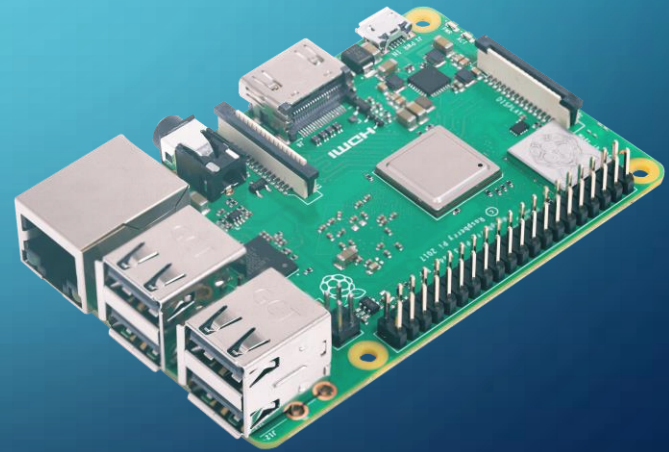


FOXBYTES COMPUTER SCIENCE
CLUB PRESENTS

RASPBERRY PI

PROMOTING AND
ADVANCING INTRACOLLEGIATE
COLLABORATION BETWEEN WOMEN IN STEM,
COMPUTER SCIENCES, AND THE FOX
ENGINEERING SOCIETY



HISTORY AND USAGE

- United Kingdom, 2012
- Raspberry Pi Foundation
- Promote Computer Science education, particularly in developing nations
- Used by students and professionals, recreational and commercial use

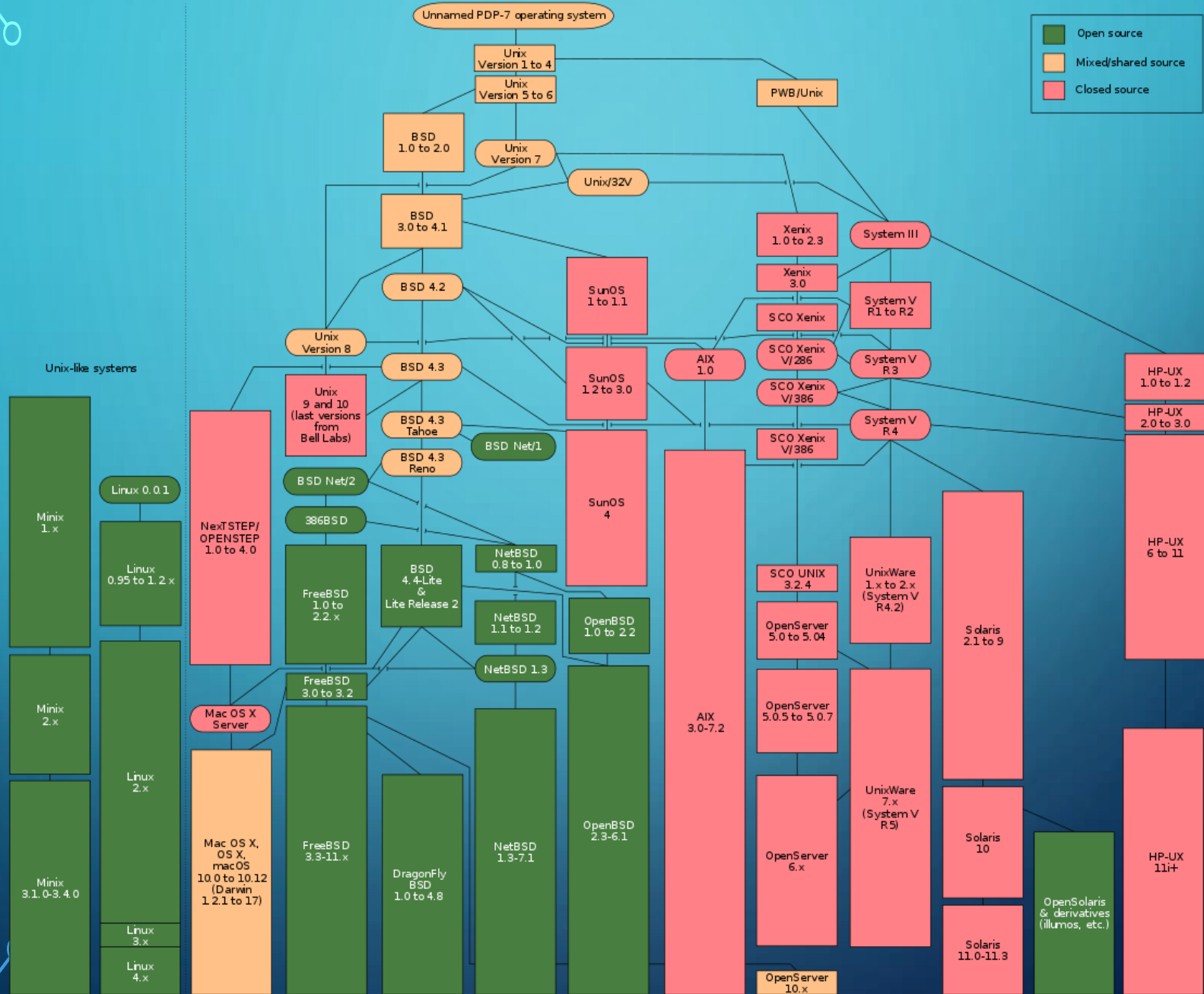
OPERATING SYSTEMS (OS)

- Essential but *not* required for most computers
- Controls hardware, schedules tasks, runs programs, and other basic functions
- Microcontroller vs Operating System?
 - Integrated circuit which performs only one task
- Layer of abstraction
 - GUI vs CLI

LINUX OPERATING SYSTEM

- Development of UNIX in 1971 set the standard
- Linus Torvalds developed Linux as an improvement from MINIX in 1991
- Countless flavors called "distributions", or "distros"
 - Ubuntu, Mint, Arch, Crunchbang, Manjaro, Debian, Fedora, CentOS, and even Windows IOT. The list goes on
- Philosophy and paradigm of **Free** and **Open-Source**
- Raspberry Pi Foundation maintains Raspbian, a Debian-based OS

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C (PROGRAMMING LANGUAGE)

- Developed by Dennis Ritchie in Bell Labs, 1972
- Fundamental in modern CS. The language most OSs are written in
 - Linux is composed of 21 million lines of code in C
- Modern variants evolved to address the limitations of C
 - C++ is Object-Oriented C. The in C "++" means to add 1; C++ is C plus one (new) version
 - C evolved from B. D evolved and was reengineered from C
 - Computer Scientists have a terrible sense of humor

CONSOLES, TERMINALS, SHELLS, AND TTY EMULATORS

- Historically was the only way to operate a computer
- Extremely quick and powerful, but can be difficult to "master"
- Command Line: Imperative Verb and Noun
 - Who remembers MS-DOS?
- Present day: Intimidating stigma

LET'S GET STARTED!

- Terminal Navigation:

- *CTRL + ALT + T* opens a terminal emulator. (*CTRL + ALT + F1* for the brave....)

Punctuation and Capitalization matter! Pay close attention!

ls – lists files/ directories

cd – change directory | cd .. – Go back in directory

pwd – present working directory

mkdir – make directory

touch – create a new file

rm – Remove file/ directory

- You can use the *tab* key for auto-completion

DOWNLOAD PI WORKSHOP REPOSITORY

- Enter the following commands (*do not type in anything before the dollar sign*):

```
pi@raspberrypi: ~/ $ cd; cd Desktop
```

```
pi@raspberrypi: ~/ $ mkdir workshop; cd workshop
```

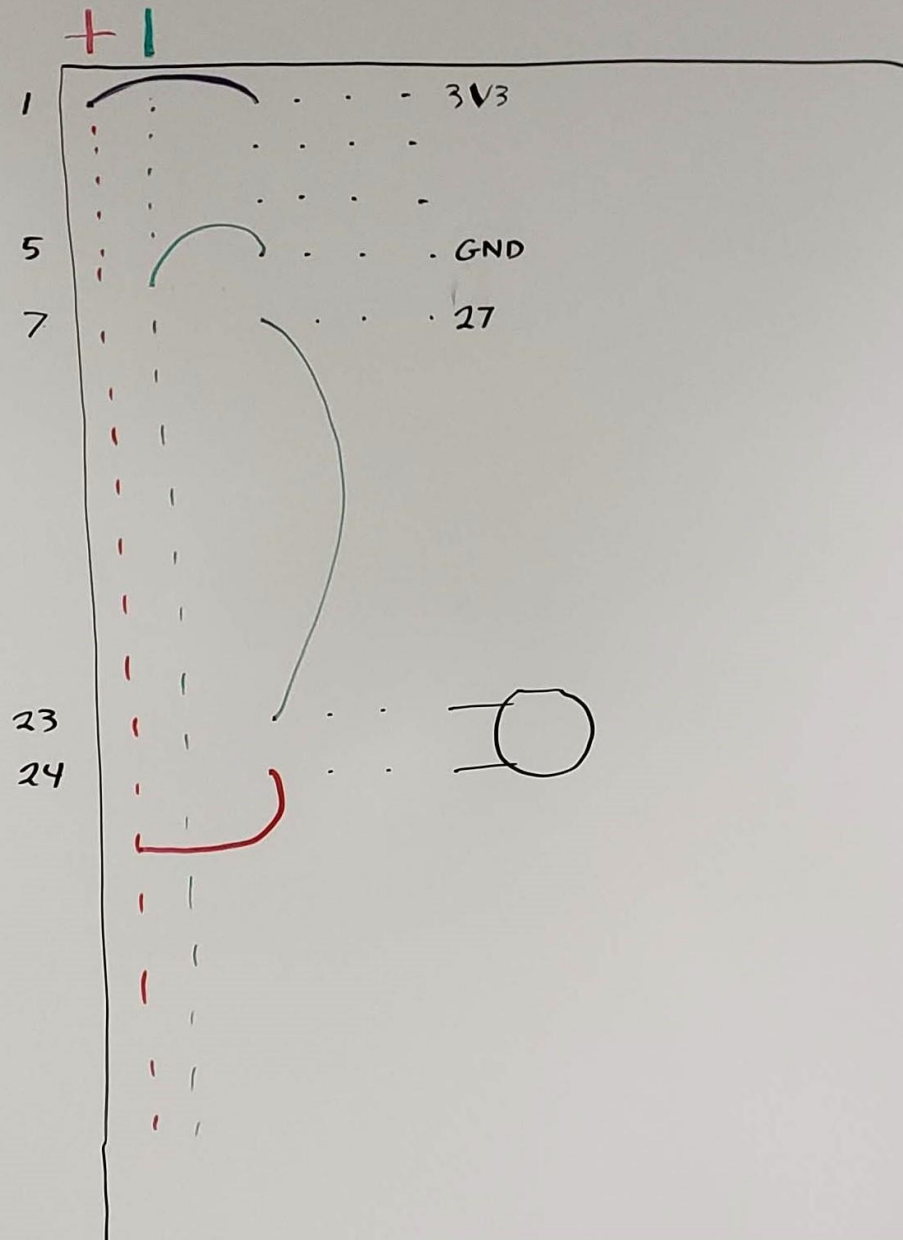
```
pi@raspberrypi: ~/ $ git clone
```

```
https://github.com/McDanielES/PiWorkshop.git
```

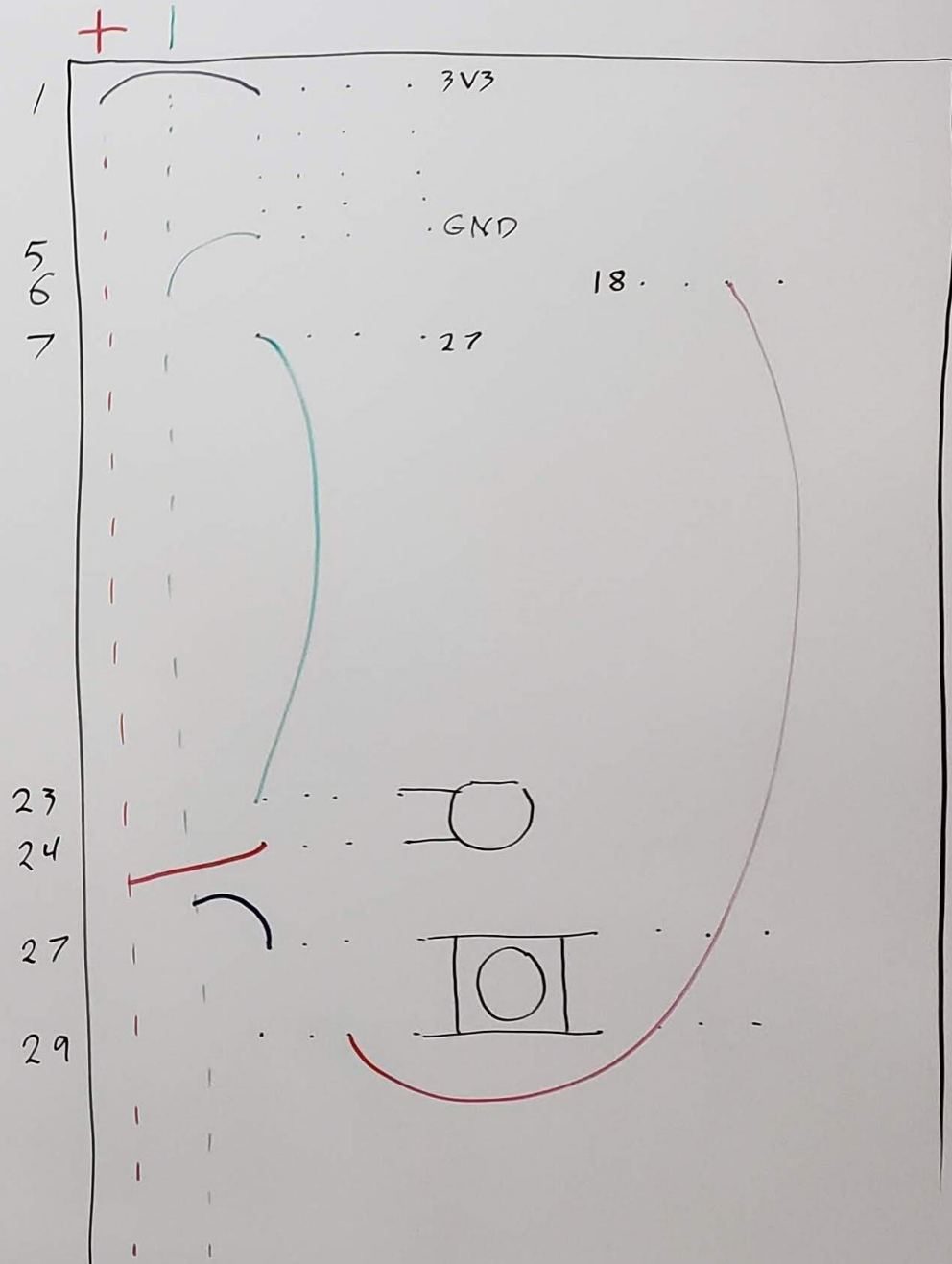
```
pi@raspberrypi: ~/ $ cd led/
```

```
pi@raspberrypi: ~/ $ gcc quit.c -lwiringPi -o quit
```

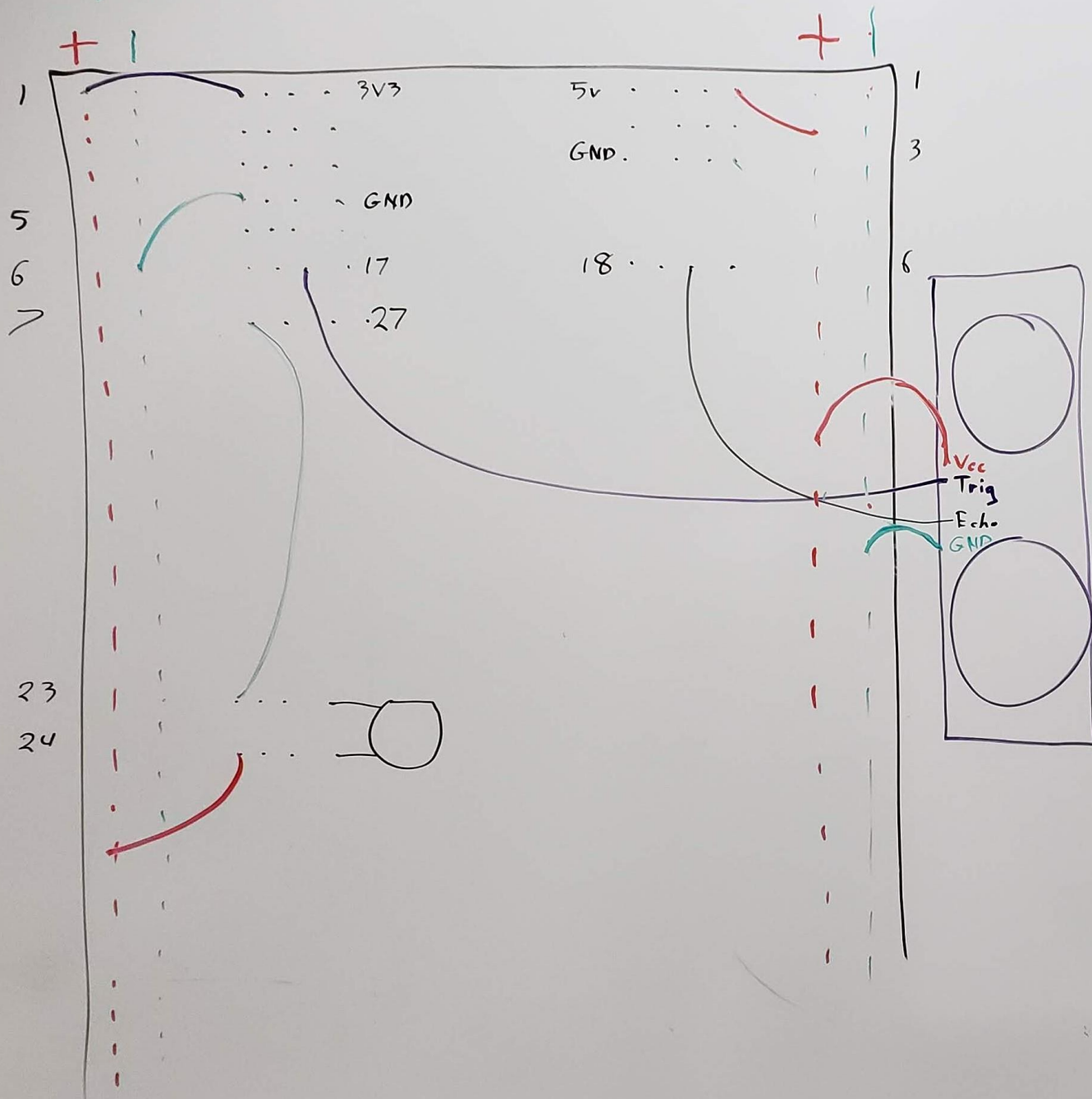
Part 1: led



Part 2: btnLed



Part 3: ultrasonic



COMPILING AND RUNNING

- To Compile:

```
pi@raspberrypi: ~/ $ gcc FILE_NAME.c -lwiringPi -o FILE_NICKNAME
```

- To Run the Program:

```
pi@raspberrypi: ~/ $ ./FILE_NICKNAME
```

- To Quit:

Type **CTRL + C**