A Turing machine $\mathcal{M}$ is a tuple

$$\mathcal{M} = (Q, q_0, \Sigma, \sigma_0, \delta)$$

whose components are:

- A finite set of states Q, with a distinguished start state $q_0 \in Q$.
- A finite set of symbols Σ, with a distinguished blank symbol $\sigma_0 \in \Sigma$.
- A transition table δ, which is a partial function $Q \times \Sigma \to \Sigma \times \{L, R\} \times Q$.