- Cards
  - Contains code and used in gameplay
- Player Mats



Conflict

- Other players can steal your RAM
- Players can stop you from getting RAM
  - Ex. breaking your loop
- Players can make you skip a turn
  - Ex. using clear() method on you

Visuals


```
playerStack.length()=5;
RAM=0;
```

Touchstones

Let’s play!