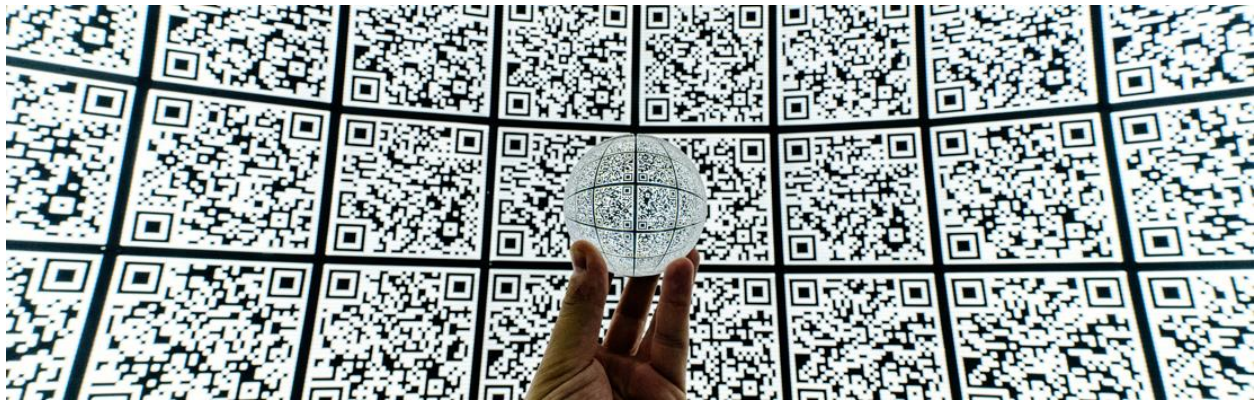# What's Black and White and Read All Over?
Keeping Mobile Devices Secure When Scanning QR Codes

Time: 7 minutes (5m30s for reading time + time for quiz)

Points:

Quick response codes (referred to as QR codes) may be familiar to some, but to others these codes may be something you've only encountered in passing. So, what are QR codes? At first, they may just look like a puzzle on the back of a magazine or package, but that little black and white box is far more than that.

Why Were They Made?

The origin of QR codes reaches all the way back to 1960's Japan. During an economic boom, cashiers desperately needed a new checkout system in order to match the surge of purchases being made. Replacing the traditional manual input of price per item, the 1D barcode we still see on today's groceries was born.

It wasn't long though before a need arose for a more complex 2D barcode with more storage. While various forms of 2D barcodes were released over the next 30 years, the QR code was not released until 1994.

How Do They Work?

QR codes function around a pattern. When a QR scanner looks at a QR code, it can detect the direction of the pattern, allowing the code and its contents to be read immediately from almost any angle.
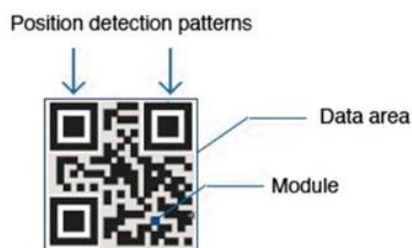
How Can I Use Them?

In day-to-day life, QR codes can be found quite frequently. Whether you're in your kitchen, the store or at work, QR codes can usually be found somewhere around you. But what exactly can you use them for?

- Add a friend in a game or on social media (like Pokémon Go or Snapchat)
- Download coupons found in stores or restaurants
- Look up more information on a food or product in the store
- Create a digital business card with contact details
- Ride a community electric scooter
- Navigate directly to a website or webpage
- Learn more about a product or event advertised on a poster, sign or even commercial (yes, you can scan a QR code on your TV screen!)
- Download content to your phone like a restaurant's menu or app

For even more uses, QR codes can be custom made by anyone, including you! Free QR code generators are all over the internet and in app stores. They've led to some creative ideas. You can generate QR codes on your own to:

- share photos or music with friends
- connect to Wi-Fi
- share your location or get directions
- design unique codes for fun or business
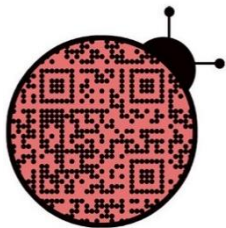
But, unfortunately so can cybercriminals.

What Are the Risks?

As cellphones have become more and more of a valued tool in day-to-day life, so too has the information we store on them. Although cellphones typically include built-in security software, it may not be enough to stop an attack.

Like phishing scams, QRishing is when cybercriminals use harmful QR codes to steal your information. Looking like any other QR code, harmful QR codes can contain a link directing you to an unsafe website. Once a cellphone visits a hazardous website, the device can be compromised and potentially taken over by the cybercriminal.

With a network connection, cybercriminals are no longer restricted to what they could store in the malicious QR code. This can allow them to:

- steal information (contacts, passwords, payment information)

- spy (tracking location, watching through camera, listening through microphone)
- disable the phone

If you're creating QR codes for business, be aware of modified QR code generators. Instead of generating a safe code, modified generators will create a code linking to a harmful website. This can be devastating if the malicious QR code is used on products or promotions, re-directing to malicious websites instead of the intended product.

There's no sure way to spot a modified generator, but there are precautions you can take to ensure that the QR codes you generate are safe.

How Do I Stay Protected?

While QR codes can be harmful, it's not hard to keep yourself protected. Three easy steps can be taken to ensure that malicious QR codes never affect a device.

Preview Feature

Download a QR code scanner that has a built-in preview feature from your device's app store. This will allow the codes content to be previewed before you visit the site, to ensure it is the desired website, file or action. For iPhone users, the camera app can be used as a scanner and includes this preview feature.

If you generate your own QR codes, this feature can be especially helpful to see whether your code does what you want it to or if it has been modified in any way.
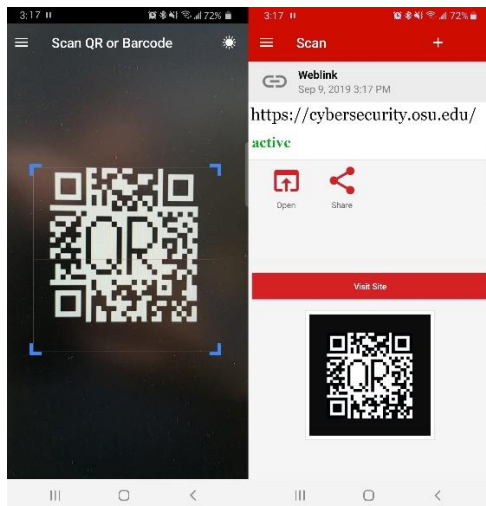
Anti-virus / Anti-malware Software

Although most cellphones have built-in security software, you can never be too secure- especially if a device has sensitive data on it. In addition to the any security software already installed, anti-virus/anti-malware software can significantly reduce the risk of a mobile device becoming compromised. Norton AntiVirus software, Malwarebytes anti-malware software and Norton 360 is earned by reaching tiers three, four and five respectively in this platform and can be used to protect your mobile devices.

Look Around

It may seem silly, but just take a look around the QR code. Make sure the code isn't just a sticker added on top, especially if it is covering up another QR code. This is usually an attempt to trick users into scanning a malicious code they think is safe. QR codes that have been received unsolicited should also be given similar caution.

Think Twice

Like phishing, some QR codes are meant to trick you into giving up valuable personal information. Imagine scanning a QR code in a restaurant claiming to give a 50% off coupon, but it asks for your credit card information before downloading the coupon.

While it may look safe, give it a second thought. Does a restaurant really need that information to give you a coupon? As a rule of thumb, QR codes should never ask for your personal information.

With the ability to be created and used so quickly and easily, QR codes are quite a useful tool. And while there are risks to consider, it's easy to stay protected and enjoy the benefits QR codes have to offer.

References:

"History of QR Code" QR Code. Published: 3/29/2013. Accessed: 8/1/2019.

"The dangers of QR codes for security" CSOOnline. Published: 8/19/2013. Accessed: 8/1/2019.

"QR Codes are Making a Comeback…and That may be Dangerous" Security7. Published: 8/4/2017. Accessed: 8/1/2019.

"QR Codes: Convenient and… Dangerous" Kaspersky Daily. Published: 2/6/2013. Accessed: 8/1/2019.

Quiz Questions

Q1:   True or False, you can tell the difference between a safe and harmful QR code just by looking at it?

A1:   True – This is actually true. On the outside, harmful QR codes look just like any other QR code. But on the inside (the actual code), they will contain a harmful link to a website or file to download. Using a scanner that has a built-in preview can allow you to see what's really inside the QR code.

*A2:   False – Correct! Harmful QR codes, despite what's inside, will look no different than any other QR code out there. Using a scanner that has a built-in preview can allow you to see what's really inside the QR code.

Q2:   QR code generators:

A1:   are always 100% safe and can always be trusted – While most QR code generators are safe to use, it is not always the case. To ensure safety, you can check the generator for any reviews or comments by other users and use a QR code reader with a built-in preview feature to test the generated code.

*A2:   can potentially create a malicious QR code – Correct! – While most QR code generators are safe to use, it is not always the case. To ensure safety, you can check the generator for any reviews

or comments by other users and use a QR code reader with a built-in preview feature to test the generated code.

A3:   offer free shipping – QR code generators can potentially create malicious codes. While most QR code generators are safe to use, it is not always the case. To ensure safety, you can check the generator for any reviews or comments by other users and use a QR code reader with a built-in preview feature to test the generated code.

Q3:   Before scanning a QR code, it is recommended that you:

A1:   take a photo, it'll last longer – You're not wrong, but what if that photo is of a malicious QR code? Before scanning any QR code, check and make sure the code isn't just a sticker added on top, especially if it is covering up another QR code.

*A2:   check if it's a sticker covering another QR code – Correct! Before scanning any QR code, check and make sure the code isn't just a sticker added on top, especially if it is covering up another QR code.

A3:   color in the white spaces – This probably wouldn't be the best idea if you wanted to use the code. But before scanning any QR code, check and make sure the code isn't just a sticker added on top, especially if it is covering up another QR code.