Quiz 9

written by Alvin Wan . alvinwan.com/cs70

Wednesday, October 5, 2016

This quiz does not count towards your grade. It exists to simply gauge your understanding. Treat this as though it were a portion of your midterm or final exam.

1 Error Correction

1. There are n students in a room. Of the students in the room, approximately $k << n$ will mis-remember the information given to them. Given a secret m, construct a scheme to recover the secret.

2 Countability

1. **True** or **False**: $\mathbb{N}$ has the same cardinality as the set of all positive numbers divisible by 10. (Extra: Prove this if it's true, or provide a counterexample if otherwise.)

2. Prove that the set of all polynomials (finite-degree and infinite-degree) is uncountably infinite. Let the coefficients be drawn from the set of all integers.

3. Prove that the set of all unique polynomials in GF(p), for some prime p, is countable. Let the coefficients be drawn from the set of all integers.