EP1000 Digital Fabrication Fundamentals
Module Project

Group:

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Project Title:
Operation Game

What does it do?
It is a 2-player board game that test the players' fine motor skills and hand-eye coordination. The game features a man on an operating table with body parts that the players take turns to remove with tweezers. Player will know which body part to remove by looking at the LED display showing the shape of the piece. If the player is not careful and touches the metal ring surrounding the body part, the man's red LED nose will light up and a buzzer will turn on to indicate that they have failed the round and lost their turn. If the player has successfully removed their piece, they will press the button under the led display to end their turn and show the other player the piece they need to remove. Player who removes the most pieces wins.

What are it's features?

1. Top panel with engraved drawing of man with body parts cut out
2. Metal tweezers attached to the game board to remove body part pieces
3. LED matrix to display which body part to remove
4. Button to load new body part to remove
5. Red LED and Buzzer will turn on when player fails their turn

What will you make?

CAD Design, Graphics	Casing design, housing, casing, removeable body parts, informational text next to input devices
Laser cutting	Casing for game and individual body parts
3D Printing	Inset to hold removeable body parts and aluminum strips
Micro-controller	Push-button presses, display, LED lighting up and buzzer ringing
Input devices	Push-button switches, Metal tweezer and aluminum foil rings
Output devices	8x8 LED matrix, Red LED and Buzzer

Bill of materials

Sn.	Qty	Item Description	Approx Cost
1	1	Arduino Uno	$15.94
2	1	Red LED	$1.35
3	1	Buzzer	$0.95
4	1	Metal tweezers	$1.80
5	1	Aluminum foil	$2.50
6	1	8x8 Red LED matrix display	$1.70
7	1	Push-button switch	$2.50
8	1	A3 plywood sheet	

References:

1. https://www.instructables.com/Operation-Game/
2. https://blog.arduino.cc/2017/07/24/make-your-own-operation-style-board-game-with-arduino/