Preliminaries 4

Definition 1. We say that an algorithm is *P-time*, if there exists a polynomial f such that the algorithm takes at most $f(n)$ steps for inputs of size at most n. (Number of steps can be more precisely defined as the number of assembler instructions the processor performs, size of the input can be taken to be the number of bits in some reasonable fixed encoding of the input).

We say that a decision problem X is *P-time reducible* to Y, if there exists a P-time algorithm which transforms an input of X to an input of Y in such a way that the correct answer (YES/NO) to X (for the original input) is equal to the correct answer to Y (for the transformed input).

Two decision problems X, Y are *P-time equivalent* if X is P-time reducible to Y and Y is P-time reducible to X.