**Raspberry Pi**

**Installing the Operating System**

1. Download “Raspbian Stretch with Desktop” from

<https://www.raspberrypi.org/downloads/raspbian/>

1. Download “Etcher” from

<https://etcher.io/>

1. Use Etcher to write the image to the SD card.
2. Insert SD card into Pi and start it up.
3. Go through first-time set-up window.
4. Enable SSH and find the IP address of the Pi.
5. Remotely connect to the Pi using Putty on your laptop.

**Setting up a SQL database**

1. sudo apt-get install mysql-server
2. sudo mysql\_secure\_installation
3. mysql
4. Create a new database called “IoT”
5. Using this database, create a new table named “sensor\_data” with the following columns:
   1. “time” – DATETIME, primary key
   2. “temperature” – DECIMAL(4, 1)
   3. “humidity” – DECIMAL(4, 1)
   4. “light\_bulb\_on” – BIT
   5. “light\_bulb\_dim” – INTEGER
6. You can see your new table with “describe sensor\_data”

**Setting up a web server**

1. sudo apt-get install nginx
2. sudo apt-get install php7.0-fpm php7.0-mysql
3. sudo nano /etc/php/7.0/fpm/php.ini
4. Find the line that says “#cgi.fix\_pathinfo=1” and change it to “cgi.fix\_pathinfo=0”
5. sudo systemctl restart php7.0-fpm
6. sudo nano /etc/nginx/sites-available/default
7. Remove everything from this file. Then type out all this:

server {

listen 80 default\_server;

listen [::]:80 default\_server;

root /var/www/html;

index index.php index.html index.htm index.nginx-debian.html;

server\_name [your public IP];

location / {

try\_files $uri $uri/ =404;

}

location ~ \.php$ {

include snippets/fastcgi-php.conf;

fastcgi\_pass unix:/var/run/php5-fpm.sock;

}

location ~ /\.ht {

deny all;

}

}

1. sudo nginx –t
2. sudo systemctl reload nginx
3. Open up your web browser and type the Pi’s IP into the address bar.

**Creating web pages**

1. cd /var/www/html
2. Create a new web page with: sudo nano [name of page].html
3. Explore the different things HTML can do

<https://www.w3schools.com/html/default.asp>

1. To view your web pages type the Pi’s IP in the address bar of your browser, followed by “/[name of page].html”