Errata/Typos for "Introduction to Modern Cryptography, second edition"

(Last updated December 16, 2018)

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 103, Exercise 3.9: the output length of F should be one bit.
- page 129, line 12: X and X' should be X_i and X_j, respectively.
- page 129, equation (4.6) should read:

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

- page 129, line 15: $\mathsf{Coll}_{i,j}$ should be $\max_{i<j}\{\Pr[\mathsf{Coll}_{i,j}]\}$.
- page 129, line -12: $2\ell - 2$ should be $2\ell - t - 2$, and this change should be propagated throughout the rest of the proof.
- 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 149, Exercise 4.14(b) should read as follows:

  > A random initial block is used each time a message is authenticated. That is, change Construction 4.11 by choosing uniform $t_0 \in \{0,1\}^n$, computing t_ℓ as before, and then outputting the tag $\langle t_0, t_\ell \rangle$; verification is done in the natural way.

- page 150, Exercise 4.20: the question assumes that Π' is strongly secure.
- page 161: the displayed equation should read

$$\Pr[\mathsf{Mac\text{-}forge}_{\mathcal{A},\Pi}(n) = 1] = \Pr[\mathsf{Mac\text{-}forge}_{\mathcal{A}',\Pi'}(n) = 1 \bigwedge \overline{\mathsf{coll}}],$$

- page 196, line 6: the displayed equation should read

$$y_i = \bigoplus_{j=0}^{n-1} c_j y_{i-n+j} \quad i > n.$$

- 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 326, line -16: This sentence should read: "... every line intersecting $E(\mathbb{Z}_p)$ at two points must also intersect it at a third point ..."

- 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 434, Exercise 11.7: m should be in $\mathbb{Z}_p$, not $\mathbb{Z}_q$.

- page 455, line -13: $\mathsf{Sig\text{-}Forge}_{\mathcal{A}',\Pi'}(n)$ should be $\Pr[\mathsf{Sig\text{-}Forge}_{\mathcal{A}',\Pi'}(n) = 1]$.

- 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 $\mathsf{enc}(m) = 0^{\kappa/10} \| m \| 0^{\kappa/10}$.

- page 490, last line of Construction 13.4: $\mathsf{Inv}_I(c)$ should be $\mathsf{Inv}_{\mathsf{td}}(c)$.

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