

The following notation is taken from the course textbook [1].

| <i>Symbol</i> | <i>Expression</i> | <i>Meaning</i> |
|-------------------|---------------------------|--|
| D, K | $D(K, Y)$ | Symmetric decryption of ciphertext Y using secret key K |
| D, PR_a | $D(PR_a, Y)$ | Asymmetric decryption of ciphertext Y using A 's private key PR_a |
| D, PU_a | $D(PU_a, Y)$ | Asymmetric decryption of ciphertext Y using A 's public key PU_a |
| E, K | $E(K, X)$ | Symmetric encryption of plaintext X using secret key K |
| E, PR_a | $E(PR_a, X)$ | Asymmetric encryption of plaintext X using A 's private key PR_a |
| E, PU_a | $E(PU_a, X)$ | Asymmetric encryption of plaintext X using A 's public key PU_a |
| K | | Secret key |
| PR_a | | Private key of user A |
| PU_a | | Public key of user A |
| MAC, K | $MAC(K, X)$ | Message authentication code of message X using secret key K |
| $GF(p)$ | | The finite field of order p , where p is prime. The field is defined as the set Z_p together with the arithmetic operations modulo p . |
| $GF(2^n)$ | | The finite field of order 2^n |
| Z_n | | Set of nonnegative integers less than n |
| gcd | $\text{gcd}(i, j)$ | Greatest common divisor; the largest positive integer that divides both i and j with no remainder on division. |
| mod | $a \text{ mod } m$ | Remainder after division of a by m |
| mod, \equiv | $a \equiv b \pmod{m}$ | $a \text{ mod } m = b \text{ mod } m$ |
| mod, $\not\equiv$ | $a \not\equiv b \pmod{m}$ | $a \text{ mod } m \neq b \text{ mod } m$ |
| dlog | $\text{dlog}_{a,p}(b)$ | Discrete logarithm of the number b for the base $a \pmod{p}$ |
| φ | $\phi(n)$ | The number of positive integers less than n and relatively prime to n . This is Euler's totient function. |
| Σ | $\sum_{i=1}^n a_i$ | $a_1 + a_2 + \cdots + a_n$ |
| Π | $\prod_{i=1}^n a_i$ | $a_1 \times a_2 \times \cdots \times a_n$ |
| | $i j$ | i divides j , which means that there is no remainder when j is divided by i |
| , | $ a $ | Absolute value of a |
| | $x y$ | x concatenated with y |
| \approx | $x \approx y$ | x is approximately equal to y |
| [,] | $\lfloor x \rfloor$ | The largest integer less than or equal to x |
| \in | $x \in \mathbf{S}$ | The element x is contained in the set \mathbf{S} |

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| 3DES | Triple DES; symmetric block cipher |
| AES | Advanced Encryption Standard; symmetric block cipher |
| CBC | Cipher Block Chaining mode of operation |
| CFB | Cipher Feedback mode of operation |
| CTR | Counter mode of operation |
| DES | Data Encryption Standard; symmetric clock cipher |
| ECB | Electronic Code Book mode of operation |
| FIPS | Federal Information Processing Standard |
| gcd | greatest common divisor |
| HTTPS | HTTP Security extensions |
| IP | Internet Protocol; network layer |
| IPsec | IP Security protocol; network layer |
| LAN | Local Area Network |
| MAC | Message Authentication Code |
| OFB | Output Feedback mode of operation |
| OSI | Open Systems Interconnection architecture |
| PGP | Pretty Good Privacy |
| PRF | Pseudo Random Function |
| PRNG | Pseudo Random Number Generator |
| RC4 | stream cipher |
| RSA | Rivest-Shamir-Adleman algorithm |
| SHA | Secure Hash Algorithm |
| SSL | Secure Sockets Layer; transport layer |
| TRNG | True Random Number Generator |
| XOR | Exclusive OR |

References

- [1] W. Stallings. *Cryptography and Network Security: Principles and Practice*. Prentice Hall, fifth edition, 2011.