User Manual

for

Digital Play Counter

Version 1.0 approved

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Introduction

The Digital Play Counter is a device that can display a number inputted through a touchscreen graphical user interface onto a digital 7 segment LED board, similar to a scoreboard. However, it is multiple times cheaper than a professionally made scoreboard/ display panel. A user would input the number they wish to display into a touchscreen monitor, that number would get processed by a UDOO microcontroller and put up onto a 7 segment LED.

Getting Started

Quick Start

The fastest and easiest way to make this device work is to hook up the lvds wires as shown in the general parts section on page 4 and plug the UDOO into a power source (either the cable that accepts 110V from a wall or a battery obtainable from Room 199 at PHS). The UDOO should turn on, the lvds touchscreen should light up, and you should see a desktop icon that says "BoardApp". Double click this to start the application, and you're good to go.

Main Scenarios of Use

This device was originally designed to be able to communicate football plays the coach wanted to run from the coach on the sidelines to the players out on the field by displaying a number 0-99. It can, however be used in any situation where a number needs to be displayed or communicated between 2 groups of people. Whether that number represents the date in an office, a question number that is being reviewed for test takers, or anything else, the Digital Play Counter can be applied to any situation.

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System Requirements

All this system requires to run, other than the components that are part of the device (more on these parts in the next section), is a power source*. This can be either a charging cable for the UDOO or a battery acquirable from room 199 at PHS.

The Parts (General)
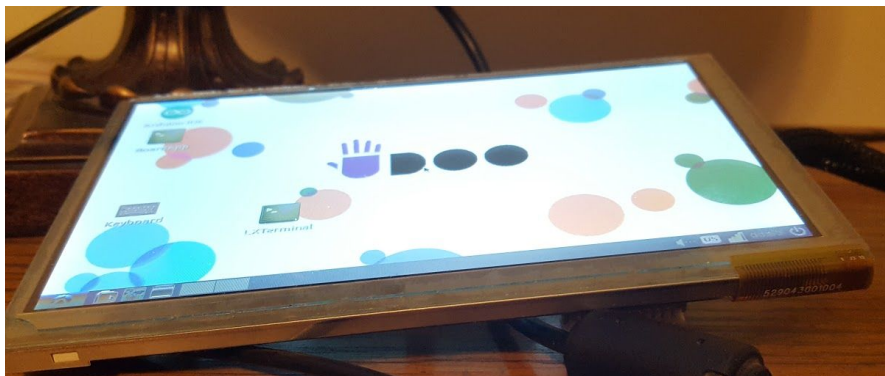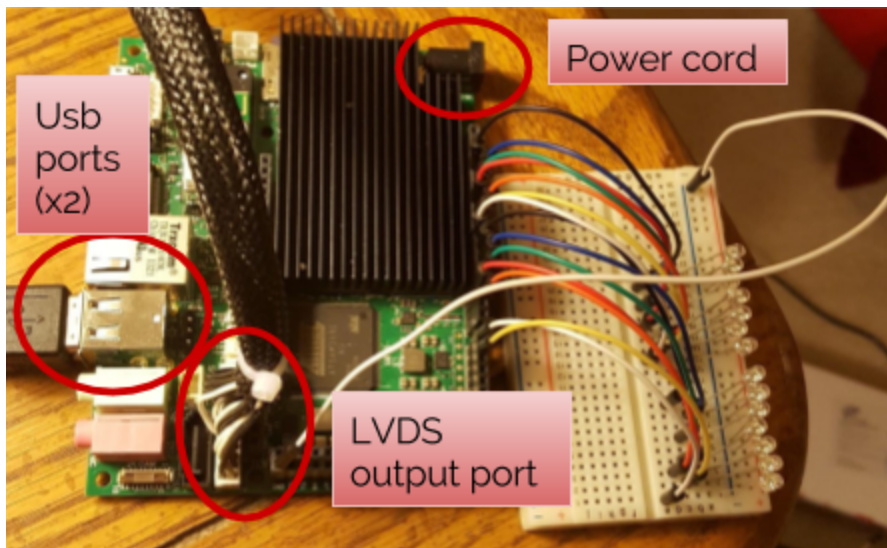
The parts you should find in this project, already mostly set up are:

- ➢ A UDOO with the proper microSD card and OS installed (green rectangle above)
- ➢ 14 LEDs wired up to UDOO, with ports 14, 15, and 2-13 being used on the UDOO
- ➢ LVDS 7" touchscreen (second image)
- ➢ Mouse with USB cable*
- ➢ 2 digit 7 segment LED light board, or provided prototype 7 segment LED in first picture above*
- ➢ A charger/compatible battery, which will connect to the Power Cord port on the UDOO to power the device.

The Parts (App)
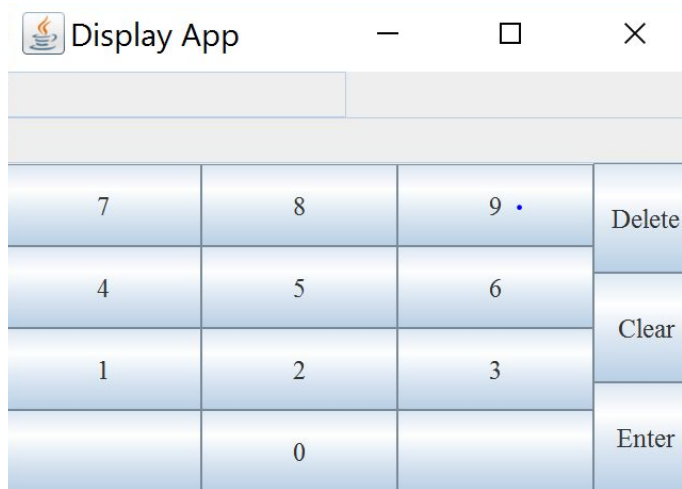
The display board control app consists of:
- ➢ 2 text areas
- ➢ 10 digits
- ➢ 3 different operations

Text Boxes

There are two text boxes in the display board graphical user interface.. These are the two beige colored rectangles at the top of the graphical user interface in the screenshot above. The bottom one (aka the input field) displays the number you are currently typing into the app via the 10 digits provided on the app. The top one, or the output field, displays the number that should be displayed on the digital led number display.

Digits

There are 10 digits, each of them represent a digit that will be displayed on the LED number display.

Operational Buttons

There are 3 different operational buttons in the app: delete, clear, and enter.
- ➢ *Delete* removes the last digit from the number in the input field (the bottom text box/ beige rectangle in the graphical user interface). For example, if the input read "648" and you pressed delete, the input would now read "64". This button doesn't affect the number displayed on the number display board/with LEDs.
- ➢ *Clear* clears/makes both the input text field and the output text field blank, as well as turns off all lights currently being displayed on the number display board.
- ➢ *Enter* first clears the lights lit up on the number display to avoid gibberish after the next input turns on new lights. Then, it takes the data from the input text field, prints it to the output text field, and turns on the corresponding LEDs on

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the number display board to create the desired number being shown on the LED display.

Use

Use from Start to Finish

1. Connect any necessary usb controlled devices to the usb ports*, then make sure that the lvds is connected securely in its port, both on the UDOO and on the actual screen.

2. Power on the device by plugging in the power cable into the wall and connecting the cable to the appropriate UDOO port. Another option would be to obtain a UDOO compatible battery from Room 199 in PHS and plug that battery in as the power source.

3. Once the device has turned on and logged in, there will be a desktop icon that says "BoardApp". Double click on this and wait a few moments for the application to load.

4. Proceed to enter in the number you would like to display, press enter, and watch the   number you would like appear on the LED number display**!

5. Once finished, proceed to click the "X" at the top right of the app window, then click the power icon at the bottom right of the screen. A menu will appear, choose "Shutdown" to turn the display board off.

Troubleshooting

If an error should occur where you don't understand what went wrong or is going on, or something seems to be very broken/wrong please email our company immediately at smcs2019.rainbow@gmail.com or our lead developer, Oksana Tkach, on her email at tkachoksn@gmail.com.

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Notes

*The Digital Play Counter is currently only a prototype. The current model's LVDS 7" touchscreen has lost its touch sensing capabilities, and therefore the model currently needs a mouse to be operable. Further, the output of the app only goes to 2 clusters of 7 LED lights because there isn't a proper 7 segment LED display board to work with right now. Each of these LEDs can be assigned a number and port 0-13 on the UDOO. When these LEDs are lit, they correspond to the light of the same number in the diagram below. For example, the inputted number 11 would light up LEDs number 5, 6, 12, and 13, or make an 11 in the diagram below. As an extra note, the UDOO portrayed in the images in this document has two ports, 0 and 1, that don't work. Because of this, in the pictures, ports 14 and 15 respectively replace ports 0 and 1, meaning that the app code also recognizes ports 14 and 15 instead of ports 0 and 1. Please watch your wiring if you attempt to do it yourself. .