INTERNET OF THINGS

Abstract

The Internet of Things is a system whereby physical devices including sensors are connected to the Internet and are able to communicate with other devices. IoT enables autonomous and secure transfer of data between physical devices and software applications.

Historical Background: Our client Mr. Steve Cosgrove is working on an IOT project which aims to create a low-cost environment for reading real time field data like temperature, humidity, pressure in a particular area using different sensors and making it available to stakeholders. This project is accomplished using an IOT dashboard 'Cayenne'. Cayenne is the first of its kind drag and drop IOT project builder that empowers developers to quickly create and host their connected device projects

Objective and Scope

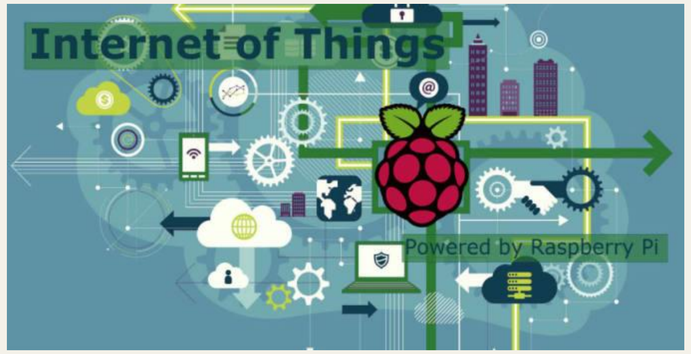
Objective: This project was intetended to document the code that used in the IoT system created by our client. The purpose of doing this documentation is to easily understand the use and the functionality of the code for the users and developers in future.

Scope: Create a Github account and then create our own repository is the first step. All the documentation and previous code is available in Github. This is the Master version which we can edit. Cayenne is a dashboard where we can monitor the parameters that have been read using the sensors. Documentation is the main part of this project, so we have to document the existing code and all the edits we have done.

Technologies and Methodology Used

Scrum Methodology: For this project we adopted Scrum methodology since we had limited time frame and we needed clients feedback at each stages of the project. Moreover scrum methodology helps to divide the entire project into small units so that we could easily distribute the work among us. Scrum meetings has been conducted on a regular basis among team members and fortnightly between team members, our project advisor Mr. Hamid Mohroeian and client Mr. Steve Cosgrove.

Gmail : Communication between project team and client plays a vital role in the development of any project. For this we used Gmail to send our queries to the client and project advisor.
Outlook: We scheduled scum meetings using Outlook calendar fortnightly according to everyone's availability.
Zoom: Since Covid-19 outbreak affected the scrum meetings physically. So we have to rely on online platforms for conducting meeting.



Project Team

Client : Mr. Steve Cosgrove

Project Coordinator : Scott Morton

Project Advisor : Hamid Mohroeian

Team members : Jitto Thomas
Gokul Shaji

Project Implementation

Iteration 1: As a first approach to the project, we conducted a client meeting for the first time. The main purpose of the client meeting was to gain details about the project so that a good project proposal can be submitted.
Result: Client provided a detailed description about the working of the project and that helped us to submit a project proposal according to the client requirements

Iteration2: The code was mainly written in Python language so it was important for learning python before starting documentation
Result : We successfully completed a python course

Iteration 3: Next stage of the project was to get the whole program that runs behind the IoT system and to study how it works.
Result: The client allowed us to clone his github repository which contains all programs to our repository

Iteration 4: In this phase of project we had to submit a sample document which explains the working of a portion of the main program. The purpose for doing this was to get feedbacks from the client to finalize the format of the document,
Result: Submitted a sample document to the client . Then client explained his concerns and correction for the final format of the documentation.

Iteration 5: As a final step we had to submit the final documentation to the client
Result: We have submitted the final documentation to the client.

ISSUES AND SOLUTIONS

1. Since we are not familiar with the Python language, it was challenging to find how the whole program works at first.
Solution: We have successfully completed a Python course.
2. It was quite difficult to understand how the software works without a Raspberry Pi
Solution: Client provided a Raspberry Pi using SSH client through a gateway
3. Documentation is very different process from programming and we didn't know in which format it has to be done
Solution: We have finalised the format after discussing with the client and project advisor.
4. Due to the unexpected Covid-19 outbreak we lost proper communication within the team and also with our advisor and client.
Solution: We managed to communicate with each other in WhatsApp on a regular basis and to conduct Zoom meeting with our advisor and client.

Conclusion

This project helped us to gain more knowledge about Python programming language and to document code .
By the completion of the project we got more clarity on how an industrial projects works. Also we understood importance of adopting a methodology to complete a project in more efficiently with in a limited span of time .