

A decorative graphic consisting of several colored rectangular bars and rounded corners. A vertical purple bar is on the left. A horizontal blue bar is below it, extending to the right. Below the blue bar are four horizontal segments: purple, yellow, red, and yellow. The red segment has a rounded right end. A vertical yellow bar is on the far right.

Espruino

JS go under limbo stick

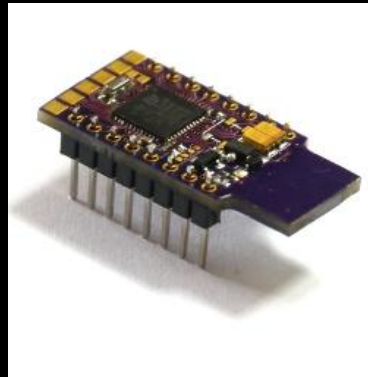
What is Espruino ?

- Brain child of **Gordon Williams**
- Software: Bare metal JS Runtime
- IDE: Chrome Packaged App
- Hardware: Custom Arm Cortex-M3 board



History

- Runs on several STM32 dev boards (STM32VLDISCOVERY, OLIMEXINO-STM32, etc)
- Kickstarter (Sept '13) funded to produce **Custom Board & OSS: Runtime, WebIDE**
- Kickstarter (Nov '14) funded for new “Pico” board

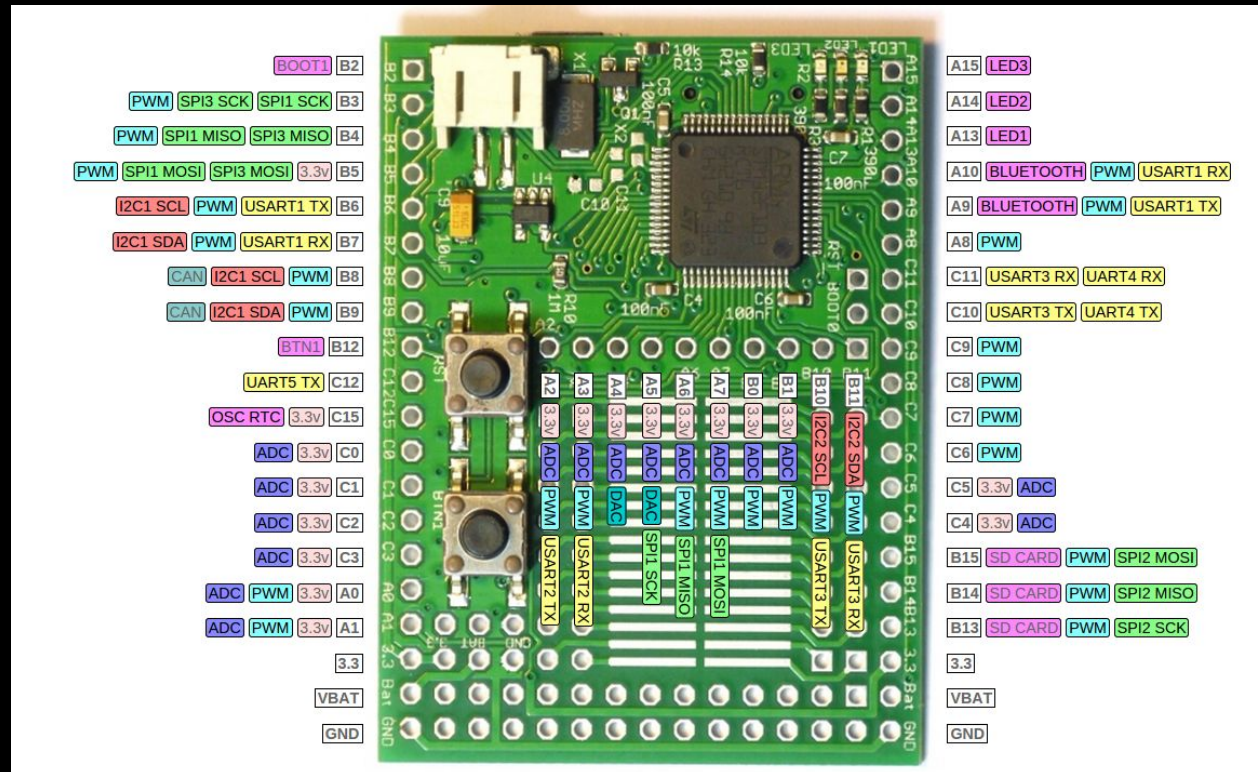


Espruino Board Specs (v1.3)

- Small: 54mm x 41mm
- STM32F103RCT6 32-bit 72MHz ARM Cortex M3 CPU
- 256KB of Flash memory, 48KB of RAM
- Battery, SD card connectors
- R, G & B LEDs, 2 Buttons
- 44 GPIO Pins: 26 PWM Pins, 16 ADC Pins, 3 USARTs, 2 SPI, 2 I2C and 2 DACs
- Pads to allow HC-05 Bluetooth modules
- Prototyping area

Espruino Board Layout

Pins! Pins! Pins!



Power Usage

Mode	Current	Time on 2Ah Batt	Notes
Run	~35mA	57 hours	Espruino is executing code and running at 72Mhz
Sleep	~12mA	7 days	Espruino has stopped the clock to the CPU, but all peripherals are still running and can wake it up
Stop	~0.11mA	2 years	Espruino has stopped the clock to everything except the real-time clock (RTC). It can wake up on setInterval/setTimeout or setWatch

Why JS?

- Makes sense for embedded
- Great for 'duino non-programmer community
- REPL makes for very rapid prototyping
- Callback style means Runtime handles power mgmt well

Runtime

- “95% JavaScript compatible”
- Supports all the usual suspects:
SPI, I2C, PWM, ADCs, GPIO
- As well as many more:
Bluetooth, HTTP, Wifi, Gfx/LCDs, Inline-
Asm, many more...
- Write new modules (in JS or C)

WebIDE

Chrome Packaged App !!!



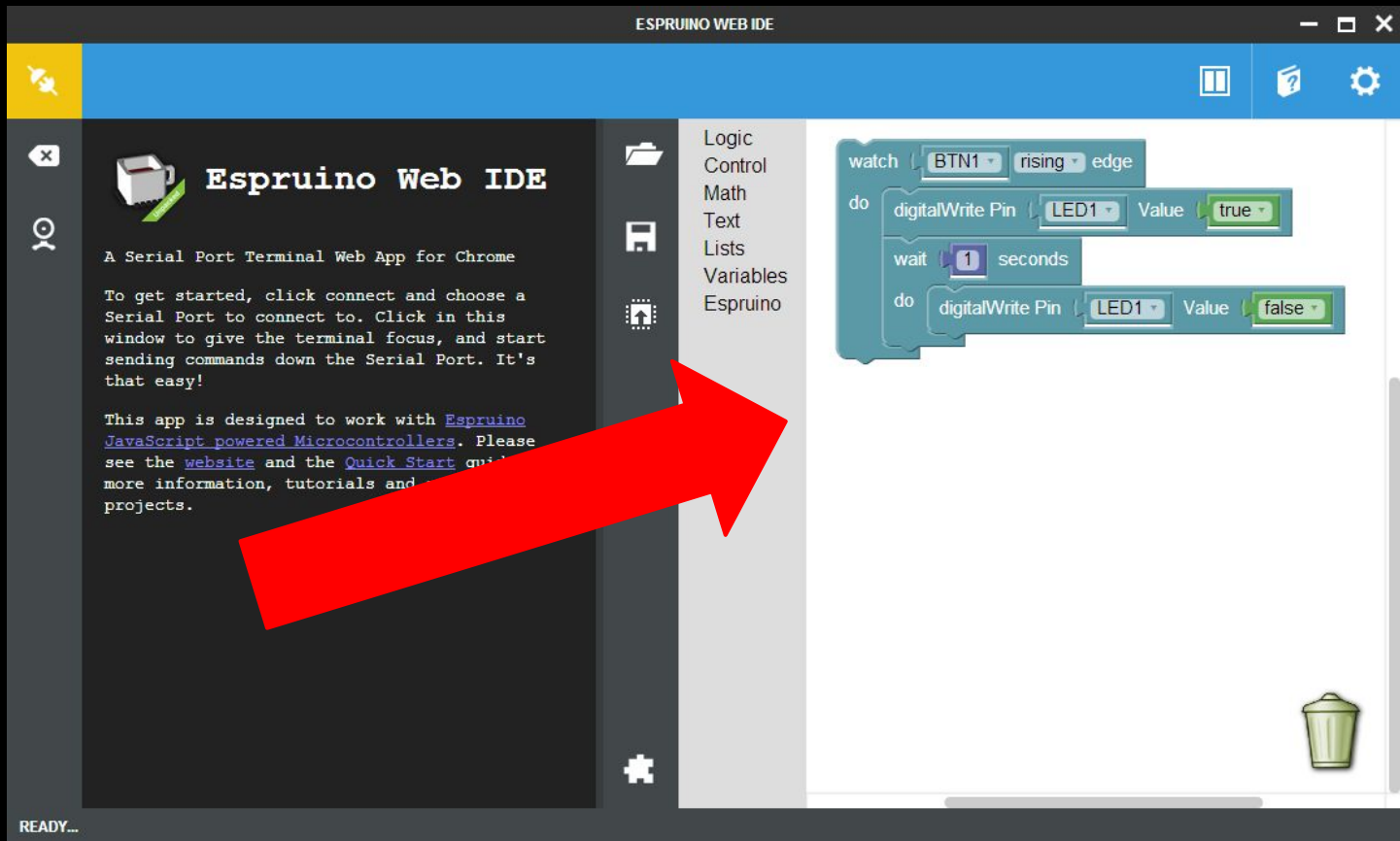
WebIDE

REPL via USB UART Terminal !!



WebIDE

Includes “Visual” JS editor



The screenshot displays the Espruino Web IDE interface. The title bar reads "ESPRUINO WEB IDE". The interface is divided into several sections:

- Left Panel:** Contains the "Espruino Web IDE" logo and introductory text: "A Serial Port Terminal Web App for Chrome. To get started, click connect and choose a Serial Port to connect to. Click in this window to give the terminal focus, and start sending commands down the Serial Port. It's that easy! This app is designed to work with [Espruino JavaScript powered Microcontrollers](#). Please see the [website](#) and the [Quick Start](#) guide for more information, tutorials and projects."
- Central Panel:** A vertical menu with icons and labels: "Logic", "Control", "Math", "Text", "Lists", "Variables", and "Espruino".
- Right Panel:** A visual JavaScript editor showing a script:

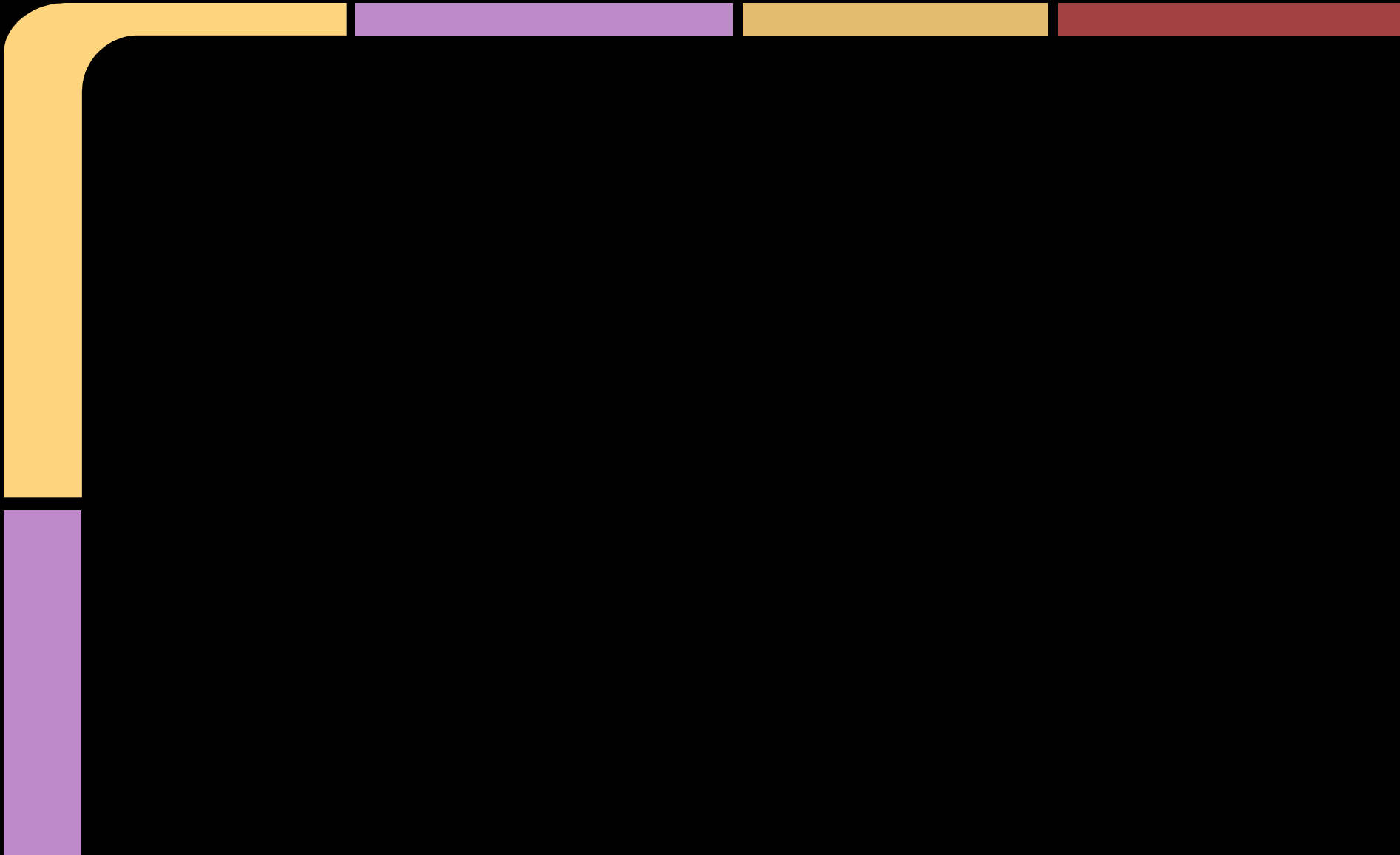
```
watch [BTN1] rising edge
do
  digitalWrite Pin [LED1] Value [true]
  wait [1] seconds
  do
    digitalWrite Pin [LED1] Value [false]
```
- Bottom Left:** A status indicator that says "READY...".
- Bottom Right:** A trash can icon.

A large red arrow points from the introductory text in the left panel towards the visual JavaScript editor in the right panel.

Community/Support

- Excellent Docs on website
- Gordon is ****VERY**** dedicated
- Forum is active, friendly and very helpful
- Runtime, WebIDE, Board Layouts, even website are on Github

DEMO!



Embedded JS Everywhere!

Its not just Espruino...

- Tessel (Cortex-M4)
- NodeJS: Johnny-Five (Intel Galileo)

Thank You!

Questions?

<http://manichord.com>

[@maks](https://github.com/maks)

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