IoT individual project technical documentation

To the moon (Crypto alert)

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Contents

Introduction

This is the technical documentation of the individual project which contains all the documentation like the UML, system architecture etc. This project is about “Crypto Alert” (To the moon blueprint).

Crypto alert is an IoT device that keeps an eye of your savings in the crypto market and alerts users when big profits are made.

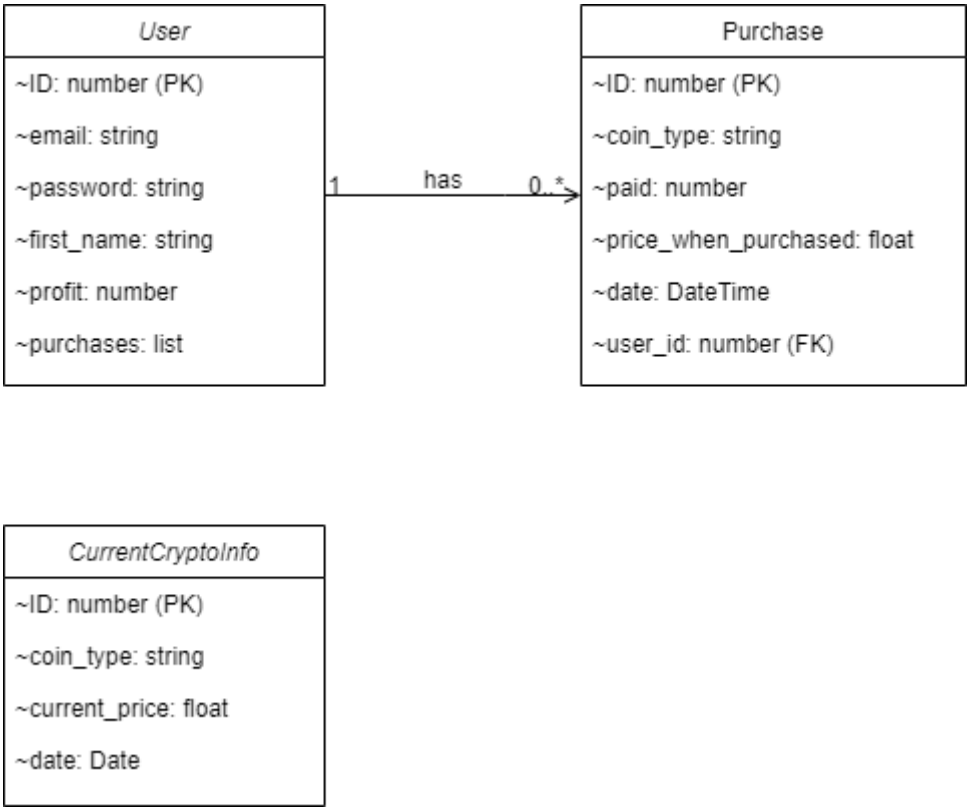
The embedded device has access the internet and Its being used to obtain data about several cryptocurrencies by calling an external API via the HTTP protocol.

Crypto alert also exists out of a web application. This web application retrieves the cryptocurrency information like the current price from the embedded device using HTTP. It also has a form where users can enter the price and quantity of the cryptocurrency they’ve purchased. Furthermore the website also calculates the total amount of profit/loss and displays all the purchases of the logged in user on the “Purchase” page.

The embedded device retrieves the total amount of profit from the web application and it produces a sound when the user has made large gains and a different sound when users have made a certain amount of loss.

UML

Class diagram



API documentation

The webserver has 2 important API endpoints.

Endpoint 1:

localhost:5000/api/crypto

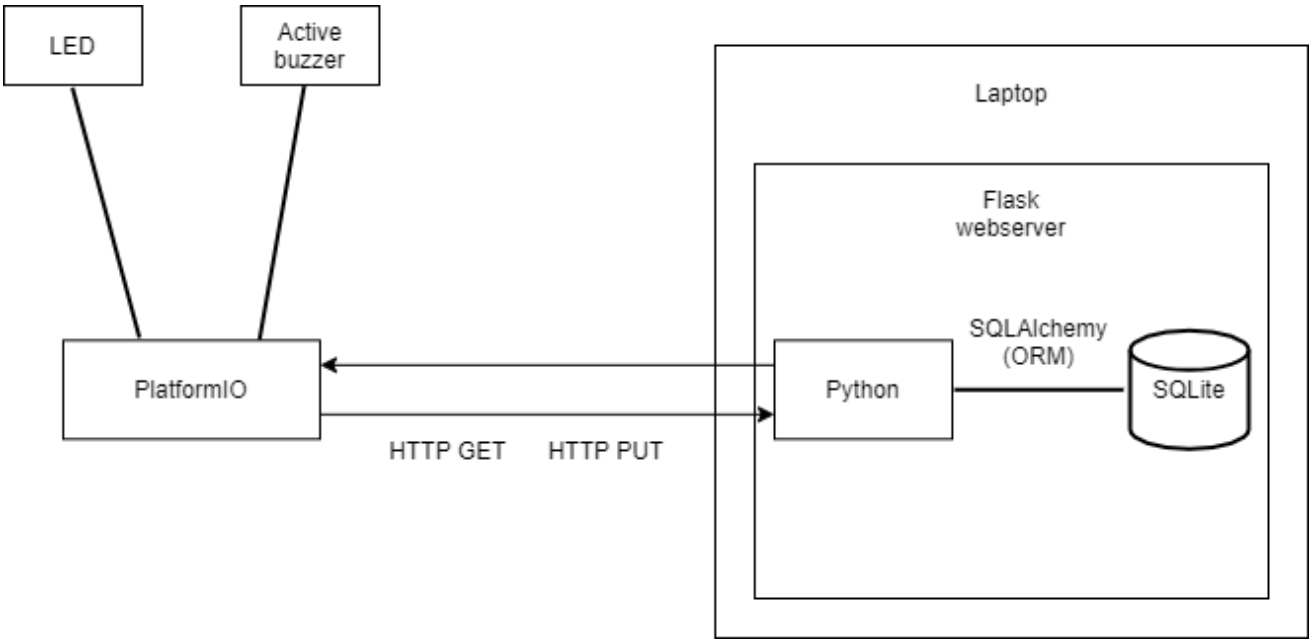
This is a “PUT” endpoint so that the embedded device can update the current cryptocurrency information like the price to the web server. The current cryptocurrency information is sent as the body of the HTTP PUT request as JSON format. The web server retrieves and parses the information and saves them as “CurrentCryptoInfo” objects. The embedded device executes this PUT request every 10 seconds.

Endpoint 2:

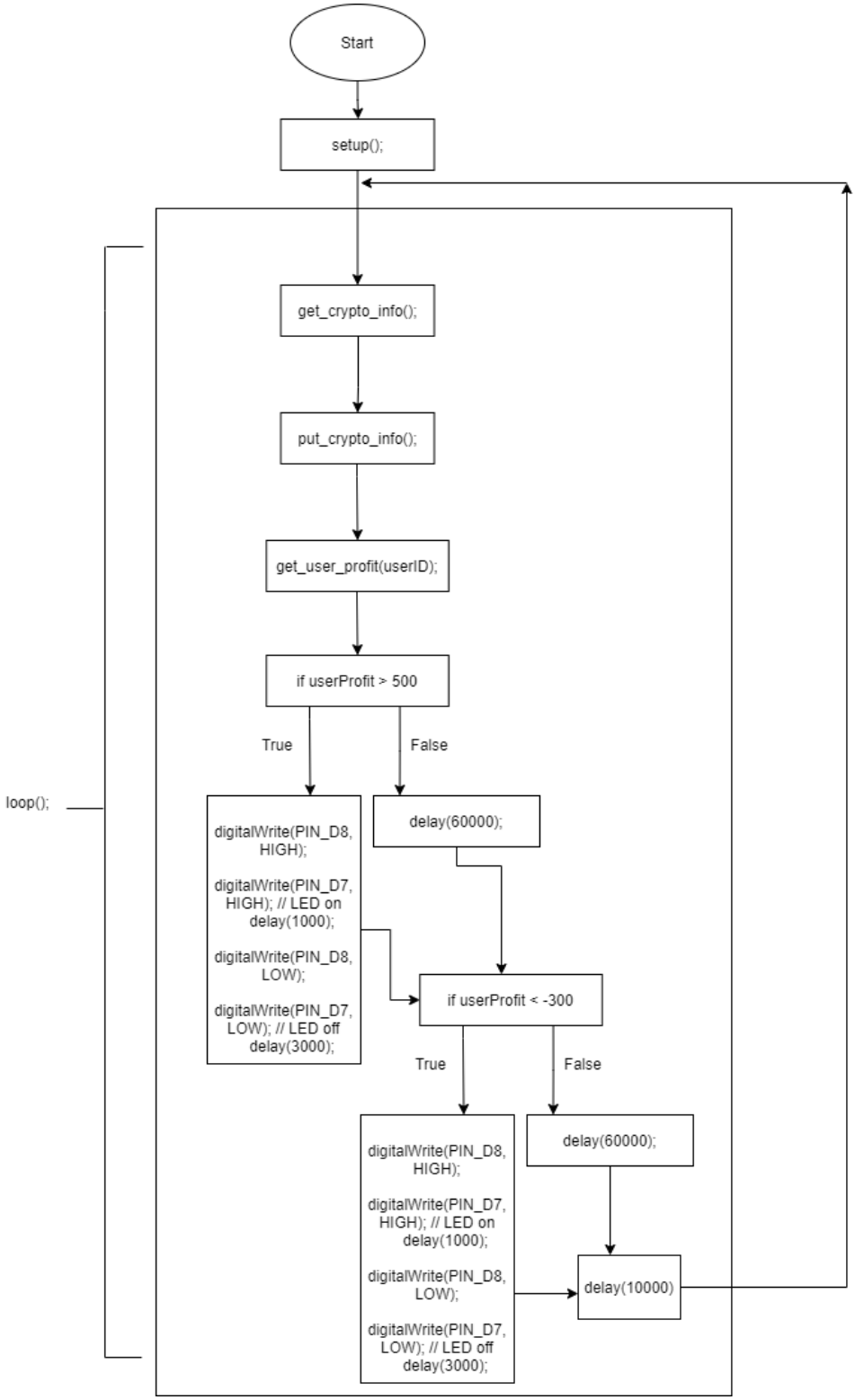
localhost:5000/api/users/profit/<user:id>

This is a “GET” endpoint so that the embedded device can retrieve the total amount of profit from a specific user (The user ID is set as a parameter of the GET request). The embedded device needs to know the total profit to alert the user if certain profits or losses are made.

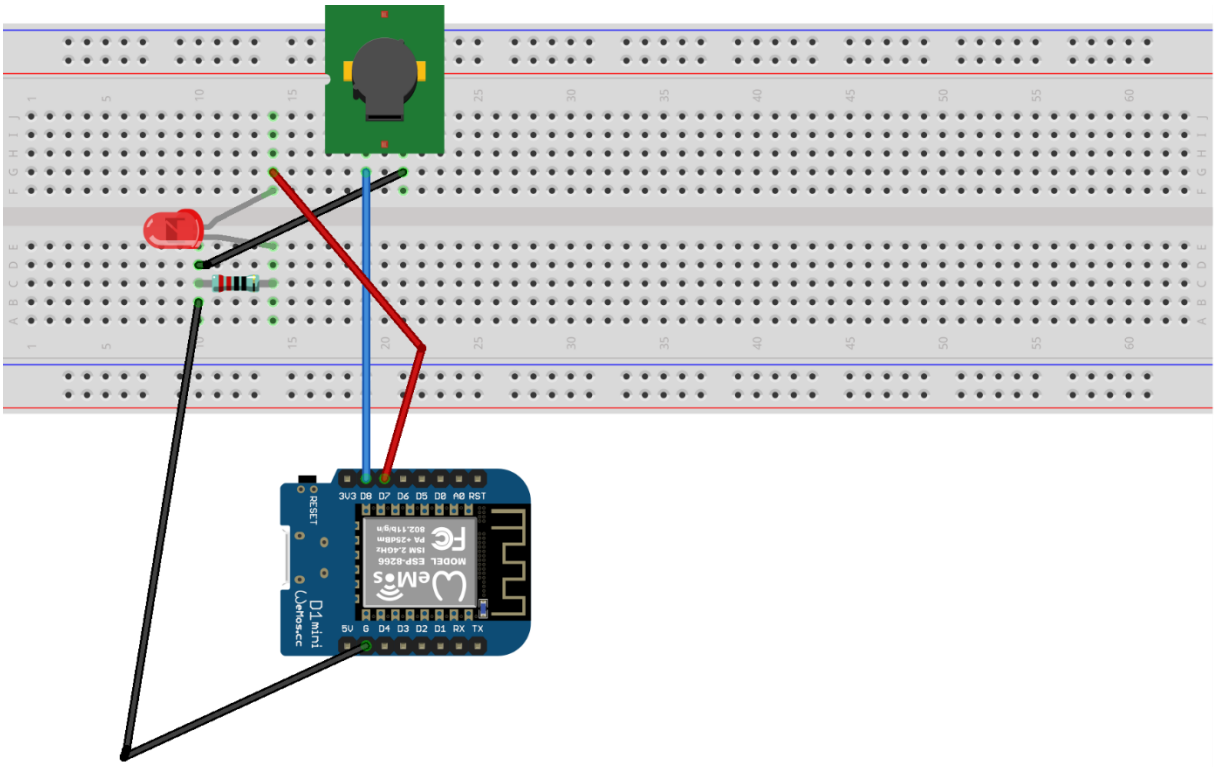
System architecture



Hardware architecture overview



Wiring diagram



BOM (Bill of Materials)

#	part number	manufacturer	name	description	quantity	cost	url
1	19-0001 0999	WeMos	Wemos d1 Mini Pro	The WeMos D1 min PRO is a miniature wireless 802.11 (Wifi) microcontroller development board.	1	-	https://grobotronics.com/wemos-d1-mini-pro-esp8266-v1.0.html?sl=en
2	000186	Tinytronics	Red LED – 5mm bright	A bright small Light-emitting-diode	1	€0.10	https://www.tinytronics.nl/shop/en/components/leds/leds/red-led-5mm-bright
3	000318	Tinytronics	220Ω resistor(LED series resistor)	A 220Ω resistor.	1	€0.05	https://www.tinytronics.nl/shop/en/components/resistors/resistors/220%CF%89-resistor(led-series-resistor)
4	000071	Tinytronics	Breadboard 830 points	A breadboard that is idealy combined with an Arduino. For the power supply there are 200 points availabl e, the	1	€4,00	https://www.tinytronics.nl/shop/en/tools-and-mounting/prototyping-supplies/breadboards/breadboard-830-points

				mid section contains 630 points.			
5	000072	Tinytronics	Breadboard wires	Also called “jumper wires” that can be used to connect components on the breadboard	4	€3.00	https://www.tinytronics.nl/shop/en/cables-and-connectors/cables-and-adapters/prototyping-wires/dupont-compatible-and-jumper/breadboard-wires-65-pieces-various-sizes
6	KY-006	Arduino Modules	KY-012 ACTIVE BUZZER MODULE	Active Buzzer Module KY-012 Arduino module, it produces a single-tone sound when signal is high. To produce different tones use the KY-006 Passive Buzzer module.	1	€6.99	https://arduinomodules.info/ky-012-active-buzzer-module/