CSE 321 Term Project

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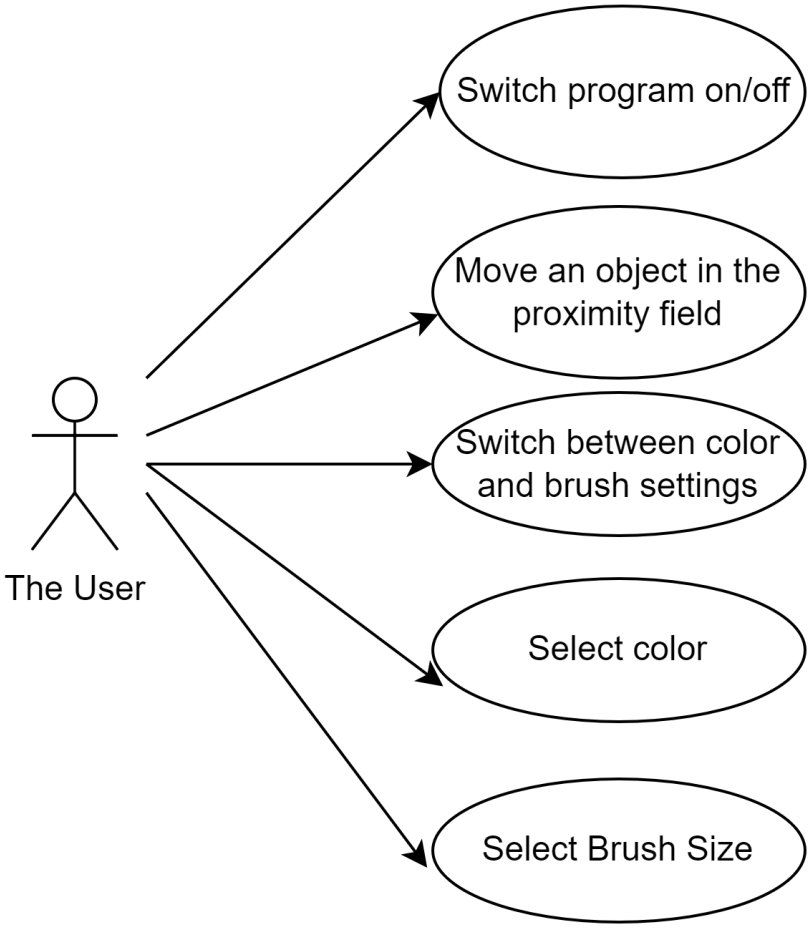
Project Description

Our term project will be a drawing program. We will use multiple proximity sensors arranged in a rectangular formation as our drawing area and we will have a screen that displays what the user has drawn in real time. When an object, such as a pen or a finger, enters the field, we will determine its location in the real world x z plane and map that real world location to the virtual 2 dimensional canvas that will then be displayed on the screen. ~~There will be a set of buttons that will allow the user to adjust the brush size or the color of the pixel that will be drawn.~~ We did not end up implementing this

UML



The UML diagram should not contain switching color/brush, as we did not have time for this

CRC

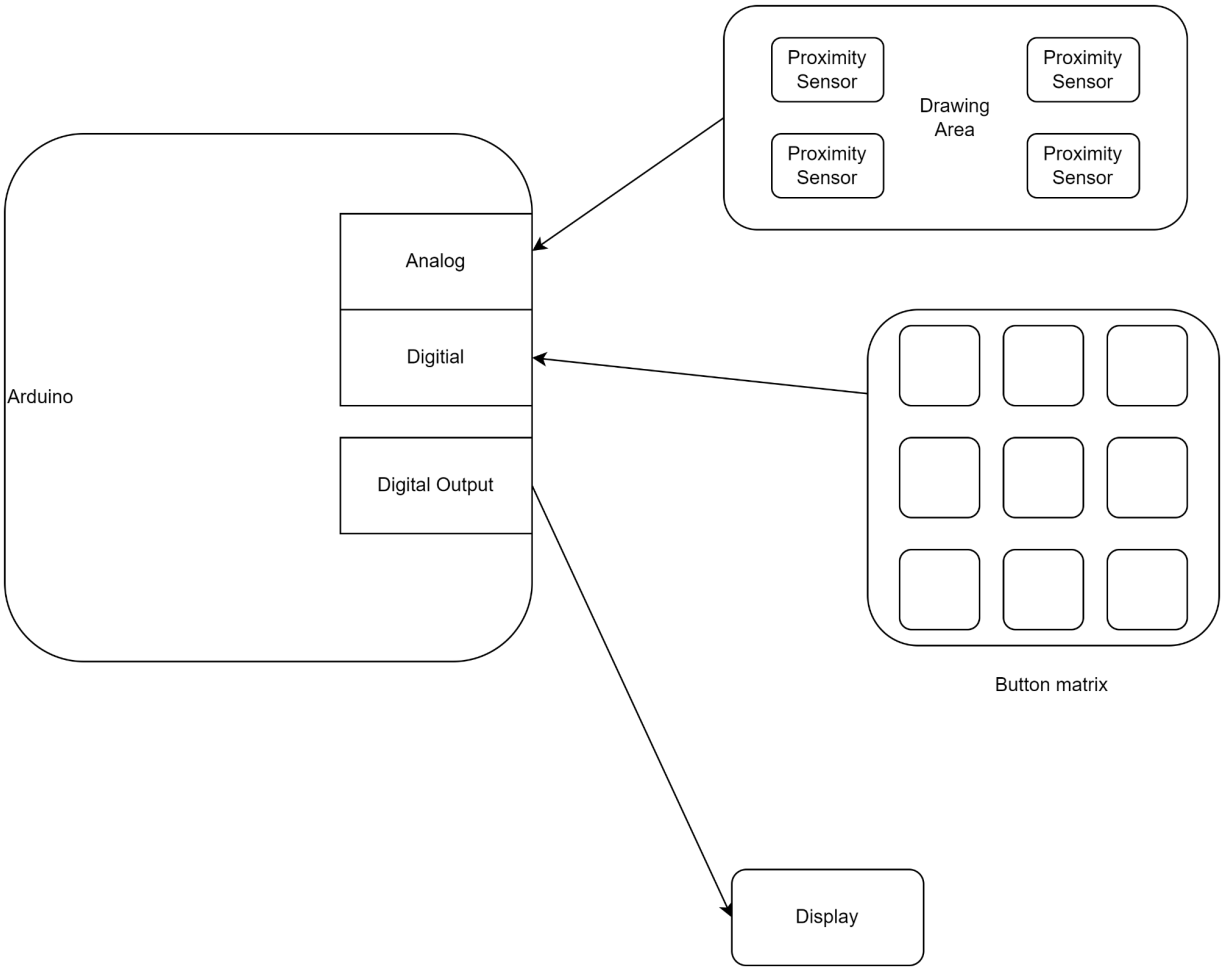
Component 1: User	
Responsibilities: • Turn on the device • Draw in the proximity area • ~~Switch color~~ • ~~Switch size~~	Collaborators: • Device

Component 2: Software	
Responsibilities: • Communication between all components • Translate location from the proximity area to screen location. • ~~Change state (color, brush size) based on what button was pressed~~	Collaborators: • Device

Component 3: Device

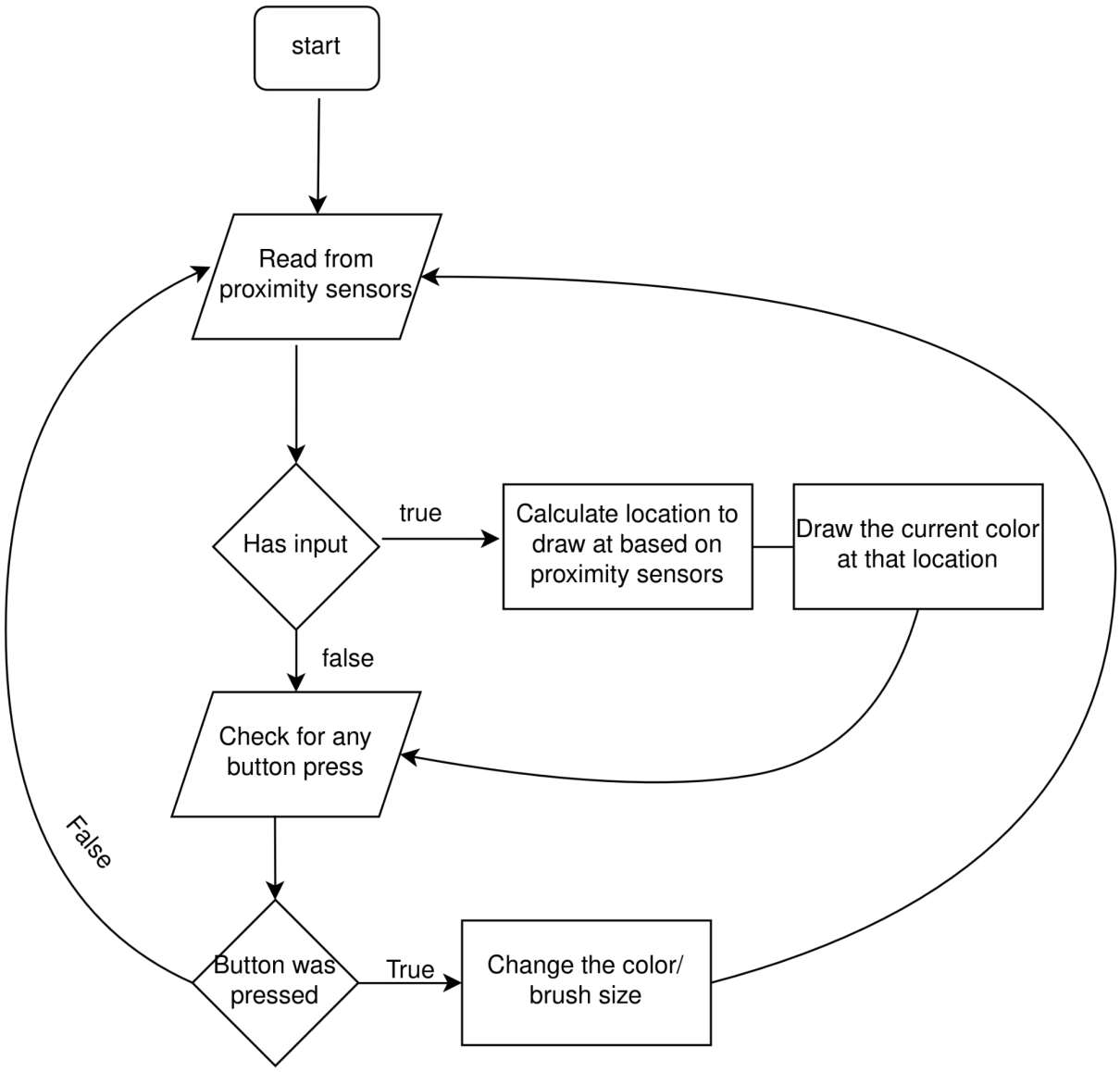
Responsibilities:	Collaborators:
• Read from the proximity area • ~~Determine what button was pressed~~ • Draw to the screen	• Software • User

Architectural Diagram



Button matrix is no longer a part of the architecture

Flow Chart


start
Read from proximity sensors
Has input
true
Calculate location to draw at based on proximity sensors
Draw the current color at that location
false
Check for any button press
False
Button was pressed
True
Change the color/ brush size

There should be no “button was pressed” condition anymore in the flow chart

Components list

Device	Part	
Arduino Uno	Arduino Uno Rev3	
Proximity sensors	Adafruit VCNL4040 Proximity and Lux Sensor	
Display	Adafruit RGB Matrix Shield for Arduino	
Button Matrix	16-Button Tactile Keypad Matrix (D72)	