

SE101 Project

Group members:

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Project name:

Terribly Twisted Tetris

What the project will do:

The project is to create a controller for a Tetris game on the computer. The controller will feature tilt controls, a Joystick, and 4 push buttons. The controller will enable tilt controls to rotate Tetris pieces in the Tetris game while the Joystick and the two lateral buttons will allow for the shifting of the piece left and right. The top and bottom button may be used to either calibrate the gyroscope or enable some other feature like storing a piece or pausing the game. An LCD may be attempted if time permits (optimistic goal).

Major software components of project:

1. Implement tilt user input
2. Implement Joystick user input
3. Implement Pushbutton user input
4. Create the logic for the Tetris game (Java)
5. Create a GUI for the Tetris game (JavaFX/JavaSwing/ArduinoLEDMatrix)

Project prototype plan:

1. Take the experimental approach to prototyping since the Arduino technology and other hardware components are new to us. We will first experiment with getting an output from each hardware component to the computer. We will make a barebone version of Tetris with standard keyboard controls to ensure our game logic and GUI is sound. We will then flesh out the details such as implementing the full range of controller outputs and game mechanics in the final iteration.
2. We will take a horizontal approach to prototyping since there are many parts to this system (hardware, game logic, GUI) and wish to ensure that the subsystems work well together. Specifically, it is important the inputs from the hardware are properly mapped to the game logic.

Hardware required (List Here):

1. Arduino Compatible 3-axis Gyroscope/Gyro Sensor Module
2. Arduino Leonardo with Headers
3. Tactile Switch Buttons (12mm square, 6mm tall) X 10 pack
4. Full sized breadboard – 830 points
5. Resistor 10K OHM 1/4W 5% AXIAL – Pack of 10
6. 0.1" 36-pin Strip Right-Angle Female/Socket Header (5 pack)
7. Male to Male Jumper Cable x 40 (20cm)

Anticipated challenges:

1. Rotating Tetris pieces in discrete space
2. Soldering the Pushbuttons and Joystick to the shield
3. Tuning tilt controls such that they feel intuitive to the user
4. Passing and parsing information from the hardware (controller) to the computer
5. Implementing the game logic for Tetris