User Manual

Science App for Lewisburg Children's Museum

The Three Musketeers

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0. Installing Everything You Need

This project depends on several frameworks and platforms. Arduino IDE is optional if you just want to play the game without hardware.

- Unity 5 (required). See how to install Unit 5.
- Git (required). See how to install git.
- Arduino IDE (optional). See how to install Arduino IDE.

After all installations, you can clone the entire repository:

```
git clone --recursive
git@github.com:The-Three-Musketeers/Mission_Control_Alpha.git
```

Using `--recursive` option will also clone the Arduino library source code as a submodule. If you just want to run the game on a computer, you can just clone the repository using the following command:

```
git clone git@github.com:The-Three-Musketeers/Mission_Control_Alpha.git
```

If you are using git with a GUI, such as Github Windows client, you can clone this repository directly there.

The cloning process will take a while. Once it is finished, you can open the `TitleScreen.unity` located in the `Assets/Scenes` folder. Unity will process the entire project, which may also take some time.

1. How to Connect the Hardware to the Computer

If you want to use the hardware to play the game, you need to make sure the port is set in Unity. Unfortunately the `.NET` used in Unity does not support port query. As a result, you need to manually input the port number in the source code. Don't worry! It is easy to do!

1. Plug the hardware in and open the Arduino IDE.
2. In the Arduino IDE, go to `Tools->Port`. Depending on your Arduino used in the hardware, it may appear in a different name, but that doesn't matter. Write down the port name. For Windows, it should be something like `COM3` or `COM4`.
3. Open `Assets/Scripts/KeyListener.cs` with any text editor you prefer, and then locate line 20: `public static Serial serial = Serial.Connect("COM4");` . Change `COM4` to the port name you just wrote down.

4. Save the file and exit the text editor.

2. Running the Game

1.1 Starting The Game

Step1: Log into the computer as user: LCM. Currently there is no password.
Step2: Locate the Unity game executable. It will be an icon on the Desktop titled **"Mission Control"**. Double click on this icon.
Step3: Select your preferred graphics settings. **"Fastest"** is recommended. Make sure the checkbox next to **"Windowed"** is unchecked. Also make sure that the resolution is selected to "**1920x1080**" (the one at the end of the list). Click **"Play**" to run the game.

1.2 Quitting the Game

The game can be quit at any time by pressing the "Q" key on the included keyboard. Make sure the keyboard is out of reach of small children so the game is not quit prematurely. This will return you to the Desktop, and then you may shut down the machine as you would any other Windows 10 computer.

3. Hardware Purchased

In the event that the users break components of the hardware controller, such as the slides or buttons, these can be easily replaced. Most of the the hardware components are purchased off-shelf. Here is a completed list of vendor links where we purchased the hardware components:

1. Slide potentiometer: http://www.mouser.com/ds/2/54/ta-778345.pdf.
2. Arcade buttons: https://www.adafruit.com/products/473.
3. LED buttons: https://www.adafruit.com/products/1185 and https://www.adafruit.com/products/1193.
4. Potentiometer: https://www.adafruit.com/products/356
5. Knob: https://www.amazon.com/Uxcell-Aluminum-Potentiometer-Diameter-Knurled/dp/B0173B6K84/ref=sr_1_7?ie=UTF8&qid=1487445310&sr=8-7
6. Arduino Mega: https://www.adafruit.com/product/191

There are several things that need to be manufactured or 3D printed:

1. The knob for the slider has to be 3D printed. The Solidworks file is in docs/SliderKnob.SLDPRT
2. The panel has to be laser cut. The schematic diagram is in docs/Case.dwg