

Tool-Assisted Speedruns

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UDLS, August 2020

Why I'm Giving This Talk

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Tool-Assisted Speedruns

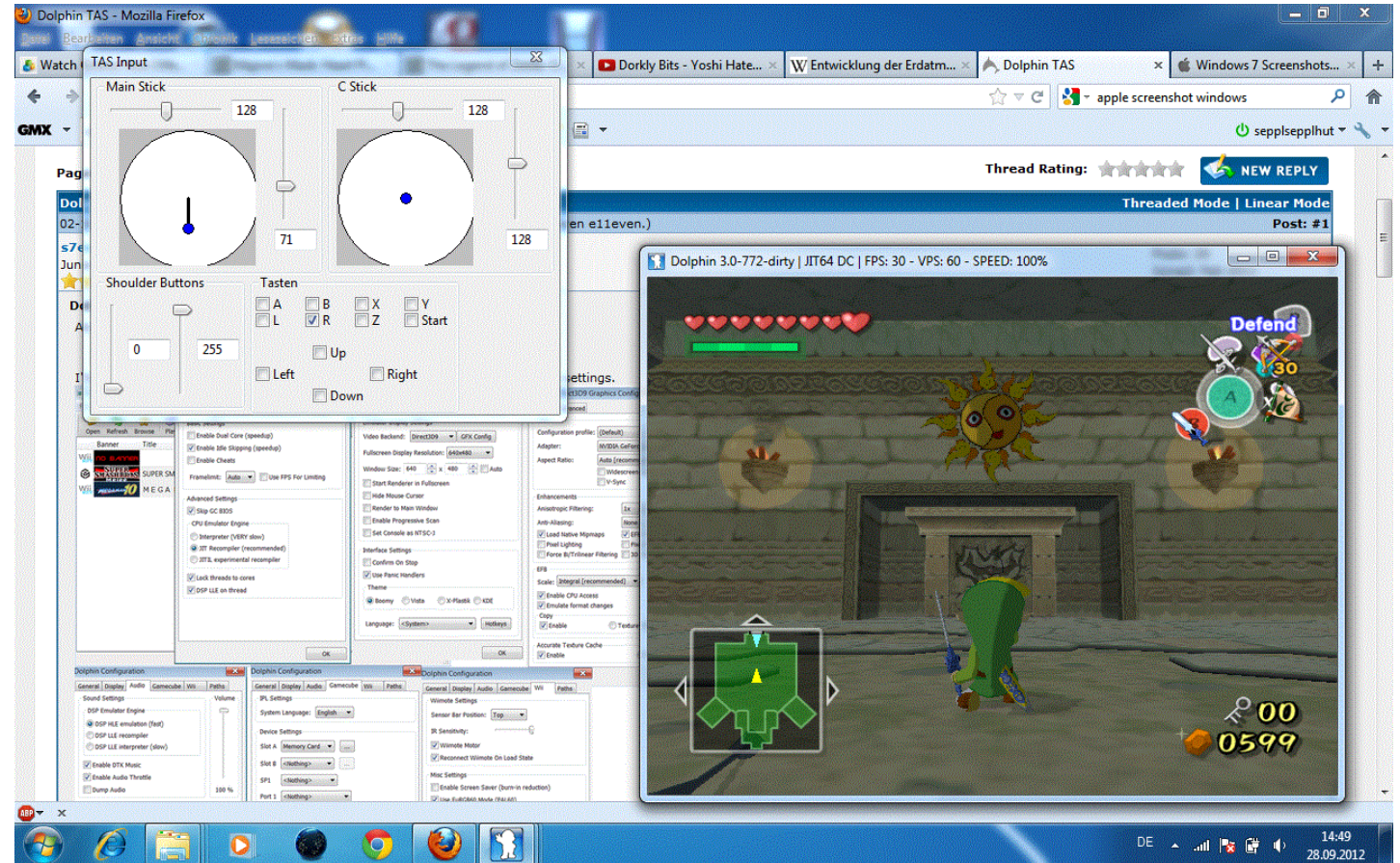
Tool-Assisted Speedruns

Allowed:

- Emulators
- Slowdown (frame by frame)
- Savestates/re-records
- Input/RAM viewers
- Disassembling game code

Not allowed:

- Modifying the game



Tool-Assisted Speedruns

Goal: beat the game as fast as possible

- Power-on to final input

Real goal: **be entertaining**

- Tool-assisted **superplays**
- Bend the definition of “as fast as possible”

The Extent of TASVideos

A huge range of speedruns:

- Extreme skill and luck
- Breaking the game
- Speedruns as art

Human Difficulty



Maybe humanly possible

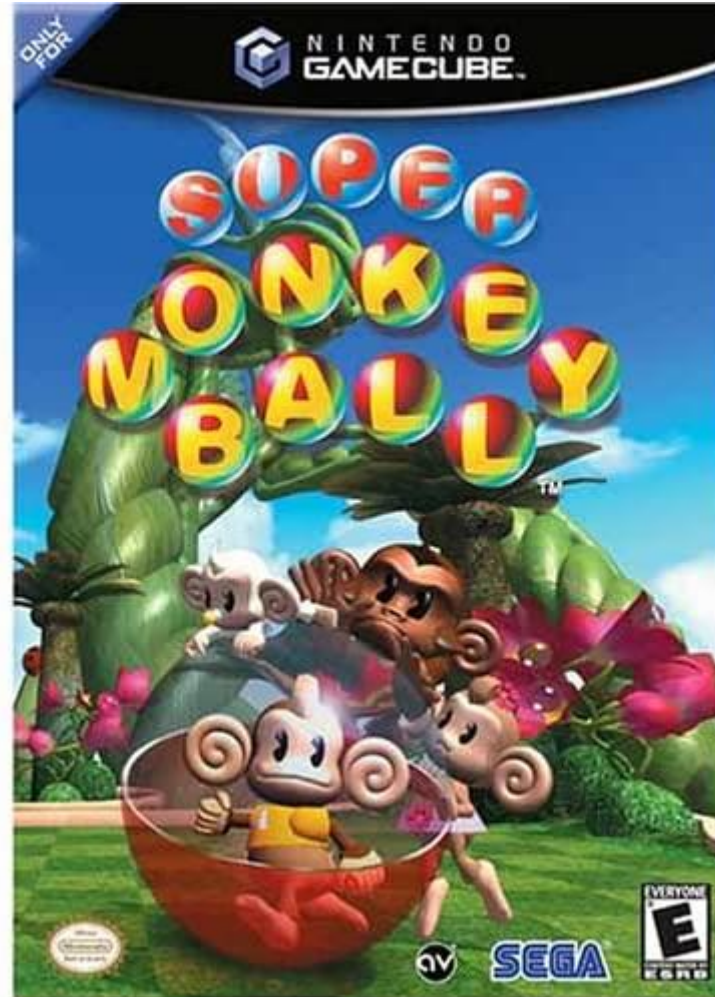
Definitely not humanly possible



???

Part 1: Extreme Skill/Luck

Extreme Skill: Super Monkey Ball



Extreme Skill: Super Monkey Ball



Extreme Skill



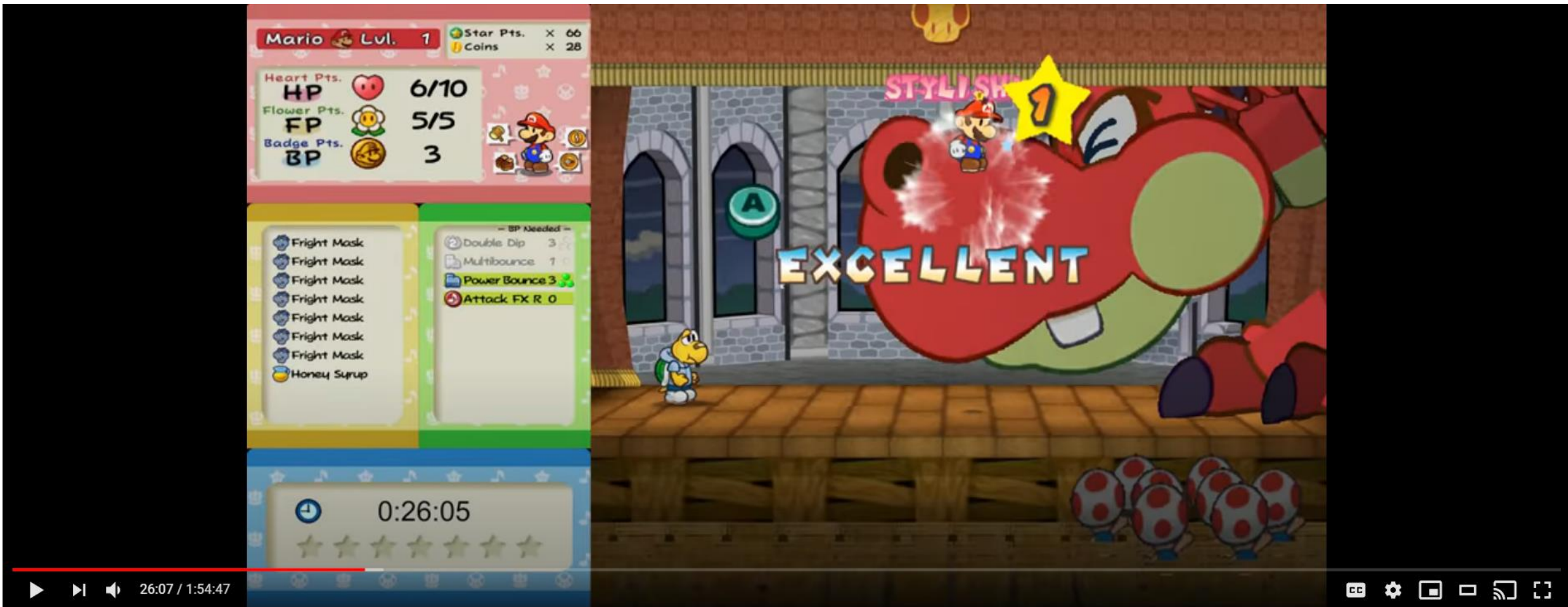
Extreme Luck: Clue



Extreme Luck: Clue



Extreme Luck: RPGs



Part 2: Breaking the Game

Breaking SM64: The A Button Challenge
















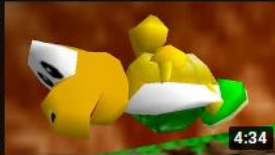


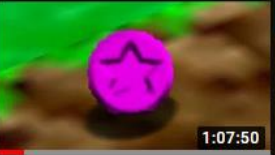

What Would You Do For An A Press?

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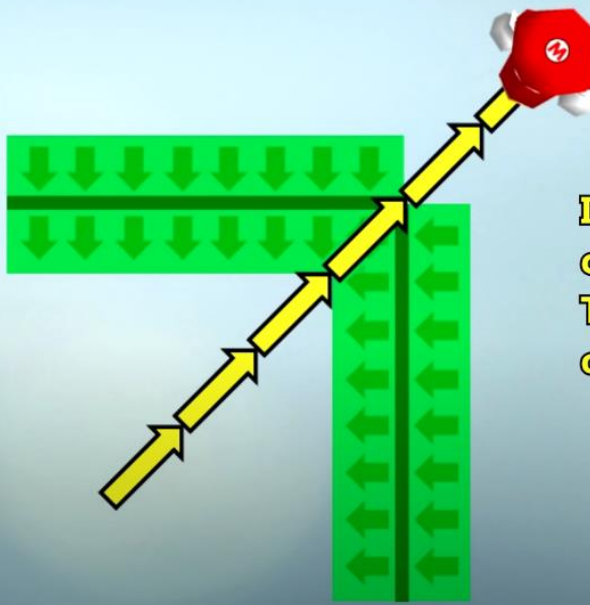
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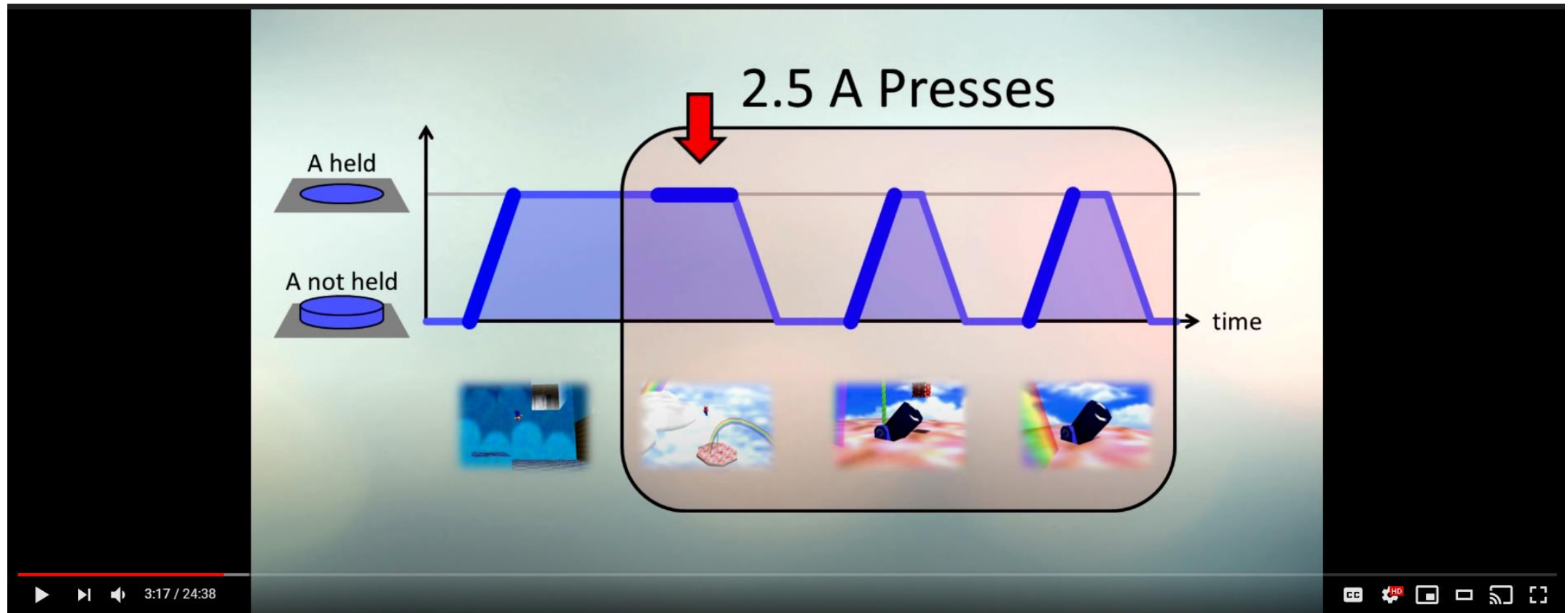
What Would You Do For An A Press?



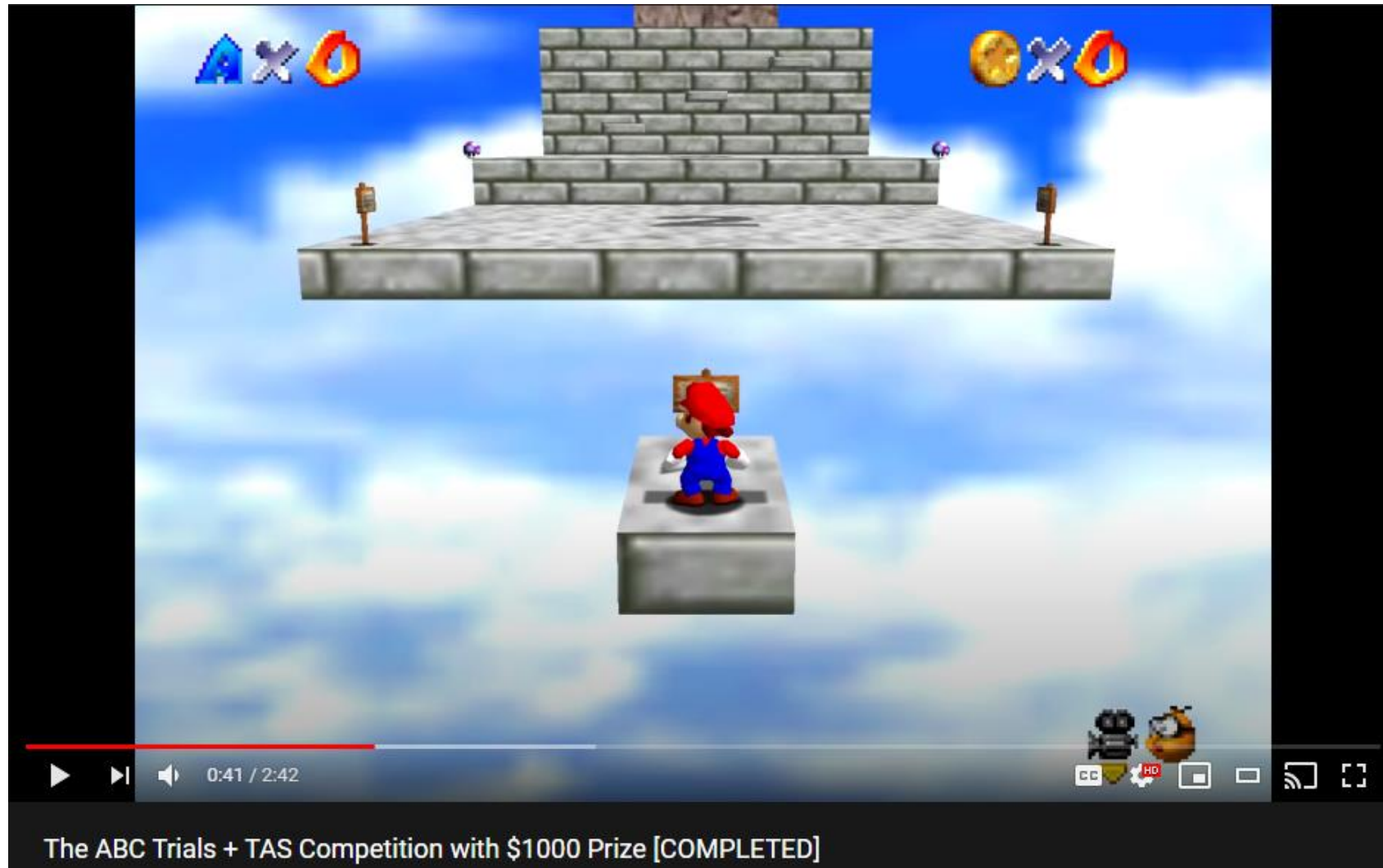
In this case, the distance that we have to cover in one quarter step is $50\sqrt{2} \approx 70.71$. Thus, we would only need a speed of at least $200\sqrt{2} \approx 282.84$.

17:58 / 37:22 • Clipping Through Walls

What Would You Do For An A Press?



Friendly Competition



Breaking Kirby Super Star: ???



What?



The reason why the game freaks out when you try to climb a ladder up and down at the same time is because it doesn't expect you to do that.

The initial glitch happens in the SA1 processor which indexes a location wrong and jumps to garbage code [...] It manages to lead the CPU to the controller registers [...] where then the fun begins. When I say the fun begins I don't actually mean fun, because I now have to deal with two processors and a destroyed RAM.

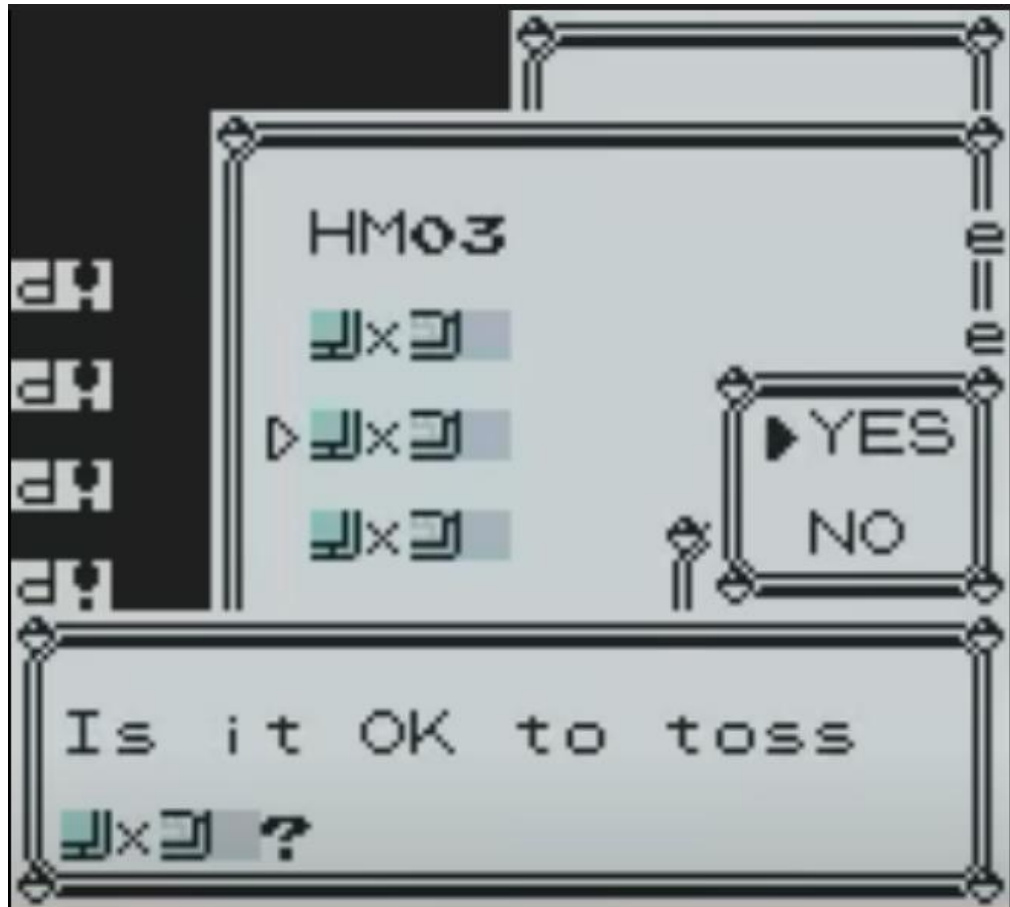
I managed to kinda see the addresses I have to change for example changing the gamemode (\$7390) to cutscene (0x0008) or the game chosen (\$32EA) to Milky Way Wishes (0x0005).

[...] I reset the SA1 processor and set it to a new location in SA1-IRAM, where I wrote a new code for it to execute, because not only RAM was damaged, the stack and direct page register were corrupted too. I changed all values and the last cutscene started.

“Arbitrary Code Execution”

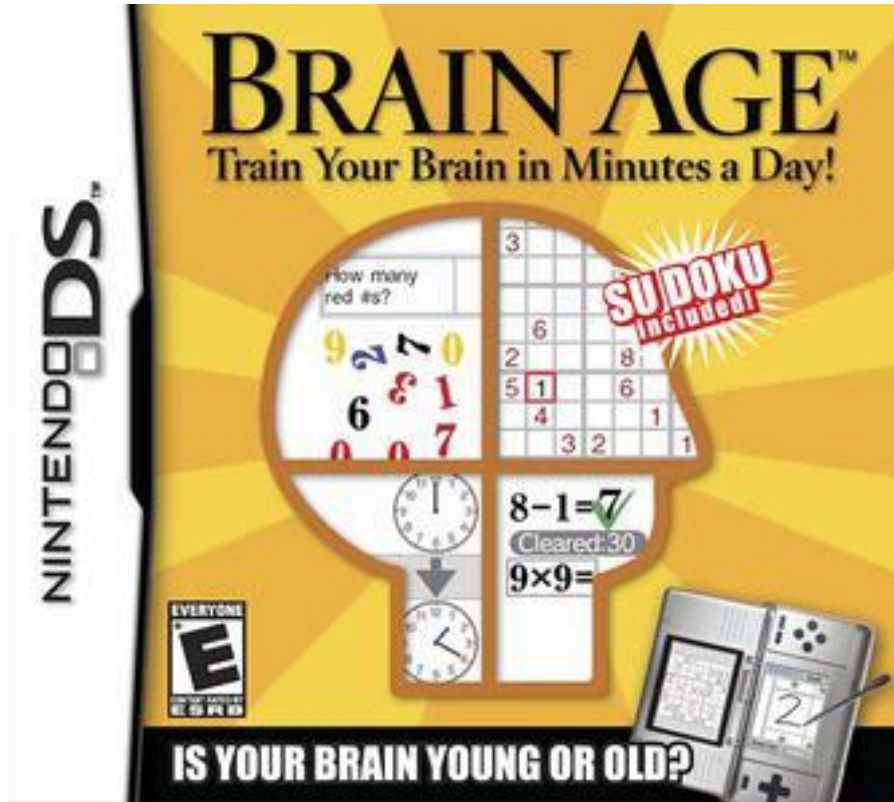


More Really Broken Games



Part 3: Speedruns as Art

Brain Age



Brain Age

$$17 - 9 = 8 \checkmark$$

$$8 \times 3 =$$

$$4 - 3 =$$

2

Erase

TASing is Art

TASes bring people together to solve problems in **creative, entertaining** ways

This takes:

- Gamers, to find creative, out-of-the-box strategies
- TASers, to plan and execute speedruns
- Programmers, to build the tools that make it all work

This could be **you!**