

Errata/Typos for “Introduction to Modern Cryptography, second edition”

(Last updated April 15, 2017)

Note: negative line numbers correspond to counting from the bottom of the page.

- Page 5, line 12: The reference to Figure 1.2 should be to Figure 1.1 instead.
- page 11, Figure 1.3: The percentage listed for the letter ‘o’ should be 7.5, not 1.5.
- page 102, Exercise 3.6(a): $\lfloor n/2 \rfloor$ should be $\lceil n/2 \rceil$.
- page 129, line 12: X and X' should be X_i and X_j , respectively.
- page 129, equation (4.6) should read:

$$\Pr[\text{Coll}] \leq \sum_{i,j:i < j} \Pr[\text{Coll}_{i,j}] < \frac{q^2}{2} \cdot \max_{i < j} \{\Pr[\text{Coll}_{i,j}]\}.$$

- page 129, line 15: $\text{Coll}_{i,j}$ should be $\max_{i < j} \{\Pr[\text{Coll}_{i,j}]\}$.
- page 146, second displayed equation: $\mathcal{K}(m_0, t_0)$ should be $\mathcal{K}(t_0)$.
- page 149, Exercise 4.11: the question assumes that Π' is a secure MAC that uses canonical verification.
- page 150, Exercise 4.20: the question assumes that Π' is strongly secure.
- page 210: In the second and third paragraphs on that page, the roles of k_1 and k_2 were confused. These paragraphs should read as follows:

A better attack is possible by noting that individual bits of the output depend on only part of the master key. Fix some given input/output pair (x, y) as before. Now, the adversary will enumerate over all possible values for the *first byte* of k_1 . It can XOR each such value with the first byte of x to obtain a candidate value for the input of the first S -box. Evaluating this S -box, the attacker learns a candidate value for the *output* of that S -box. Since the output of that S -box is XOR'd with 8 bits of k_2 to give 8 bits of y (where the positions of those bits depend on the mixing permutation and are known to the attacker), this yields a candidate value for 8 bits of k_2 .

To summarize: for each candidate value for the first byte of k_1 , there is a *unique* possible corresponding value for some 8 bits of k_2

(The rest is the same, exact that k_2 should be replaced with k_1 .)

- page 237, Exercise 6.4: the attack in the text already considers S -boxes with 8-bit input. So the first part of the question should instead consider a block length of 64 bits and 16 S -boxes taking 4-bit input.
- page 240, Exercise 6.16: there is in fact an attack taking time 2^{56} and using only constant space.
- page 255, line -12: $\mathcal{A}(x, r \oplus e^i)$ should be $\mathcal{A}(f(x), r \oplus e^i)$.
- page 358, Exercise 9.2: show instead that the algorithm outputs p with overwhelming probability.
- page 424, last line of Construction 11.36: \hat{m} should be m' .
- page 455, line -13: $\text{Sig-Forge}_{\mathcal{A}', \Pi'}(n)$ should be $\Pr[\text{Sig-Forge}_{\mathcal{A}', \Pi'}(n) = 1]$.
- page 459, line -9: h should be y (twice).
- page 460, line 3: $\mathbb{G}m$ should be \mathbb{G} .
- page 484, Exercise 12.5(c): the encoding should be $\text{enc}(m) = 0^{\kappa/10} \| m \| 0^{\kappa/10}$.
- page 490, last line of Construction 13.4: $\text{Inv}_I(c)$ should be $\text{Inv}_{\text{td}}(c)$.

Thanks to Claude Crépeau, Daniel Escudero, Rolf Haenni, Ali El Kaafarani, Zach Kissel, Tal Malkin, Alejandro Mardones, Greg Plaxton, Kyle Andrew Porter, Christian Schaffner, Jim Tallent, and Rui Xue for informing us about some of the above typos.