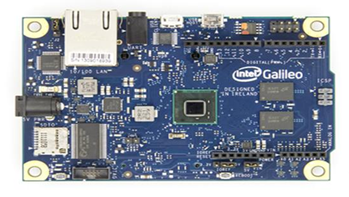
**Intel Galileo**

**About:**

Intel Galileo is the first [Arduino](https://en.wikipedia.org/wiki/Arduino)-certified development board based on [Intel](https://en.wikipedia.org/wiki/Intel) x86 architecture and is designed for educational communities. Intel released two versions of Galileo, Gen 1 and Gen 2. These are sometimes called "Breakout boards". The Intel Galileo is a board based on the IntelQuark SoC X1000, a 32­bit Intel Pentium brand system on a chip. The Intel Galileo has built-in networking and more memory capability than other boards, making it suitable for libraries and incorporate large display functions. It supports Microsoft Windows, Mac OS and Linux host operating systems, and the Arduino IDE.

The structure of Intel Galileo is given below.



**Features:**

Galileo is a microcontroller board based on the Intel® Quark SoC X1000 Application Processor, a 32-bit Intel Pentium-class system on a chip. Galileo is designed to support shields that operate at either 3.3V or 5V. The core operating voltage of Galileo is 3.3V. Processor Included is [Intel® Quark™ SoC X1000 (16K Cache, 400 MHz)](https://ark.intel.com/products/79084/Intel-Quark-SoC-X1000-16K-Cache-400-MHz) with Max Memory Size of 256 MB and type DDR3 800.It has 1 memory channel with memory bandwidth of 2.5 GB/s and 32 bit extensions. It has PCI express PCI support with 1 mini card slot. It also has 3 USB 2.0 ports and integrated LAN port. Its 15mm\*15mm with only 1 CPU configuration.

**Booting up:**

To get started, simply connect the board to power with the 5V AC to-DC adapter and then connect to the computer with the micro-USB cable. By default they measure from ground to 5 volts.

1. Locate the 32GB SanDisk bootable pen drive inside the accessories box. This pen drive is

loaded with a custom operating system with all the necessary software tools pre-installed

to kick start the application development with eIoT3500.

2. You need a host machine a.k.a computer to boot the pre-installed pen drive.

Note: Please ensure that your host machinea.k.a computer has a 64 bit processor

architecture before you attempt to boot the pre-installed pen drive provided.

Check the PROCESSOR\_ARCHITECTURE environment variable on your host a.ka.

Computer to know whether the processor architecture is 64 bit or 32 bit.

Open command line in your windows PC and type

echo PROCESSOR\_ARCHITECTURE.

If the output gives AMD64 then your processor is 64 bit else the output will be x86

which tells us that the processor architecture is 32-bit.

If your host machine a.k.a computer is already running any flavor of Linux, then please

follow the instructions provided in the link below.

http://www.cyberciti.biz/faq/linux-how-to-find-if-processor-is-64-bit-or-not/

3. Shutdown your host machine a.k.a computer

4. Connect the USB bootable pen drive to your host machine a.k.a computer USB port.

5. Power up the system and enter the BIOS set up menu.

Note: Please check how to enter BIOS set up menu on your host machine. Usually

pressing the keys F1/F2 immediately after pressing power button will allow you to enter

the BIOS set up menu option.

6. Navigate through the BIOS set up menu and disable the secure boot option if present.

7. Navigate to the boot order option in the BIOS set up menu and move the USB pen drive

to the top of the list.

8. After all the above changes are done, save the BIOS settings and boot the setting. Usually

pressing F10 key will allow you to save and exit from the BIOS set up menu

environment.

9. After all the above steps are followed the system should automatically boot into the system.

## Interfacing

1. Platform used is Eclipse IDE.

2. Components used are:-

a. LED

b. LCD Display Screen

c. Temperature Sensor

d. Light Sensor

e. Buzzer

f. Cloud computing

1. Brief explanation for interfacing of LED:-



LED is connected to an analog input of the Galileo board and a signal is sent to turn it on or off.

CODE:

#include &lt;LiquidCrystal.h&gt;

LiquidCrystallcd(12,11,5,4,3,2);

void setup()

{

// The LiquidCrystal library can be used with many different

lcd.begin(16, 2);

// clear() command from the LiquidCrystal library:

lcd.clear();

// Now we&#39;ll display a message on the LCD!

// When the display powers up, the invisible cursor starts

// on the top row and first column.

lcd.print(&quot;hello, world!&quot;);

// Adjusting the contrast (IMPORTANT!)

}

void loop()

{

// LCD before sending data. Counting starts from 0, so the top

// line is line 0 and the bottom line is line 1. Columns range

// from 0 on the left side, to 15 on the right.

// Here we&#39;ll set the invisible cursor to the first column

// (column 0) of the second line (line 1):

lcd.setCursor(0,1);

lcd.print(millis()/1000);

}

Eclipse Paho:-

There is a set of different implementations of MQTT protocol available on the market. Eclipse

Paho – open source implementation under the

that it provides implementations for a wide range of languages/technologies, from JavaScript to embedded C.

**Some other sensors are :**

1.Temperaature humidity sensors

2.Infrared emission sensors

3.Photoresister

4.Ultrasonic Distance sensor

5.Sound Sensor etc.

**References:**

1. [<https://www.packtpub.com/mapt/book/hardware_and_creative/9781782174585/2/ch02lvl1sec14/downloading-and-installing-the-ide> ]
2. [ <https://www.intel.in/content/www/in/en/support/articles/000006387/boards-and-kits/intel-galileo-boards.html> ]
3. [ <http://www.libelium.com/libelium-connects-intel-galileo-to-sensors-for-the-internet-of-things/> ]
4. [ <http://www.nskelectronics.com/intel_galileo.html> ]

**Conclusion:** Thus we have studied the Intel Galileo port successfully. The architecture of the software and hardware pins of intel Galileo board are compatible with AurdinoUNO.