



Powered By Visual Paradigm Community Edition

P: the class of problems that can be decided by deterministic Turing machines in polynomial time

NP: the class of problems that can be decided by nondeterministic Turing machines in polynomial time

NP-Complete: the subclass of NP problems to which all NP problems reduce in polynomial time.

NP-Intermediate = $NP - (P \cup NP\text{-Complete})$

PSPACE: the class of problems that can be decided by deterministic Turing machines in polynomial space

NPSPACE: the class of problems that can be decided by nondeterministic Turing machines in polynomial space

PSPACE-Complete: the subclass of PSPACE problems to which all PSPACE problems reduce in polynomial time.

EXPTIME: the class of problems that can be decided by deterministic Turing machines in exponential time

In the following, $X \subset Y$ means X is a proper subset of Y , i.e., $X \subseteq Y$ but $X \neq Y$.

Proven Facts

$$P \subseteq NP \subseteq PSPACE = NPSPACE \subseteq EXPTIME$$

$$P \neq EXPTIME$$

Conjectures

$$P \subset NP \subset PSPACE \subset EXPTIME$$

$$P \cap \text{NP-Complete} = \emptyset$$

$$\text{NP-Intermediate} \neq \emptyset$$

$$NP \cap \text{PSPACE-Complete} = \emptyset$$