

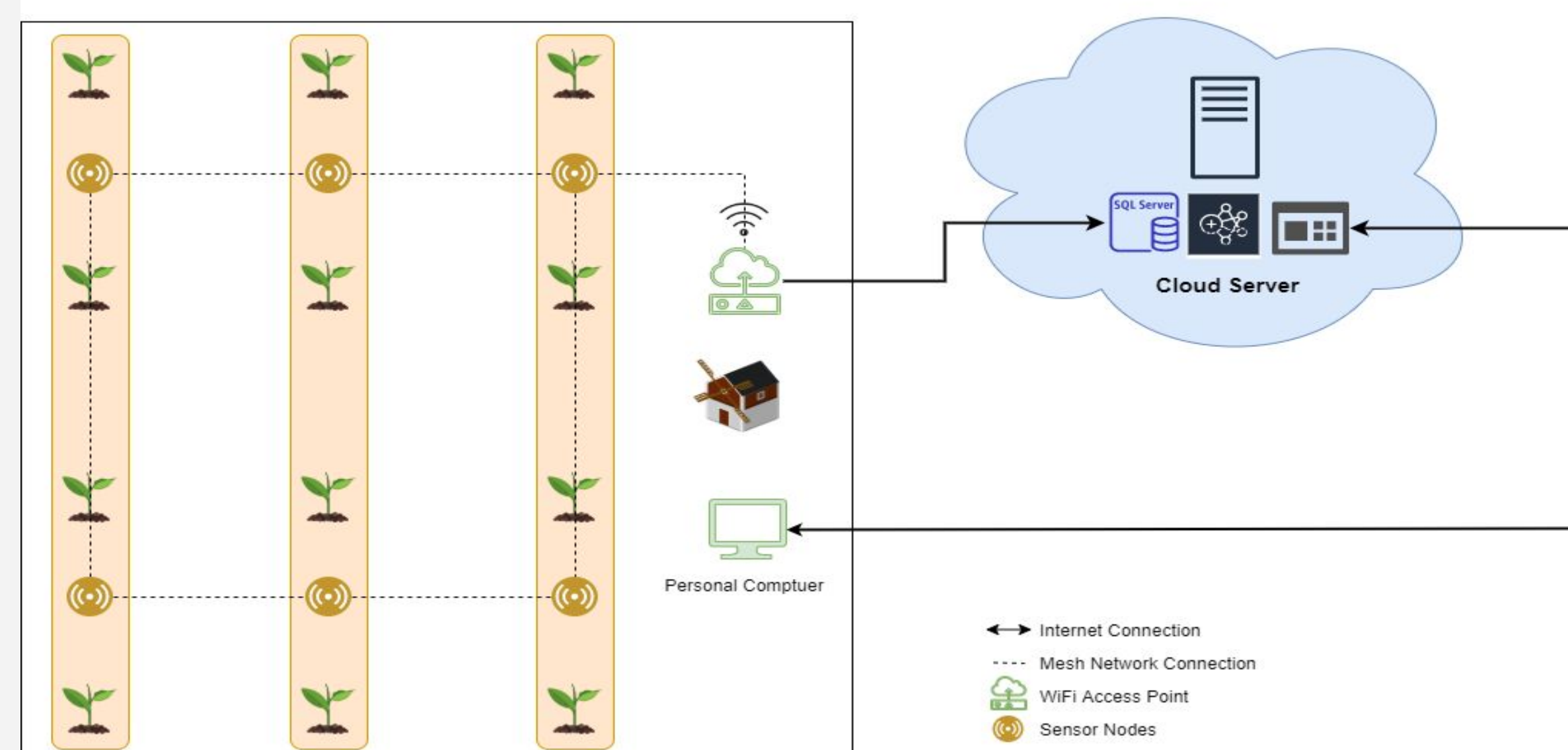
Project Goal

- Against unpredictable external factors, such as rising climate change, farmers face much difficulty in efficiently managing their farms.
- Therefore to reduce waste and increase yields, IoT technologies can be used to evaluate the conditions of their land and inform farmers of any discrepancies.

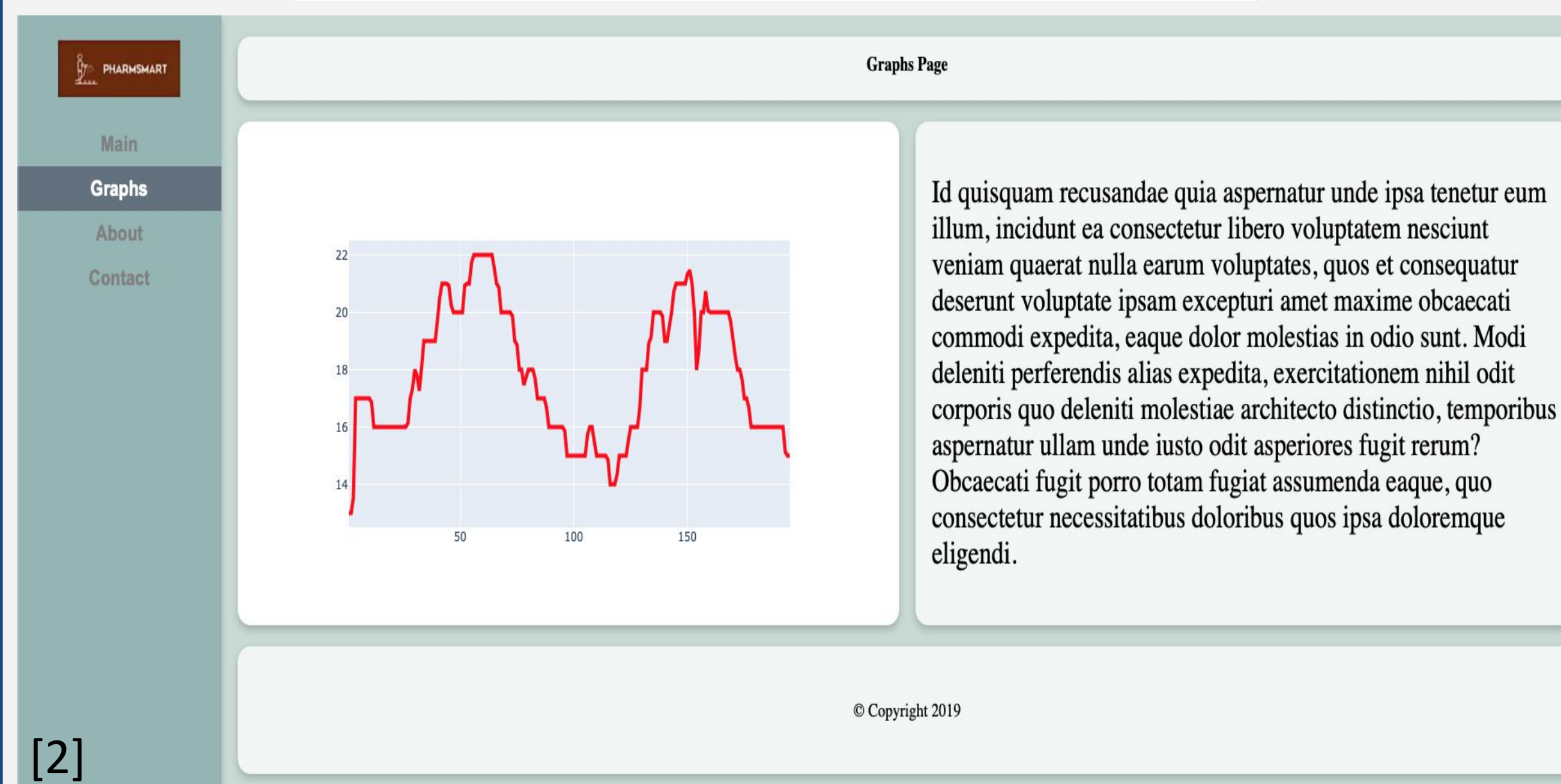
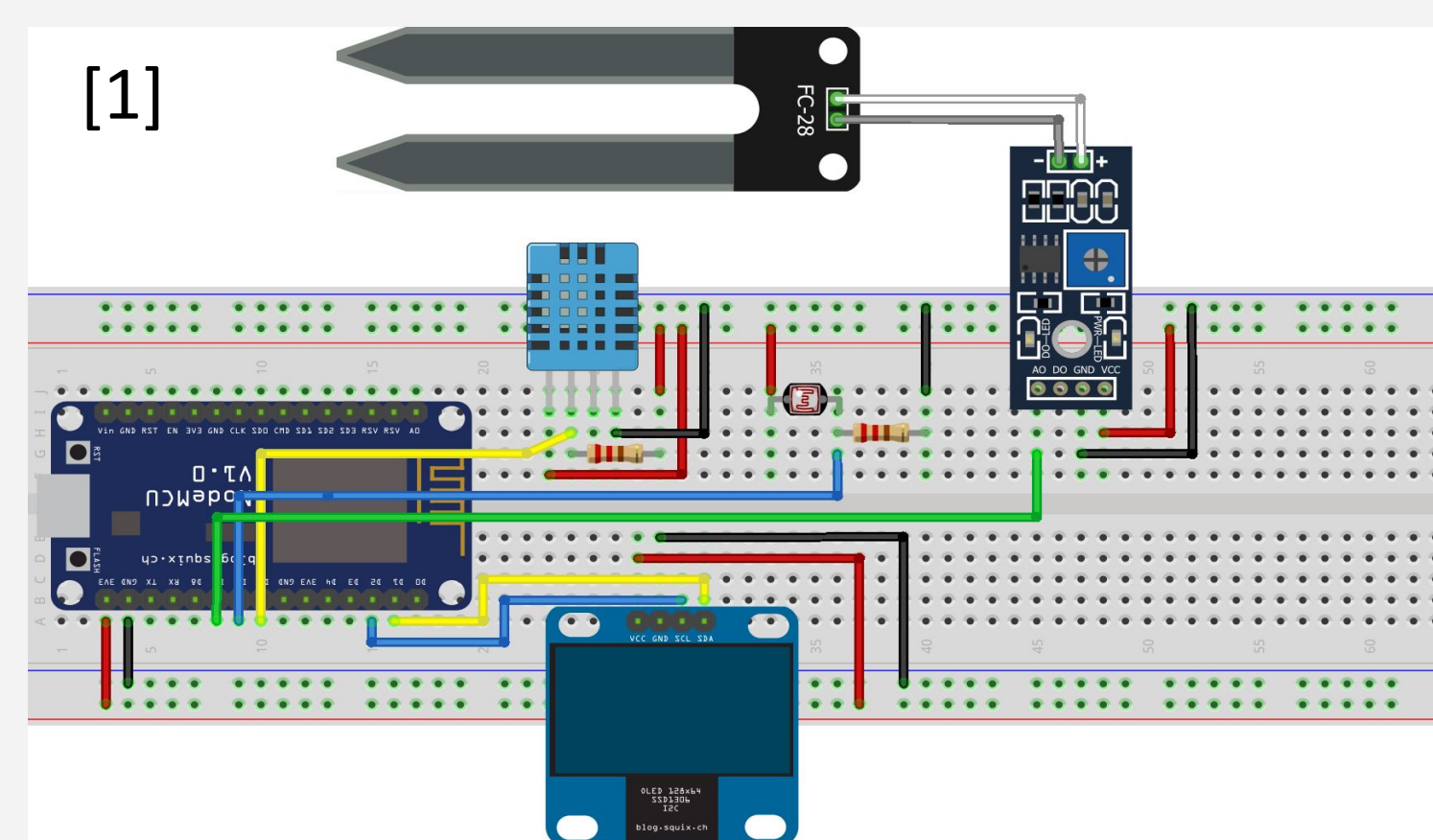
Current Progress

- Firmware:
 - Successfully set up circuit with DHT11 sensor and extracting the temperature and humidity
 - Successfully enabled WiFi from the ESP8266 nodeMCU
 - Established HTTP Connections with AWS server
 - Established mesh network with other nodes
- Back End:
 - Successfully sent extracted data to MySQL database and create tables to organize info.
- Front End:
 - Successfully set up a web page for displaying data and connected database to web page.
 - Currently working on improving the web page layout and creating interactive graphs.

Diagrams



- Overview Diagram



- [1] Circuit Diagram, [2] Current web page / User Interface

Milestones & Future Work

- Getting website online: Achieved
- SQL and Website communication: Achieved
- Wifi synch with server by 1st Quarter
- Mesh Network by 1st Quarter.
- Power Management by 1st Quarter.
- Node Communication by 2nd Quarter.
- SQL support and communication with backend data by 2nd Quarter.
- Data analysis by 2nd Quarter.

Materials

- Node modules are build on multiple ESP8266 NodeMCU which provides good HTTP protocols.
- The node modules contains a DHT11 sensor which returns the current temperature and humidity
- An AWS server is used to provide a reliable server to connect to anywhere.

Reference

- “Monitoring Vineyard Irrigation Performance with Internet of Things” by Davit Hovhannisyanyan · Reinier van der Lee · Justin Haessly · Ahmed Eltawil · Fadi Kurdahi
- Topology Adaptive, Resilient and Scalable (TARS) IoT for Irrigation CPS by Irvine, CA