



State Machines in Smash Ultimate

By Jacob and Daniel B

What is Smash Brothers Ultimate?

- Fighting game
- Newest in series
- 8 player multiplayer
- Lots of characters and lots of items




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State machines and what they do



- A state machine is a way to handle different types of state a thing can be
I.e running, shooting, jumping, etc...
- They allow states to go from one another without nesting a lot “if” statements
and they also make it simpler to separate logic from one action to another
- However the larger the size of a state machine the harder it is to maintain and
keep track what state transitions into and out of.

Where are state machines used in Smash Bros?



- Characters movesets: All of their movesets are different from each other but they all derive from the same base
- Character controller: moving, jumping, dashing, falling, attacking, shielding, etc.. all transition between each other
- Character Animations: Character animations transition between what move is used and what the player presses
- Enemy AI and difficulty: what decisions the enemy “CPU” will make and how it will make those decisions based on its difficulty

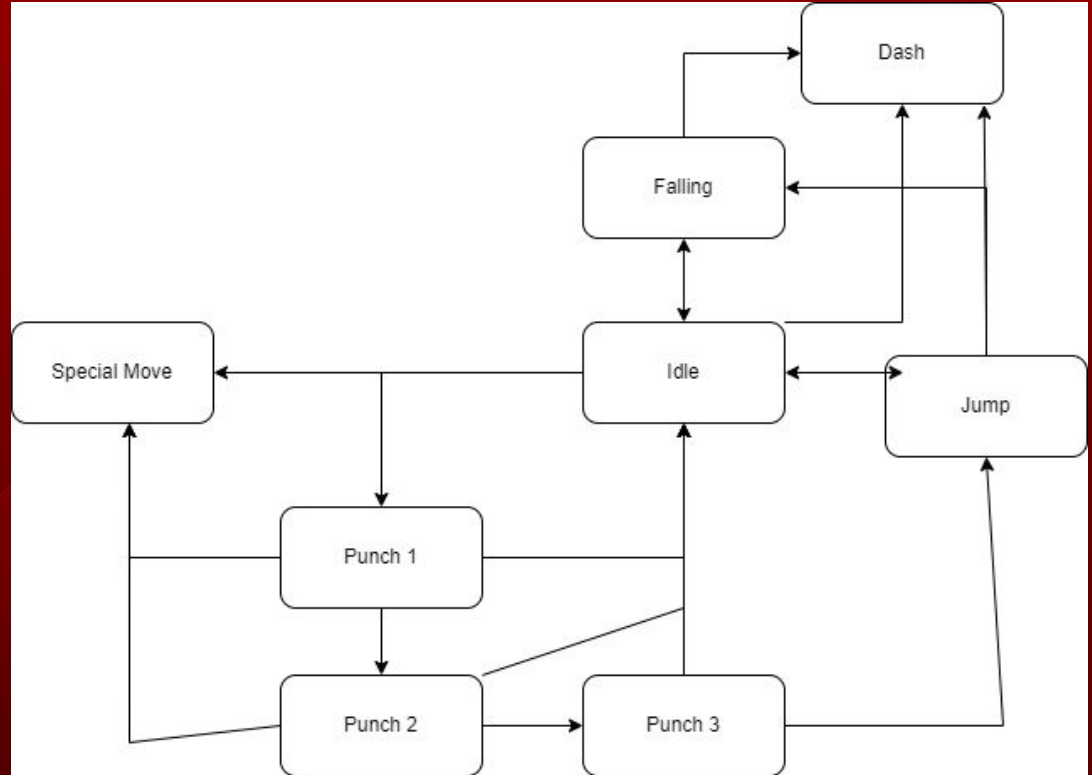
State Machine Advantages

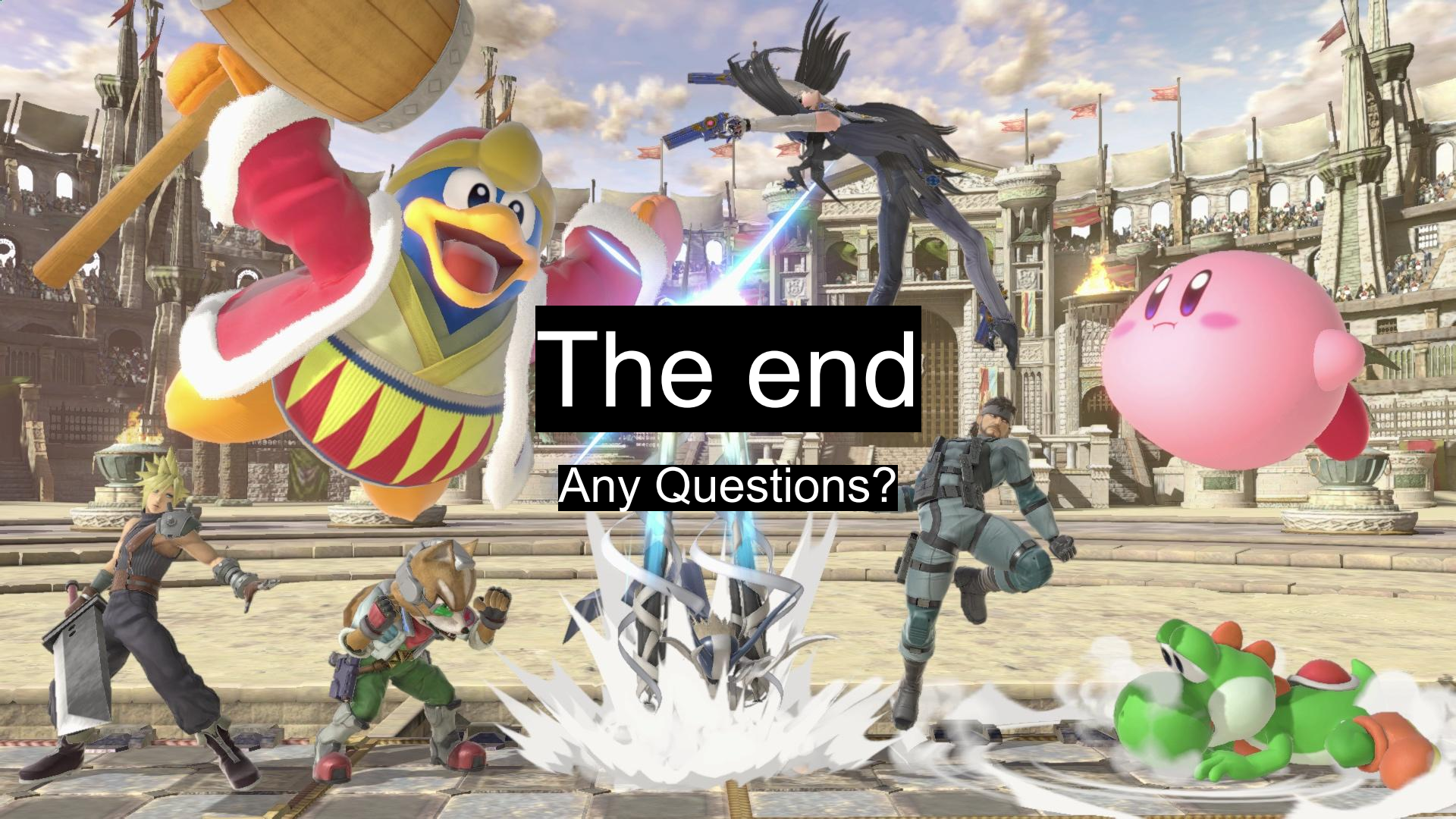
- It can be a simple solution for separating logic without needing to nest a lot of "if" statements
- Makes it simpler to add logic when entering, during and exiting the state that is currently being run



State Machine Disadvantage

- State Machine can easily get harder to manage the more states there are
- Where there are more states there are more transitions to deal with





The end

Any Questions?