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D13: Code Representation

Joystick Manipulation Puzzle Setup Function Algorithm:

1. Create new JoystickPasscode class
2. Create new NextClueMusic class
3. Create new LEDControl class
4. Initialize Serial console
5. Print ready message over serial

Joystick Manipulation Puzzle Main Loop Function Algorithm:

1. Wait for and process input on joystick
2. If input was successfully processed
    a. Signal input on RGB LED
    b. Play input chirp on buzzer
    c. Turn off RGB LED
3. If no input was processed
    a. Signal timeout on RGB LED
    b. Play timeout on buzzer
    c. Turn off RGB LED
4. If a complete sequence has been entered over the joystick
    a. If the complete sequence is correct
        i. Signal correct sequence on RGB LED
        ii. Play clue over buzzer
        iii. Turn off RGB LED
    b. If the complete sequence is incorrect
        i. Signal incorrect sequence on RGB LED
        ii. Play incorrect tone over buzzer
        iii. Turn off RGB LED
    c. Clear sequence from the joystick processor

Joystick Manipulation Wait and Process Action Function Algorithm:

1. Set action variable to NO_PRESS
2. Set start time to millis()
3. While action is equal to NO_PRESS
    a. Read the current joystick action into action
    b. If the difference between current time (millis()) and start time is greater than INPUT_TIMEOUT (30 seconds) and there is a sequence partially entered
        i. Clear the partially entered sequence
        ii. Return false (No action received)
4. Debug print the entered joystick action
5. If there is room in the entered sequence buffer
    a. Add the joystick action into the sequence buffer
    b. Increment index of sequence buffer
6. While the current joystick action is in a pressed state
    a. Do Nothing

7. Return True (Action received)

Photoresistor Puzzle Setup Function Algorithm:
1. Initialize Servo Motor
2. Initialize 7 segment display pins to output
3. Initialize Push Button to input
4. Initialize PhotoresistorController class

Photoresistor Puzzle Main Loop Function Algorithm:
1. Call update photoresistor state function
2. If push button is pressed
    a. Reset photoresistor sequence
3. If the photoresistor state is the correct sequence
    a. Open servo motor
4. If it is in an incorrect or incomplete state
    a. Close servo motor

Temperature Sensor Puzzle Setup Function Algorithm:
1. Initialize pins for 7-segment display shift register for output
2. Initialize new temperature sensor controller class
3. Calibrate thermistor

Temperature Sensor Puzzle Main Loop Function Algorithm:
1. Read the temperature sensor
2. If the temperature reading is greater than the calibration threshold
    a. Display code onto 7-segment display
3. If the temperature reading is within the calibration threshold
    a. Turn off 7-segment display

IR Remote and LCD Puzzle Setup Function Algorithm:
1. Initialize IR Receiver
2. Initialize LCD
3. Initialize Passcode 1 Display Class
4. Initialize Passcode 2 Display Class
5. Initialize Puzzle Display Class
6. Set display state to Passcode 1 Display

IR Remote and LCD Puzzle Setup Function Algorithm:
1. If the state is in Passcode 1 Display
    a. Call Passcode 1 Display Loop
    b. If the loop returned true
        i. Set state to Passcode 2 Display
2. If the state is in Passcode 1 Display
    a. Call Passcode 2 Display Loop
    b. If the loop returned true
        i. Set state to Puzzle Display
3. If state is Puzzle Display
    a. Call Puzzle Display Loop