# UpLua Project

The objective of this project is to boost the use of Programming Language Lua, especially (but not only) in the areas of Internet of Things and Artificial Intelligence (AIoT)

We have already started the development of two initiatives:
- **Google IoT Core - Lua Interface**
- **Course "Programming for the 21st Century - First steps"**

## Google Cloud IoT Core interface in Lua

The project consists of developing a library interface, in Lua, for the set of Cloud IoT Core APIs, through REST resources:

- cloudiot methods, to facilitate device manager tasks

- cloudiotdevice methods, to facilitate device communication over the HTTP and MQTT bridge
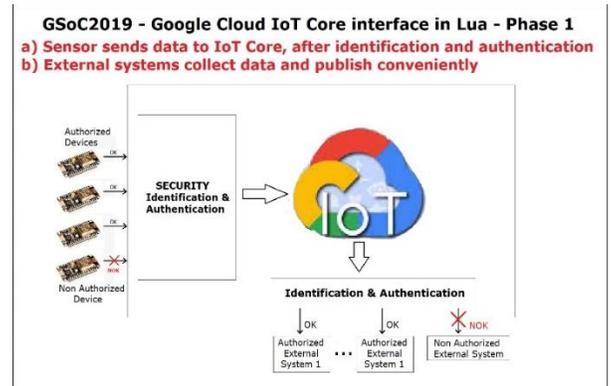


This library can be used in systems developed for microcontrollers such as ESP8266 / NodeMCU and ESP32, among others, facilitating the development of secure AIoT systems with reliable identification, authorization and encryption mechanisms.

The current version will use Google's infrastructure, but the project envisions the development of libraries for other providers, such as IBM, AWS-Amazon, Microsoft and RIOT, among others.



**Proof of Concept:**
The project is being developed, with the support and mentorship of LabLua, by a student of the Indian Institute of Technology, Mandi - India.

Data captured from temperature sensors will be sent through Google Cloud Core APIs so that they can be stored, sorted, manipulated and displayed through Google's own graphical user interfaces or developed by third parties.

Currently we have an operating prototype running on LabLua, but we are proposing that other people and entities also participate in the initiative by sending temperature data through Cloud IoT Core.

We will provide a manual that describes all parts of the project (software and hardware) as well as implementation guidelines.

# Programming for the 21st Century - First steps



**Duration:** 40 hours

**Introduction**

In this course, even students with no previous programming knowledge will learn the basics of computer programming, through practical examples in the areas of Games, Applications Development, Internet of Things and Artificial Intelligence.

It will be presented an overview of the technologies covered, pointing to new professional or entrepreneurial possibilities(in the short, medium and long term) and developing competences in Computational Thinking, fundamental for the new professions that will emerge in the next years.

**Our Goal**

The purpose of the course is to inspire the students to create their professional or entrepreneurial future in our challenging, increasingly digital, connected and rapidly changing world. Disruptive innovations are already happening in the so-called Fourth Industrial Revolution (Industry 4.0), which will have a profound and exponential impact in our lives with the merging of the physical, digital and biological worlds.

Throughout the course the students can develop knowledge, skills and attitudes that could help them to follow the evolution of the technology, as well as to familiarize themselves with models of reasoning that will be useful not only in the areas known internationally as STEAM (Science, Technology, Engineering, Arts and Mathematics), but also in other professions, for example in Humanities, Letters, Law, Agribusiness and Public Management, among others.

Taking the first steps in a learning process can be difficult. This also happens when you start learning to program. You have to overcome the "beginner block", take the first steps safely and find ways, which is not always easy, but it is very rewarding.

In order to soften this "learning curve," a complete environment will be provided for each group of five students, involving: a computer connected to the Internet and a hardware device (based on a microcontroller, display and sensors), where simple and practical experiments will be carried out, with individualized supervision. This will give students confidence for a progressive evolution, with the support of materials to be provided and links to consult other sources of information on the Internet.