**IEEE Breathalyzer Spring 19 Instruction**

**Software By Anapat, Hardware by Kai**

1. Install [Arduino IDE](https://www.arduino.cc/en/Main/Software) if you have not done so.
2. Install Arduino Nano clone [driver](http://www.wch.cn/download/CH341SER_EXE.html).
   1. MacOS users, [here](http://www.wch.cn/downloads/CH341SER_MAC_ZIP.html) is for you.
3. Install Screen library [Adafruit-GFX-Library](https://github.com/adafruit/Adafruit-GFX-Library) and [Adafruit\_SSD1306](https://github.com/adafruit/Adafruit_SSD1306). Open Arduino IDE->Sketch->Include Library->Manage Libraries and search for those libraries.
4. Go to the directory of libraries you just installed which is likely at Documents\Arduino\libraries\Adafruit\_SSD1306\—same for MacOS, try searching for Arduino folder.
5. Open Adafruit\_SSD1206.h with any text editor (Notepad, or just right click and open with a suitable program) and edit the following.
   1. Uncomment this line (line 28).
      1. #define SSD1306\_128\_64 ///< DEPRECTAED: old way to specify 128x64 screen
   2. Comment this line (line 29).
      1. //#define SSD1306\_128\_32 ///< DEPRECATED: old way to specify 128x32 screen
6. Plug your Arduino Nano with a Macro USB cable (not Micro USB!) to your PC.
7. Set up IDE for uploading codes to the board.
   1. In Arduino IDE->Tools->Board, select Arduino Nano.
   2. In Arduino IDE->Tools->Processor, select ATmega328P (Old Bootloader).
   3. In Arduino IDE->Tools->Port, select whichever COM it is (you will likely see only one).
      1. MacOS, there is a few ports, try ports with “USB” in it, or just try them all.
8. Download the code from this [GitHub](https://github.com/ieeeuwmadison/IEEE-DrinkBoy-2000/tree/master/Breathalyzer) and study it!
   1. If you want to test each component, here is [GitHub](https://github.com/ieeeuwmadison/IEEE-DrinkBoy-2000/tree/master/IEEE_board_test) for it.
9. Back to Arduino IDE, hit “Verify” (compile) button—a circle with a check mark. If there is an error message printed, try changing ports in step 7.
10. Hit “Upload” button—a circle with a right arrow. If successful, you will see “Done Uploading” on the left bottom corner of the window.
11. Do some calibration by changing parameters as needed and enjoy drinking!

**Troubleshooting**

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| **Problems** | **Solutions** |
| Arduino IDE does not detect COM (port). | Make sure you have a driver (CH340 or 341). |
| Cannot upload a code to Arduino Nano. | Check if you have the right board, processor, and port. |
| The code does not work. | Check if you plug in Arduino to the female header pins correctly. |
| Still does not work! | Try ieee\_board\_test.ino and see if all components are working as expected. |
| Screen is not showing anything. | Make sure you uncomment and comment lines in .h file. Try ieee\_board\_test.ino. If nothing happens, your screen might be broken. Don’t scream! Just change the screen. |
| Sometimes it detects alcohol. Sometimes it does not. Sometimes it functions weirdly. | MQ3 Sensor is not as precise as commercial-grade sensors. You must play around with the parameters and find the sweet spot. |
| I don’t understand the code! | Sorry… Ask me (Anapat) or Kai in person for an explanation or just email any of us ([chairithinug@wisc.edu](mailto:chairithinug@wisc.edu), [kpederson3@wisc.edu](mailto:kpederson3@wisc.edu)). |
| How can I test it? | You know. Just drink some alcohol (must be 21 though)! |
| I really enjoy this project! | Let us know if you do! We are happy that you enjoy and learn something. |
| I want to be involved in IEEE-Student Chapter. | Keep your eyes on our email. We usually send out an email recruiting new officer! |

Feel free to let us know if you have any concerns or questions. Thank you for joining us in making this project! We hope that you learn some skills and that our project interests you to explore the world of electronic devices.