The length of the coding string

- The length of the coding string is just the number of symbols used to represent a problems instance
- Complexity function as well as the number of elementary steps (computational steps such as comparisons, arithmetic operations) strictly depends on the coding string.
- Below is a copy of the previous note on the encoding, which covers this in more detail:
    - An encoding of a set S of abstract objects is a mapping e from S to the set of binary strings. We can use encodings to map abstract problems to concrete problems.
    - Thus, a computer algorithm that “solves” some abstract decision problem actually takes an encoding of a problem instance as input. We call a problem whose instance set is the set of binary strings a **concrete problem**.
    - We say that an algorithm solves a concrete problem in time $\Theta(T(n))$ if, when it is provided a problem instance i of length $n = |i|$, the algorithm can produce the solution in $\Theta(T(n))$ time (T is just some function).