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Programming Language

A programming Language for the Internet of Things

1. Introduction

The technology has changed a lot if we compare the beginnings since the early days of computing. In recent years technology has been taking a step in a new and unexplored direction and a new phrase for this phenomenon to emerge, The Internet of things. The internet of things is a concept of connecting devices through the internet with the ability to gather and exchange data. These devices or gadgets are usually embedded with micro-controllers,software, sensors, actuators and internet connectivity. These gadgets may include a regular household, alarm clocks, and much more. Also there are IoT applications used in cities like sensors which monitor traffic, air and water pollution and electrical energy consumption.

The proposed programming language project will be to develop a programming language that is able to use the internet of things (IoT) in order to manage lights and outlets in a given network. The advantage of this programming language is that it will enable an ease of use and setup to manage and control outlets and lightings, and even set up specific times to where the lights can turn on and off and thus this can potentially save a lot of costs for electricity in any given household or business.

2. Language Features

The language of the program will be simple and easy to understand and use, it should be restricted in terms of complexity for better understanding for the new programmers. Declarative syntax will be implemented for better understanding of the paradigm of the code.
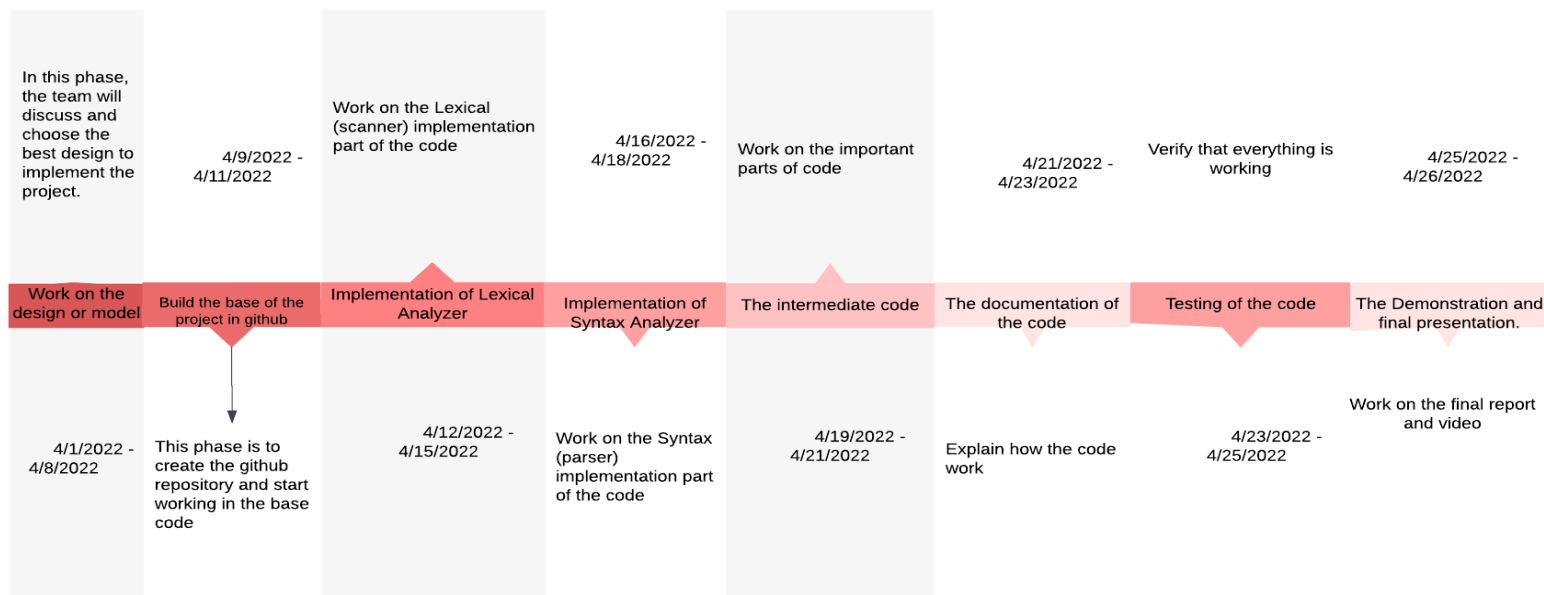
3. Example of a program

```
START
SECTION = LIVINGROOM
TURN ON/OFF? = ON
END
```

4. Implementation requirements and tools

The team plans to use Python as the implementation language of the project. That is because for many developers, Python is the language of choice in the market, it is easy to learn, has clean syntax, and it is supported by a large community. Also in IoT, Python is a great choice for the backend side of development as well as the software development of devices. Some of the many advantages of working with Python for IoT devices are the speed at which you can develop code and a large number of libraries for all kinds of platforms.

Tools that will be used are the following libraries; PLY and pyserial. The integrated Development Environment that was chosen will be PyCharm and Geany will be the top choice as an IDE for the raspberry pi.

5. Project timeline

In this phase, the team will discuss and choose the best design to implement the project.		Work on the Lexical (scanner) implementation part of the code		Work on the important parts of code		Verify that everything is working	
4/9/2022 - 4/11/2022		4/16/2022 - 4/18/2022		4/21/2022 - 4/23/2022		4/25/2022 - 4/26/2022
Work on the design or model	Build the base of the project in github	Implementation of Lexical Analyzer	Implementation of Syntax Analyzer	The intermediate code	The documentation of the code	Testing of the code	The Demonstration and final presentation.
4/1/2022 - 4/8/2022	This phase is to create the github repository and start working in the base code	4/12/2022 - 4/15/2022	Work on the Syntax (parser) implementation part of the code	4/19/2022 - 4/21/2022	Explain how the code work	4/23/2022 - 4/25/2022	Work on the final report and video

6. References

- "Internet-of-things-with-python"{Online}:https://svitla.com/blog/internet-of-things-with-python
- "Understand the importance of the Internet of Things"{Online}:https://www.javatpoint.com/internet-of-things-with-python