Corrections to “Introduction to Cryptography, Second Edition”

April 11, 2005
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 \( c_1, c_2, \ldots, c_n \). 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 \( K = A^b \mod p \).
p. 190 last line of first paragraph: Read \( g^c \equiv g^{ab} \mod \).
p. 192 line 1: \( b \in \{0,1,\ldots,p-2\} \).
p. 223 In equation (10.4) \( a + \) is missing:
\[
p^{-1}x = x_0p^{e-1} + p^{e}(x_1 + x_2p + \ldots + x_{e-1}p^{e-2}).
\]
statt
\[
p^{-1}x = x_0p^{e-1} + p^{e}(x_1 + x_2p + \ldots + x_{e-1}p^{e-2}).
\]
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 \( g \) mod \( p \). 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 \( A^q = g^{qz} \mod p \) 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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Buchmann, J.
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