

# Theory of Computation

Paolo Bettelini

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## 1 Alphabet

An alphabet is a set of values which represents the solutions to a certain problem.

The set  $\{0, 1\}$  is the binary set. The set  $\{0, 1\}^*$  is the set of all binary strings (union of all  $n$ -permutations of  $\{0, 1\}$  and an empty string).

$$\{0, 1\}^* = \lambda \cup \bigcup_{n \in \mathbb{N}} \{0, 1\}^n$$

where  $\lambda$  is the empty string.

## 2 Turing Machines