Problem Set 8

This problem set is due on **Friday Apr 2, by 4:00pm**.

Use the CS172 drop box.

Write **your name and your student ID number** on your solution. Write legibly. The description of your proofs should be as clear as possible (which does not mean long – in fact, typically, good clear explanations are also short.) Be sure to be familiar with the collaboration policy, and read the overview in the class homepage [www.cs.berkeley.edu/~luca/cs172](http://www.cs.berkeley.edu/~luca/cs172).

1. Formulate factorization as a language. That is, describe a language $L$ such that $L \in \mathbf{P}$ if and only if there is a polynomial time algorithm to (completely) factor positive integers (where the input is the binary representation of the integer). In addition, prove that your language has the required property.

