

CS 211 - Project Proposal

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Introduction:

This is the project proposal for a device-to-application IoT device. this project aims on making a simple IoT device with sensors that can communicate with an application on a different machine via the internet. There are three main components to this project.

- 1) The IoT device which has some sensor and internet capabilities.
- 2) The server communicates with the IoT device and acts like a web-server that can cater to the user's commands over the web.
- 3) The web client is a command-line interface that will allow the user to send control of the IoT device.

In this project, we will use a Raspberry Pi Zero W with the thermal sensor as our IoT device. We will run the server on a windows laptop using docker. We will make a simple python web server which will be the middle-ware between the user and the IoT device. We will be able to get the current temperatures where the IoT Device will be deployed from the server. We will be able to send messages to the IoT device which will be shown on the IoT device terminal.

The decision was taken:

The first choice taken was between the IoT framework to use. Over studying the documentation of the Google IoT, AWS IoT, and Device hive. An important deciding factor was the open-source code of DeviceHive. Another factor was that the Device Hive does not require any online computing power. Therefore Device hive was the best choice due to its open-source, customizable, and cloud-free platform.

The second choice was taken over the language for development. Python was selected to keep all the development in the same language. The raspberry device was selected as the IoT device due to its modularity which would allow us to use multiple and diverse sensors.

User Stories:

The following user stories will be used to evaluate the progress of this project.

- 1) As a user, I should be able to connect my IoT device to the base server.
- 2) As a user, I should be able to request the current temperature.
- 3) As a user, I should be able to send messages to the IoT device.
- 4) As a user, I should be able to use SSL to encrypt my data.
- 5) As a developer, I should be able to run tests on the server.