- 1. Not really There is no evidence that one encoding scheme provides (generally) faster convergence than the other. Often, real-number encoding is used for simplicity, at least if the number of variables is large enough (more than 10, say) to allow crossover to operate as it should.
- 2. This is FALSE. The size of the tournaments can be generalized to any positive integer > 2 (up to the population size), even though two is the most common tournament size. See p. 50 for a description of how to implement tournament selection in cases where tournament size is larger than two.
- 3. This is TRUE. Crossover, which is a very efficient operator, is only carried out with a certain probability (the crossover probability), to avoid premature convergence; see p. 53 and pp. 68-69. In cases where crossover is not carried out, the two selected individuals (obtained, as usual, with either roulette-wheel selection or tournament selection) are subjected only to mutation before being inserted in the new population.
- 4. Yes, this is TRUE. During mutation, one runs through each chromosome gene by gene, checking whether or not the current gene should be mutated. Thus, in principle, the number of mutations can be anything from 0 to m, even though, typically, the mutation rate is set to a small value (usually 1/m) so that, on average, only a few mutations (or zero) occur.