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# Corrections to “Introduction to Cryptography, Second Edition”

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- p. 10** In the line before Example 1.7.4. replace  $a_i$  by  $\alpha_i$ .
- p. 29** last line of Definition 2.1.1: Delete “the” after “divides”.
- p. 42** Proof of Theorem 2.9.5: Theorem 2.9.2 instead of Theorem 2.9.3 (Twice)
- p. 45** Proof of Corollary 2.11.3: Theorem 2.9.2 instead of Theorem 2.9.3.
- p. 59** Lemma 2.19.2: Use a “plain”  $K$ .
- p. 68** Exercise 2.22.12:  $d_i$  is missing in the sum.
- p. 88** At the bottom the sequence reads  $c_1, c_2, \dots, c_n$ . The last entry should be  $c_u$  instead.
- p. 93** Equation (3.3): replace  $z_{i-j}$  by  $s_{i-j}$ .
- p. 95** above example 3.9.3, the  $p_i$  should be  $c_i$ .
- p. 103** line 2 of 3.13: The name is Blaise *de* Vigenère.
- p. 104/105** Example 3.14.1: The determinant of  $A$  is even, and so the cipher is not allowable since it is not relatively prime to  $m = 26$ . Replace FUSS replaced by FOOT.
- p. 117** line 2:  $\Pr(a)$  instead of  $P(a)$ .
- p. 117** p. 105, line 2 of Definition 4.2.2: The “end quote” should be placed after ‘occurs’ (and not after the  $B$ ).
- p. 118** line 1 of Example 4.2.3: Delete “probability of the”.
- p. 123** line 9 from below:  $m$  should be replaced by  $p$  (3 times).
- p. 131** Figure 5.1: replace “Expansionsfunktion” by “expansion function”, “S-Boxen” by “S-boxes” and  $f(R, K)$  by  $f(K, R)$ .
- p. 132** In Table 5.3, description of the function  $P$  the positions for 10 and 20 must be switched.
- p. 136** Replace  $f(R_0, K_1)$  by  $f(K_1, R_0)$ .
- p. 136** 4th last and 2nd last lines of Section 5.3: In both strings, the 3rd and 16th bits (from the left) should be changed (that’s a result of the problem with the P-table).
- p. 140** line 9: Those arrays have “four” rows ...x
- p. 168** line 3 of Example 7.2.1: Read  $\gcd(3, 220) = 1$ . p. 145, line 3 of Example 7.2.5:
- p. 171** Example 8.3.5: 119 should be replaced by 110 (twice), and 26 by 165.
- p. 171** line 8 of 2nd paragraph: 1023 instead of 1024.
- p. 189** line 7 of Section 8.5.4: Read  $K = A^b \bmod p$ .
- p. 190** last line of first paragraph: Read  $g^c \equiv g^{ab} \bmod$ .
- p. 192** line 1:  $b \in \{0, 1, \dots, p-2\}$ .
- p. 223** In equation (10.4) a + is missing:

$$p^{e-1}x = x_0p^{e-1} + p^e(x_1 + x_2p + \dots + x_{e-1}p^{e-2}). \quad (0.1)$$

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$$p^{e-1}x = x_0p^{e-1} + p^e(x_1 + x_2p + \dots + x_{e-1}p^{e-2}). \quad (0.2)$$

- p. 244** Line 15: In the definition of SHA-1 we have

$$C = S^{30}(B)$$

instead of

$$C = S^{36}(B).$$

**p. 279** Exercise 12.9.5: In the ElGamal signature scheme use the prime number  $p$  and the primitive root  $g \pmod{p}$ . Suppose that  $p \equiv 1 \pmod{4}$  and that  $g$  has only small prime factors. Let  $A$  be Alice's public key.

1. Show that a solution  $z$  of the congruence  $A^q = g^{qz} \pmod{p}$  can be found efficiently.
2. Let  $x$  be a document and let  $h$  be its hash value. Prove that  $(q, (p - 3)(h - qz)/2)$  is a valid signature of  $x$ .

**p. 295** The correct formula for the determinant of the Vandermonde matrix is

$$\det U = \prod_{1 \leq i < j \leq \ell} (x_j - x_i).$$



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