6.111 Project Checklist - NES Emulation (Team 19)
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Commitment:
Both main modules (PPU and CPU) functioning separately and with methods to demonstrate said functionality by showing instructions are implemented either on the screen or on a test bench.

- ❏ PPU outputting background: single background scene rendered from preloaded VRAM. No scrolling. (VGA output)
- ❏ PPU outputting sprites: single moving sprite rendered from preloaded VRAM (VGA output)
- ❏ CPU running simple test program with no interrupt functionality. Values of registers displayed on the hex display. Program can be manually stepped through with a button (simulate clock input).

Goal:
- ❏ Sufficient Interface between PPU and CPU for soundless 1st generation game functionality (no mappers, no scrolling, probably Donkey Kong or Galaga)
    - ❏ Having full control of player sprite using FPGA buttons as controller input
    - ❏ Game background fully loaded and updating correctly
    - ❏ Non-player sprites moving how they should be
- ❏ Correct interrupt behavior on VBLANK
    - ❏ Test program that increments the accumulator (shown on the hex display) every time a VBLANK interrupt occurs. Should count at about 60 increments/second

Stretch Goals:
We would consider this an exceptional project if we can implement any of the following stretch goals, possibly multiple if we have the time.
- ❏ Running a complex game (Super Mario Bros for example) on our system
    - ❏ Having a game with scrolling backgrounds
- ❏ Being able to play with a fully functional NES controller
- ❏ Scaled video out
    - ❏ Larger than 240x256 game screen (x2?)
- ❏ APU integration into CPU
    - ❏ Hearing the correct sound effect and background music for each action