CS4510: HW3

Due: Sept 16 before 3pm on Gradescope (there is a link on Canvas)
Separate page for each problem
You should write the solutions on your own,
and include the names of all students you talk to.

1. Finite sequences. [2 points]
Prove that the set of finite sequences of positive integers is countable.

2. Strings of prime length. [2 points]
Prove that the language $L = \{1^p : p \text{ is prime}\}$ is not regular.

3. Infinite length strings. [2 points]
Prove that $\{0,1\}^\infty$, (the set of infinitely long binary strings), is uncountable.