

Algorithm Analysis and Design (CS1.301)

Monsoon 2021, IIIT Hyderabad
18 August, Wednesday (Lecture 1)

Computation

Decision Problems

We will consider only decision problems, posed as membership queries in languages. A *language* is a set of strings, *i.e.* a subset of $\{1,0\}^*$. Thus the output will be a single bit.

Axioms of Computation

The *axioms of computation* state some limitations on computational solutions to problems:

- it takes nonzero time to retrieve data from far-off locations.
- only finite information can be stored in a finite volume.
- a finite-length code has only a finite amount of control.

Comparison of Solutions

Solutions are compared based on the resources (time or space) that they consume.