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QRCode



Simple C/C++ QRCode Library



Fulvio Dominici, 11 Jun 2013

GPL3

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How to generate a QRCode with the libqrencode library, with a clear example



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Introduction

This is a simple example of usage of the libqrencode library from FUKUCHI Kentaro to generate a bmp file with the QRCode of a specific text. There are a number of references online to this library but no simple example of how to use it. In this project, there is also a workaround to the problems that arise when the library is used normally: here the source codes are directly included so that no linker conflict arises.

Libqrencode supports QR Code model 2, described in JIS (Japanese Industrial Standards) X0510:2004 or ISO/IEC 18004. Currently,

the following features are not supported: ECI and FNC1 mode QR Code model 1.

Background

QR Codes are bidimensional codes that can be read by a number of different devices. Today most of the smartphones have a **QR Code** reader. This format can support a number of different data types: URLs, contacts, ... In this example, an URL is encoded and you can read it with your smartphone that will automatically connect you with the Ultramundum Foundation web site. The most used library for **QR Code** generation is Libqrencode, but simple examples of its usage, especially in C/C++, are not available. The documentation is made only by comments in the source code and useless Doxygen stuff. I created a simple application that converts a URL into a **QR Code** that is saved into a plain Windows bmp file. By reading this code, people that would like to use the library, even in other languages will learn how to use it and how to convert its internal bitmap format into a standard graphical representation.

Using the Code

The code is really simple: there is a main source called *QRGenerator.cpp* with a standard C **main()** function. The sample application is a Win32 Console one. Changing the **#defines**, it is possible to recompile the program to generate different URLs/output files/pixels dimensions/pixels colors:

Hide Copy Code

```
#define QRCODE_TEXT "http://www.ultramundum.org/index.htm" // Text to encode into QRCode
#define OUT_FILE "C:/test.bmp" // Output file name
#define OUT_FILE_PIXEL_PRESCALER 8 // Prescaler (number of pixels
    //in bmp file for each QRCode pixel, on each dimension)
#define PIXEL_COLOR_R 0 // Color of bmp pixels
#define PIXEL_COLOR_G 0
#define PIXEL_COLOR_B 0xff
...
```

Points of Interest

At first, I tried to use the library as a standard C one, but the linker kept firing errors on conflicting functions; so I directly included the source code into the project and compiled everything as a whole.

History

- First release 1.0
- Second release 1.1, thanks to all those that contributed.
- Third release 1.2, release version also working

License

libqrencode library is Copyright (C) 2006-2012 Kentaro Fukuchi

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QR Code is registered trademarks of DENSO WAVE INCORPORATED in JAPAN and other countries.

Reed-Solomon code encoder is written by Phil Karn, KA9Q.

Copyright (C) 2002, 2003, 2004, 2006 Phil Karn, KA9Q

RPM packages are done by Katsumi Saito.

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About the Author



Fulvio Dominici



President Ultramundum foundation

Italy 

Fulvio Dominici Carnino was born in Torino, Italy, in 1965.

One of the founders of the first Italian computer club, he studied electronics in the Turin university. Before graduating he wrote his first videogame, Specventure.

The title sold more than 15000 copies all over Europe, a success for 1985, and made Dominici the first Italian ever to sell a videogame on the international market.

In 1986 creates a real-time multitasking operating system: I-Wave.

In 1990 he started his first company for automated test systems.

During his army service develops an advanced neural network artificial creature, creating the theory of bottom-up artificial intelligence.

In the 90s starts a firm for the automated reproduction of ancient paintings by secret computer techniques.

From 1995 to 2002 Dominici is co-founder of the largest Italian public network of computers.

From 2001 is president of Ultramundum Foundation.

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QR scanner or reader written in C
Member 12397448 17-Mar-16 9:07

Where can i find a QR scanner or reader written in C where i can change then the programm?

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Heap problem
kolio_gg 29-Sep-15 21:53

Current example leave allocated memory. At least "rs_cache" is not released my be and another. Use "QRcode_clearCache()" at the end of QRcode_encodeStringReal.

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My vote of 3
Richard Chambers 4-Oct-14 13:18

I wish there were more comments explaining the bitmap image generation as well as some of the alternatives instead of 24 bit color. I spent some time investigating the differences between 24, 16, and 8 bit color bitmaps as I am interested in using QR codes with a thermal receipt printer. I also experimented with reducing the value of OUT_FILE_PIXEL_PRESCALER which made the resulting image smaller. However I understand this article is really about QR codes and not bitmaps.

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bmp file to loadimage
Member 10753293 16-Apr-14 19:11

hi
qr code bmp file "test.bmp"

to HBITMAP hbit = LoadImage(NULL, _T("test.bmp"),
IMAGE_BITMAP,0,0,LR_LOADFROMFILE);

in LoadImage error occur

please answer me;

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1.00/5 (1 vote)

Unresolved External Symbol

raniam 17-Mar-14 15:13

Hi,

I'm using C++ Builder XE3, and I've tried to compile the project, but i keep on getting these errors:

[ilink32 Error] Error: Unresolved external '_QRcode_encodeString' referenced from C:\USERS\RANIA\DOCUMENTS\QR CODE PRACTICE2\QRGENERATOR\QRGENERATOR\WIN32\DEBUG\QRGENERATOR.OBJ

[ilink32 Error] Error: Unresolved external '_QRcode_free' referenced from C:\USERS\RANIA\DOCUMENTS\QR CODE PRACTICE2\QRGENERATOR\QRGENERATOR\WIN32\DEBUG\QRGENERATOR.OBJ

[ilink32 Error] Error: Unable to perform link

And i've placed my project in the following path: C:\Users\rania\Documents\QR CODE PRACTICE2\QRGenerator.

I don't know what's the problem, Can someone please help me??

Regards.

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Re: Unresolved External Symbol**Member 10970996 25-Jul-14 21:42**

Did you find a solution?

I'm getting the same error codes and I don't know how to fix it.. :(

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ERROR not declared DDescriptors**SepBen 25-Feb-14 16:28**

Dear, I try to include libQRencode to my GNU GPL Project, but I have a Problem, following Descriptors are not declared:

MAJOR_VERSION
MINOR_VERSION
MICRO_VERSION
VERSION
no_argument
required_argument
options

MS VC++ 2013 wanted to know what __STATIC is, I just added #define __STATIC static. I hope it was right

I read that this VERSION, MAJOR, MINOR and MICRO Version are only returning the version of the library, so I can just #define VERSION /* Write the Lib Vers here*/ right?

But I have another question in rscode.c:

MSVC++ want to have a '(' after inline

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```
static inline int modnn(RS *rs, int x){
    while (x >= rs->nn) {
        x -= rs->nn;
        x = (x >> rs->mm) + (x & rs->nn);
    }
    return x;
}
```

I am wondering why?

Greetings B.

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QREncode: How to convert QrCode bits to bmp pixels of RGB565 format? dhivys 21-Feb-14 13:43

I am trying to use QrGenerator with a HMI development tool; which can display images of only RGB565 format. QrGenerator code(QrGenerator.cpp) converts Qrbits to bmp pixels of ARGB8888 format(24bit pixel). Can you help me in converting QR bits to bmp pixels of RGB565 format?

Thanks and Best Regards,
Dhivya

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Nice! but dven5egr 1-Oct-13 21:30

Detected memory leaks!

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1.00/5 (1 vote)

Capacity of storage characters? carlos2013mx 22-Aug-13 2:51

hello :
How many lenght of characters can storage in this 2D QR image generator ?
Thanks-

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Re: Capacity of storage characters? Fulvio Dominici 12-Sep-13 18:24

The QRCode is automatically dynamic: it can hold different string lengths by getting larger



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Thai / Chinese or German language Member 9836469 10-Aug-13 14:33

Before I contact the author, has anyone now a solution for the chinese characters. I don't want to send the question a second or third time to the author.

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1.00/5 (2 votes)

Re: Thai / Chinese or German language Fulvio Dominici 21-Nov-13 21:11

Just Google on libqrencode for details on the library.



If you do not find enough data, you can try emailing Kentaro Fukuchi <kentaro@fukuchi.org>

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Project Description


Roshan Jindani 21-Jun-13 1:35

I get it that the main file is QRgenerator file and there are some other header files in Release, but what about other files which are used. Can you elaborate how data and functions are interacting to generate QRcodes. Please help me because I'm thinking of it as a project for my college grades and want to extend it.....
Please reply ASAP how the interaction is taking place between main file QRgenerator and among other files....

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Re: Project Description

Fulvio Dominici 21-Jun-13 16:15

The main file just sets the parameters and then calls the library, that was written by Kentaro Fukuchi. On output the library creates an array of bytes with on/off status for each pixel of the QRcode; the main function reads that array and expands it into the bitfield of a standard BMP windows file. 

Just Google on libqrencode for details on the library.

If you do not find enough data, you can try emailing Kentaro Fukuchi <kentaro@fukuchi.org>

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Documentation of Project


Roshan Jindani 20-Jun-13 2:49

@Fulvio Dominici can you please provide me some Documentation or Algo regarding the code ...

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Re: Documentation of Project

Fulvio Dominici 20-Jun-13 16:12

Just Google on libqrencode 

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5.00/5 (1 vote)

Compilation


Roshan Jindani 18-Jun-13 5:08

please tell me is it necessary to compile and run this project on Visual Studio.....

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Re: Compilation

Fulvio Dominici 18-Jun-13 15:18

The downloadable package was made with VisualStudio 8, but you should be able to compile it on any C++ compiler, just remove the windows stuff if your OS is different. 

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I would like more information

Salatiel Bairros 13-Jun-13 1:36

Very cool, but I would like more information on how the code was made...

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Re: I would like more information

Fulvio Dominici 18-Jun-13 15:17

Just Google on libqrencode

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How to support chinese?

andylauning 11-Jun-13 21:36

Fulvio Dominici:

i want to generate QR bmp of chinese ,how to do ?thks.

as below :

```
#define QRCODE_TEXT "新年快乐" // Text to encode into QRCode
#define OUT_FILE "C:/test.bmp" // Output file name
#define OUT_FILE_PIXEL_PRESCALER 8 // Prescaler (number of pixels
//in bmp file for each QRCode pixel, on each dimension)
#define PIXEL_COLOR_R 0 // Color of bmp pixels
#define PIXEL_COLOR_G 0
#define PIXEL_COLOR_B 0xff
```

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1.00/5 (1 vote)

Re: How to support chinese?

Fulvio Dominici 11-Jun-13 21:57

param hint tell the library how non-alphanumeric characters should be
* encoded. If QR_MODE_KANJI is given, kanji characters will be
* encoded as Shift-JIS characters. If QR_MODE_8 is given, all of
* non-alphanumeric characters will be encoded as is. If you want
* to embed UTF-8 string, choose this.

Found into Libqrencode documentation.

You could also try emailing Kentaro Fukuchi <kentaro@fukuchi.org>

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Re: How to support chinese?

andylauning 11-Jun-13 22:44

thks,i change to QR_MODE_KANJI ,but still not work for chinese.



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Re: How to support chinese?

Fulvio Dominici 18-Jun-13 15:19

try emailing Kentaro Fukuchi <kentaro@fukuchi.org>



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