Authentication is an activity to authenticate the person's credential that wishes to perform the activity. If the credential is matched, the process is completed, and the user will be granted access. Generally, the user will need to provide their password to begin using a service of the system. According to Rouse (2014), user authentication authorizes human-to-machine interactions in operating systems and applications as well as both wired and wireless networks to enable access to network and Internet connected systems, applications and resources.

In their investigation of password evolution, Bonneau (2015) state that:

The password is added to the sharing operating system in the 1960s. However, the problem arose very quickly due to the leakage of the unencrypted password master file. When reaching 1970s, the password started to be stored in the hashed form. In 1979, the hashed password was improved with the salting. With the mid-1990s introduction of the World Wide Web, the password is secure using the public-key cryptography via secure sockets layer (SSL) client certificates. The password is then started to link to the email and two-factor authentication is introduced. In the early 2010s, the smartphone starts to be widely used. The reason for the implementation is also because of the free smartphone applications to act as a second factor based on the emerging time-based-onetime-pad (TOTP) standard. TOTP is an algorithm that computes a one-time password from a shared secret key and the current time. There are also services provided by sending codes via short message service (SMS) as a backup authentication mechanism.

In their investigation of password evolution, Denso (2016) state that:

Quick Response (QR) code was created by 1994 in Japan. It is named after quick response because of the high-speed reading. QR code is an evolution of the barcodes. The evolution occurs due to the limitation of the barcodes which only can hold 20 alphanumeric characters. The e project is then carried out by Masahiro Hara and his development team for 1 year and a half. The outcome of the QR code is a huge success due to it can store 7,000 numerals with the additional capability to code Kanji characters was finally created. With the current technology, the QR code is scanned can help to redirect to a website or coupon.