

CSEE 4840 Embedded Systems  
Project Proposal  
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## Tetris

Our project will be a hardware and software implementation of the classic game Tetris. The user will be able to control each piece using a keyboard or custom controller. The user will see the entirety of their game on a computer screen in front of them. As the user plays they will hear audio clues about the state of the game.

### Features

- Input: keyboard or custom collection of buttons
  - Left and right arrows move the blocks left and right.
  - Down arrow shortly accelerates the block downwards.
  - Up arrow rotates the blocks clockwise. Z key rotates counterclockwise.
  - Space bar drops the block straight to the bottom.
  - C key saves the block for later, and swaps it with whichever block was previously saved.
- Display: computer monitor using VGA connection to fpga
  - Full color display for blocks and background
  - Smooth fall of blocks down the screen - no jumps
  - Display incoming blocks on the right.
  - High score display - persistent across reboots - save to fpga memory or ssd
  - Display user score and lines cleared
- Game mechanics
  - Ghost outline at the bottom that shows where the block is falling
  - Blocks with different shapes and colors
  - Progressive increase in speed of blocks fall as score increases
- Audio
  - Piezo speaker
  - Background music loop - Retro music during play - music speeds up as blocks speed up
  - Music interrupt sound - Audio feedback when rows get cleared
  - Music interrupt sound - Audio feedback when high score is beaten

Something similar to this:

