RSA Vs. ECC Vs. ECDSA

RSA(Asymmetric CryptoGraphy)

One of the most common and secure methods of cryptography is public key cryptography or asymmetric cryptography.

This method involves the first two large random numbers. These numbers are multiplied to create another very large number. The puzzle here is to determine the prime numbers of the product.

Asymmetric or public key encryption is based on two keys, public and private. Each person will have a public key and a private key. Your public key is available to others, but the private key is only yours and yours. Suppose someone sends you a message. This message is encrypted with your public key on the source computer and sent to you. You are the only one who can decrypt because you have a private key associated with your public key. The most common algorithm used for asymmetric encryption is the RSA algorithm.

One big advantage that RSA offers is its scalability. RSA is based on a simple mathematical approach and therefore simplifies its implementation in public key infrastructure (PKI). This compatibility with PKI and its security has made RSA the most widely used asymmetric encryption algorithm in use today. RSA is widely used in many applications, including SSL / TLS certificates, cryptocurrencies, and email encryption.

This algorithm can be used for digital signatures

This algorithm has a low speed

ECC(Elliptic curve cryptography)

In 1985, two mathematicians, Neil Kobleitz and Victor S. Miller proposed the use of elliptic curves in cryptography.

Compared to RSA, ECC is more secure. Because it is quite complex. Provides the same level of protection as the RSA, but uses much shorter key lengths. Another advantage of shorter switches in ECC is faster performance. Shorter switches require less network load and computing power, which is great for devices with limited storage and processing capabilities. When ECC is used in SSL / TLS certificates, it significantly reduces the time it takes to lose SSL / TLS and helps you load the website faster. ECC encryption algorithm is used for encryption applications, digital signatures, quasi-random generators, etc.

This algorithm generates public and private keys by selecting a point on a curved elliptical diagram.
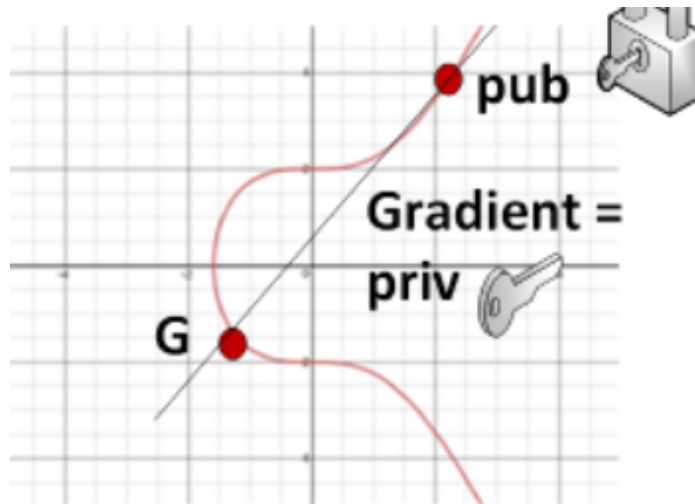
ECDSA(Ethereum Blockchain Wallet Address Generator)

The Elliptic Curve Digital Signature Algorithm (ECDSA) is a different version of the above mentioned Elliptic Curve Cryptography, but shares the advantageous characteristic of short keys with it. The algorithm is used by (for example) Sony on their Playstation 3, and by the virtual monetary value Bitcoin.