

# QRCRE\$ - Create QR Code Image File

The QRCRE\$ routine can be used to encode a text string as a QR code image file.

## 1. Invocation

To create a QR code image file code:

```
CALL QRCRE$ USING qr
```

where *qr* is a control block of the following format:

01	QR				
02	QRVERS	PIC 9(4)	COMP		* BLOCK VERSION MUST BE 1
	VALUE 1				
02	QRMINV	PIC 9(2)	COMP		* MINIMUM QR VERSION (1 TO 40)
02	QRMXV	PIC 9(2)	COMP		* MAXIMUM QR VERSION (1 TO 40)
02	QRECL	PIC 9(2)	COMP		* ERROR CORRECTION LEVEL
					* 0 = Low (7% tolerance)
					* 1 = Medium (15% tolerance)
					* 2 = Quartile (25% tolerance)
					* 3 = High (30% tolerance)
02	QRBOOST	PIC 9(2)	COMP		* BOOST ERROR CORRECTION
					* 0 = DISABLED; 1 = ENABLED
02	QRPTXT	PIC PTR			* POINTER TO ZERO-TERMINATED TEXT
					* STRING TO ENCODE AS A QR CODE
02	QRPIMG	PIC PTR			* POINTER TO ZERO-TERMINATED .BMP
					* OR .PNG FILENAME
02	QRSIZE	PIC 9(9)	COMP		* RETURNED QR CODE SIZE (OR WINDOWS
					* ERROR CODE FOR SOME EXCEPTIONS)
02	QRPFIL	PIC PTR			* RETURNED IMAGE FILE NAME (.BMP or
					* .PNG)

## 2. STOP Codes and Exception Conditions

The following STOP codes may be generated by QRCRE\$:

STOP code	Description
14601	QRCRE\$ has been called by an application that is not running on GX.
14602	Invalid QR block version (QRVERS is not 1)
14603	Invalid Minimum QR version (QRMINV is not between 1 and 40)
14604	Invalid Maximum QR version (QRMXV is not between 1 and 40)

The following EXIT codes may be returned by QRCRE\$:

EXIT code	\$\$COND	Description
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14602	2	Unable to allocate temporary data page
14603	3	The total length of the GX command block has exceeded 8192.
14604	4	GX encountered an error encoding the QR code
14605	5	GX was unable to allocate memory (the Windows error code is returned in QRSIZE)
14606	6	GX was unable to create the bitmap file (the Windows error code is returned in QRSIZE)
14607	7	GX was unable to write to the bitmap file (the Windows error code is returned in QRSIZE)
14608	8	GX was unable to create the PNG image file
14609	9	Unexpected error from GX.

### 3. Programming Notes

QRCRE\$ is only available with GSM SP-41, or later. In addition, QRCRE\$ requires GX V6.0, or later.

In addition to establishing the QRMINV, QRMXV, QRECL and QRBOOST fields, the calling program must initialize QRPTXT to point to the zero-terminated text-string that is to be encoded as a QR code; and QRPIMG to point to the zero-terminated name of the resulting image file.

By default, the QR code will be stored as a bitmap file (.BMP) and this file extension will be appended to the supplied file name if a file extension is not supplied. Optionally, the QR code can be stored as a Portable Network Graphics (PNG) file by explicitly specifying the .PNG file extension.

Note that replaceable GX folder names can be specified, e.g. %TCPIIMAGES to place the file in the PFPRINT images folder or %QR to place the file in the specially created QR subfolder. Note also that the file extension is not required, e.g. setting “%QR\QR” will result in the file QR.bmp.

In addition to initializing the QRPTXT and QRPIMG pointers the QRPFIL field must be initialised to point to a PIC X(256) buffer (see below).

If the QR code has been encoded and the image file saved successfully then the size of the image file is returned in QRSIZE; and the returned image file name is returned in the buffer pointed to be QRPFIL.

For some exceptions the QRSIZE field is (mis)used to return the Windows error code – see table above.

The QR code type determines the size of the bitmap image and hence the number of characters that can be encoded according to the following table.

Version	Size	Maximum number of characters per ECL			
		Low	Medium	Quartile	High
1	21 x 21	25	20	16	10
2	25 x 25	47	38	29	20
3	29 x 29	77	61	47	35
4	33 x 33	114	90	67	50
5	37 x 37	154	122	87	64
6	41 x 41	195	154	108	84
7	45 x 45	224	178	125	93
8	49 x 49	279	221	157	122
9	53 x 53	335	262	189	143
10	57 x 57	395	311	221	174
11	61 x 61	468	366	259	200
12	65 x 65	535	419	296	227
13	69 x 69	619	483	352	259
14	73 x 73	667	528	376	283
15	77 x 77	758	600	426	321
16	81 x 81	854	656	470	365
17	85 x 85	938	734	531	408
18	89 x 89	1046	810	574	452
19	93 x 93	1153	909	644	493
20	97 x 97	1249	970	702	557
21	101 x 101	1352	1035	742	587
22	105 x 105	1460	1134	823	640
23	109 x 109	1588	1248	890	672
24	113 x 113	1704	1326	963	744
25	117 x 117	1853	1451	1041	779
26	121 x 121	1990	1542	1094	864
27	125 x 125	2132	1637	1172	910
28	129 x 129	2223	1732	1263	958
29	133 x 133	2369	1839	1322	1016
30	137 x 137	2520	1994	1429	1080
31	141 x 141	2677	2113	1499	1150
32	145 x 145	2840	2238	1618	1226
33	149 x 149	3009	2369	1700	1307
34	153 x 153	3183	2506	1787	1394
35	157 x 157	3351	2632	1867	1431
36	161 x 161	3537	2780	1966	1530
37	165 x 165	3729	2894	2071	1591
38	169 x 169	3927	3054	2181	1658
39	173 x 173	4087	3220	2298	1774
40	177 x 177	4296	3391	2420	1852

## 4. Examples

None.

## **5. Copy-Books**

None.

## **6. See Also**

QRSCN\$      Scan QR Code image file