RWBLINN.DE

jTM1637 v1.01

B4J Additional Library

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Overview

jTM1637 is an open source B4J Library to control the 4 digits LED display TM1637 connected to Raspberry Pi.

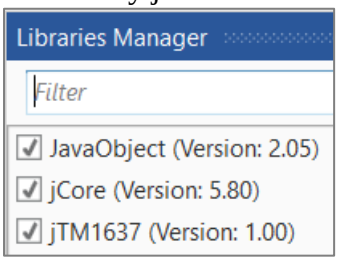
B4J is a development tool for desktop, server and IoT solutions by Anywhere Software.

The library is written in B4J (requires v5.80 or higher) and published on the B4J Forum.

Getting Started

Install

- Download the B4J Library, Source Code and Examples.
- Unzip the jTM1637.zip to a folder of choice.
- Copy the files jTM1637.jar, jTM1637.xml to the B4J additional libraries folder.
- The library jTM1637 should be listed in the B4J IDE Files Manager tab:



- Lookup folder Examples on how to use, i.e. Basic, Clock, CPU Temperature.

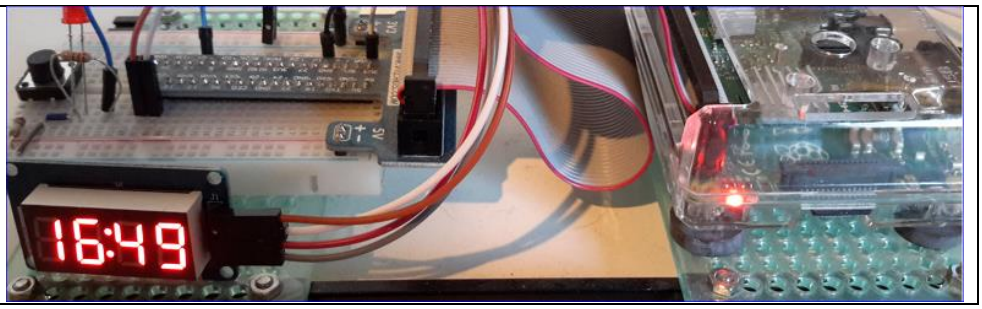
Dependencies

On jPi4J and the pi4j jar files (core, device, gpio-extension, service).
Ensure these additional library jar files are located in the B4J additional libraries folder.

Example pi4j Library Files

pi4j-core	jar	601.948	24.07.2017
pi4j-device	jar	234.537	24.07.2017
pi4j-gpio-extension	jar	96.326	24.07.2017
pi4j-service	jar	19.063	25.06.2017

Prototype

The prototype setup uses a Raspberry Pi 3 (running latest Raspian version)	

Wiring

TM1637 = Raspberry Pi
GND = Pin 9 = GND
VCC = Pin 1 = 3.3v
DIO (Data In Out) = Pin 38 which is BCM20 = GPIO.28 = wiringPi 28
CLK (Clock) = Pin 40 which is BCM21 = GPIO.29 = wiringPi 29

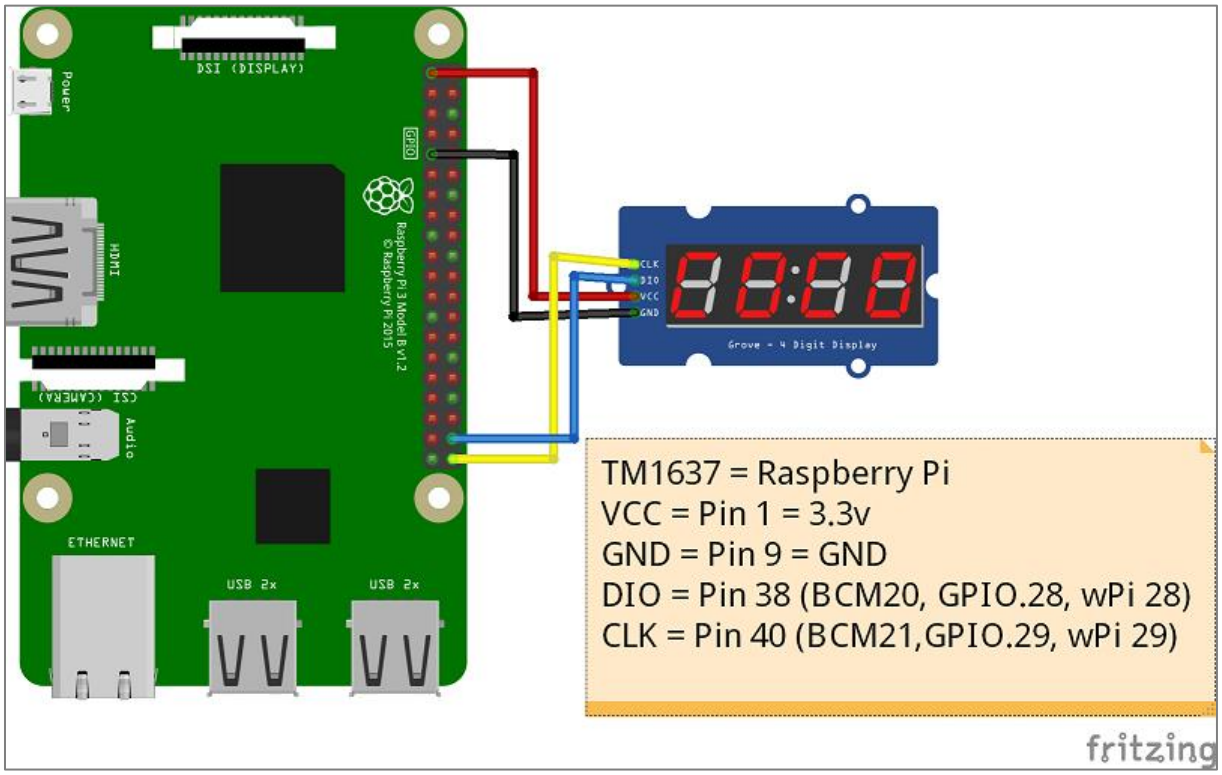
wiringPi

The wiringPi pin numbers 28 and 29 are required to initialize the display. The table below (from Raspberry Pi Shell with command `gpio -v`), the two physical pins 38 and 40 are shown as output.

BCM	wPi	Name	Mode	V	Physical	V	Mode	Name	wPi	BCM
		3.3v			1 || 2			5v		
2	8	SDA.1	ALT0	1	3 || 4			5v		
3	9	SCL.1	ALT0	1	5 || 6			0v		
4	7	GPIO. 7	IN	1	7 || 8	1	ALT0	TxD	15	14
		0v			9 || 10	1	ALT0	RxD	16	15
17	0	GPIO. 0	IN	0	11 || 12	0	IN	GPIO. 1	1	18
27	2	GPIO. 2	IN	0	13 || 14			0v		
22	3	GPIO. 3	OUT	0	15 || 16	0	IN	GPIO. 4	4	23
		3.3v			17 || 18	0	IN	GPIO. 5	5	24
10	12	MOSI	IN	0	19 || 20			0v		
9	13	MISO	IN	0	21 || 22	0	IN	GPIO. 6	6	25
11	14	SCLK	IN	0	23 || 24	1	IN	CE0	10	8
		0v			25 || 26	1	IN	CE1	11	7
0	30	SDA.0	IN	1	27 || 28	1	IN	SCL.0	31	1
5	21	GPIO.21	OUT	1	29 || 30			0v		
6	22	GPIO.22	IN	1	31 || 32	0	IN	GPIO.26	26	12
13	23	GPIO.23	IN	0	33 || 34			0v		
19	24	GPIO.24	IN	0	35 || 36	0	IN	GPIO.27	27	16
26	25	GPIO.25	IN	0	37 || 38	1	OUT	GPIO.28	28	20
		0v			39 || 40	1	OUT	GPIO.29	29	21
BCM	wPi	Name	Mode	V	Physical	V	Mode	Name	wPi	BCM

Pi 2

Circuit


DSI (DISPLAY)
Power
GPIO
HDMI
CSI (CAMERA)
Audio
ETHERNET
USB 2x
USB 2x
CLK
DIO
VCC
GND
Grove - 4 Digit Display
TM1637 = Raspberry Pi
VCC = Pin 1 = 3.3v
GND = Pin 9 = GND
DIO = Pin 38 (BCM20, GPIO.28, wPi 28)
CLK = Pin 40 (BCM21,GPIO.29, wPi 29)
fritzing

Library

Object

The library object is TM1637.

Declare:

```
Private tm As TM1637
```

Properties

Brightness

Brightness As Int

Set the brightness of the LED display.

Values

BRIGHTDARKEST, BRIGHTTYPICAL, BRIGHTHIGHEST

Example

```
Private tm As TM1637

tm.Brightness = tm.BRIGHTDARKEST
```

ShowDoublePoint

ShowDoublePoint As Boolean

Set the brightness of the LED display.

Values

True to show the double point (:.
False to show the digits without the double point.

Example

```
Private tm As TM1637

tm.ShowDoublePoint = True
```

Routines

Initialize

Initialize(pinData As Byte, pinClock As Byte) As Boolean

Initialize the LED display with pins data (DIO) and clock (CLK).
Important: The wiringPi pin numbers are required to initialize the display.

Example for the Clock pin connected to the Raspberry Pi physical pin 40:

```
Private pinClock As Byte = 29 'CLK = GPIO.21 = BCM29 = pin 40
```

Returns
True or False

Example

```
Private tm As TM1637

Private pinData As Byte = 28  'DIO = GPIO.20 = BCM28 = pin 38
Private pinClock As Byte = 29 'CLK = GPIO.21 = BCM29 = pin 40

Dim result as boolean = tm.Initialize(pinData, pinClock)
```

Clear

Clear

Clear the display.

Returns
None

Example

```
Private tm As TM1637

tm.Clear
```

DisplayDigits

DisplayDigits(d() As Int)

Display up to 4 digits.

Returns
None

Example

```
Private tm As TM1637

Tm.DisplayDigits(Array As Int(1,9,5,8))
```

DisplayDigit

DisplayDigit(pos As Int, digit As Int)

Display a digit 0 - 9 at position 1 – 4.

Returns
None

Example

```
Private tm As TM1637

tm.DisplayDigit(1,1)
```

Delay

Delay(DurationMs As Int)

Delay for a duration in milliseconds.

Returns
None

Example

```
tm.Delay(2000)
```

Events

- There are no events.

Code Example

B4J non-UI Example.

```
Sub Process_Globals
 Private tm As TM1637
 Private pinData As Byte = 28 'DIO
 Private pinClock As Byte = 29      'CLK
End Sub

Sub AppStart (Args() As String)
 tm.Initialize(pinData, pinClock)
 Tests
 StartMessageLoop
End Sub

Sub Tests
 tm.Brightness = tm.BRIGHTDARKEST
 tm.ShowDoublePoint = False
 tm.DisplayDigits(Array As Int(1,9,5,8))
 tm.Delay(2000)
 tm.Brightness = tm.BRIGHTHIGHEST
 tm.Clear
 tm.DisplayDigit(1,1)
 tm.Delay(1000)
 tm.DisplayDigit(2,9)
 tm.Delay(1000)
 tm.DisplayDigit(3,5)
 tm.Delay(1000)
 tm.DisplayDigit(4,8)
End Sub
```