

MbedJS QuickStart manual R1

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This document is mbedJS Quick start manual.

version	date	
r1	2014/11/28	Create new

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1 mbedJS

mbedJS is a embed web services software for one-chip microcomputers. This is developed by MiMicProject.

This software provides Web-based development environment, and remote control API via WebSocket-JSONRPC one-chip microcomputer. JavascriptAPI of mbedJS can be control the mbed board directly from HTML content. User does not need to update the firmware every time in order to change the behavior.

The API will be able to access from major PC browser and smartphones. mbedJS is possible to treat the mbed as part of the web content. mbedJS is possible to control any devices from webBrowser. In addition, it be able to operate the device from online content.

2 Setup

2.1 Preparing hardware

mbedJS requires Ethernet enabled device. There are available platform.

Platform	Remark
mbed LPC1768	LAN connector is not Need expansion kit which has LAN connector such as mbed Application Board
EA LPC4088 QuickStart Board	LAN connector enabled.
Seeeduino-Arch-Pro(LPC1768)	LAN connector enabled.
FRDM-K64F	LAN connector enabled.

In case of not mbed enabled products, it can work if has same MCU and LAN peripheral.

2.2 Get Firmware

Compiled mbedJS firmware is available on sourceforge.jp. Firmware pack can be downloaded at following URL.

The zip file contains 3 .bin files for each platform.

<http://sourceforge.jp/projects/mimic/releases/p14439>

Source code is available on mbed.org repository.

<http://developer.mbed.org/users/nyatla/code/mbedJS/>

2.3 Connect to mbedJS

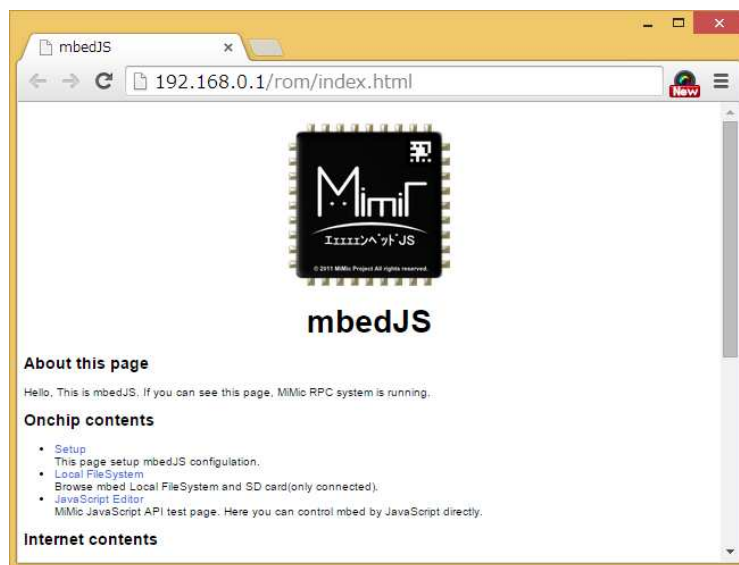
Initial IP address of mbedJS is 192.168.0.39. Temporarily change the IP address setting of the PC to 192.168.0.x to connect to the mbedJS.

Connect to mbedJS to network by ethernet cable.

Power on mbed.

Open WebBrowser on PC, access to <http://192.168.0.39/>.

If you got a following web page, setup is completed.

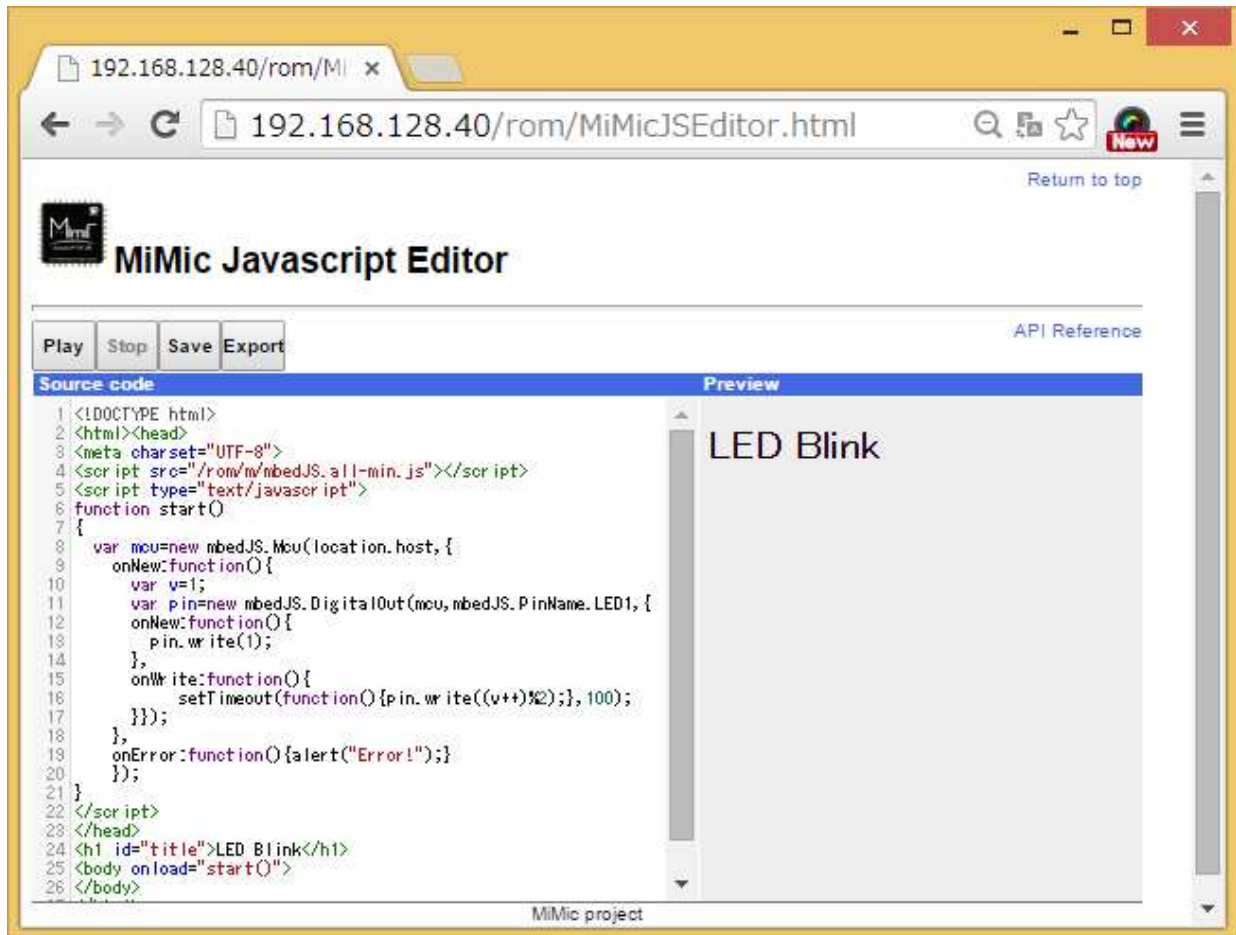


You can override the initial address from the configuration file for mbedLPC1768. Please refer to the chapter of Appendix. Configuration file for more information.

3 Javascript programming for mbedJS

mbedJS is equipped with a simple onchip Javascript editor.

You can create the HTML content on the browser.



- Open mbedJS onchip contents by browser, click **JavascriptEditor**.
- LED blinking program has been preset on JavaScriptEditor. Click Start button to run LED blinking.
- For to edit contents, click stop button to stop the program.
- The board equipped with a file system such as mbed LPC1768, you can save the content to the local file system. The board that does not have a file system can not be saved. To download the source code, use the Export button.

MbedJS Javascript API is here.

<http://mimic.sourceforge.jp/doc/mbedjs/current/>

3.1 Using external editor

mbedJS contents is able to create also in a other environment.

Save the following content on your computer, please open it in your browser. LED will be blinking.

```
01 <!DOCTYPE html>
02 <html><head>
03 <meta charset="UTF-8">
04 <script src="http://mimic.sourceforge.jp/jsapi/mbedJS.all.js"></script>
05 <script type="text/javascript">
06 function start()
07 {
08   var mcu=new mbedJS.Mcu("192.168.0.1",{
09     onNew:function(){
10       var v=1;
11       var pin=new mbedJS.DigitalOut(mcu,mbedJS.PinName.LED1,{
12         onNew:function(){
13           pin.write(1);
14         },
15         onWrite:function(){
16           setTimeout(function(){pin.write((v++)%2);},100);
17         });
18       },
19       onError:function(){alert("Error!");}
20     });
21   }
22 </script>
23 </head>
24 <h1 id="title">LED Blink</h1>
25 <body onload="start()">
26 </body>
27 </html>
```

Check line4 and8.

Line4 loading mbedJS script from online server.

Line8 set mbedJS IP address.

HTML content can be placed anywhere as long in a location that can be access from the browser. However, you must set mbedJS IP address and library script file address.

4 Useful functions

4.1 Find mbedJS from Windows and MacOS

mbedJS support with UPnP / Bonjour network. It will find out the mbedJS device using the function of the OS and browser from network.

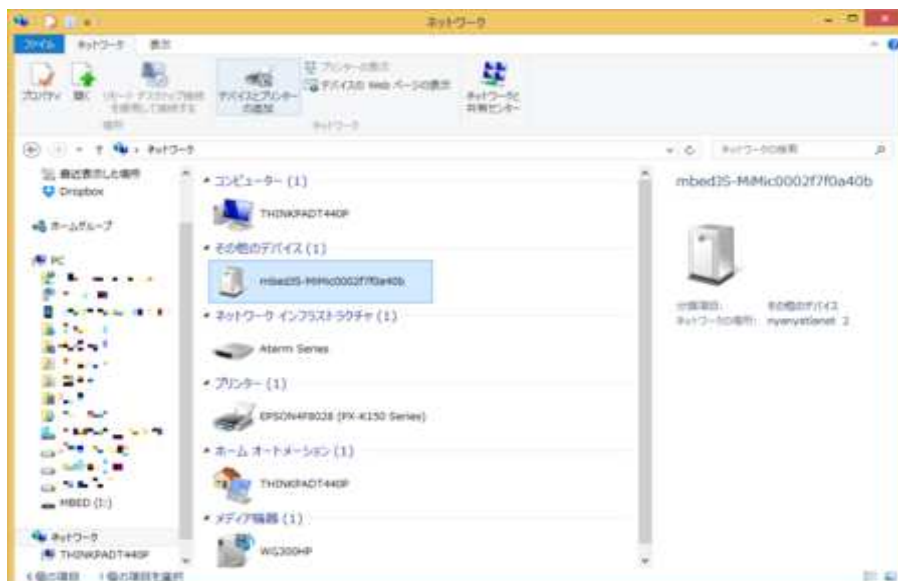
- **MacOS**

In case of MacOS, Bonjour network is enabled. You can find mbedJS device from Safari browser .



- **Windows**

In case of Windows, UPnP network is enabled. You can find mbedJS device from network computer at Explorer .



4.2 Connect to mbedJS over the Internet

mbedJS sharing system allows to connect via the Internet to mbedJS.



You can ask debugging via the internet to friends , and you may control mbedJS from portable devices via internet.

Sharing system will generate the connection destination of the URL that can be used instead of the IP address.

4.3 Other language API

mbedJS also can be control from the processing and java API.

Processing

<https://github.com/nyatla/mbedJS-Processing-API>

Java

<https://github.com/nyatla/mbedJS-Java-API>

Javascript

<https://github.com/nyatla/mbedJS-Javascript-API>

mbedJSAPI is built with a simple Websocket-JSON RPC.

If development environment has the Websocket, mbedJS API is able easily porting.

5 Resources

Website

MiMic project

<http://nyatla.jp/mimic/wp/>

mbed.org repository

<http://developer.mbed.org/users/nyatla/code/mbedJS/>

API reference

javascriptAPI manual

<http://mimic.sourceforge.jp/doc/mbedjs/current/>

javascriptAPI(device driver) manual

<http://mimic.sourceforge.jp/doc/mbedjs.driver/current/>

processing API manual

<http://mimic.sourceforge.jp/doc/mbedjs.psg/current/>

Contact

Please use this address for inquiries on this product.

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6 Appendix

6.1 Configuration File (*mimic.cfg*)

Placed the configuration file "mimic.cfg" at the root directory of the mbed drive, you can override the setting of mbedJS.

mimic.cfg is a plain text file. Each setting presents the setting in the form set value = value.

Sample configuration file to set IP address, netmask, default gateway.

```
ipaddr=192.168.0.40
netmask=255.255.255.0
gateway=192.168.0.254
```

List of parameter.

value	description	example
ipaddr	IP address of interface. "xxx.xxx.xxx.xxx" or "auto" is valid. "auto" enable zero configuration. Zero configuration will automatically get IP address. IP address will be searched in the order of DHCP and AutoIP.	192.168.0.1 auto
netmask	Subnet mask of interface. It is ignored when ipaddr=auto.	225.255.225.0
gateway	Default gateway of interface. It is ignored when ipaddr=auto.	192.168.0.254
macaddr	Ethernet MAC address.	02:01:02:03:04:05
host	Hostname for UPnP and Bonjour network.	MiMicServer01
srv_http_port	Port number of httpd.	80
srv_mdns	Enable flag of mDNS Sservice. "yes" or "no"	Yes no
srv_upnp	Enable flag of UPnP Sservice. "yes" or "no"	Yes no

Each item can be omitted. Omitted item take over the on-chip settings by default.
If no configuration file, all settings are on-chip setting.