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Keeping Your Credit Card Safe with Mathematics

Post-lecture Discussion Guide

1. Can you think of other areas in life in which the processes of coupling and decoupling play a role? In these cases, which is harder?
2. Similar to the issue about smell, think of other human cognitive abilities that break down larger objects into smaller ones. Are some people better at it than others?
3. How concerned are you about internet security? Are you aware of the implications of stolen identities?
4. (For those who want to try some math) If you would like to send secret messages to each other, go through the algorithm (first obtain a copy of my slides) and try to encrypt and decrypt. There are websites that help with modular exponentiation, for example
<https://www.mtholyoke.edu/courses/quenell/s2003/ma139/js/powermod.html>

5. Play with the website <https://www.passwordmonster.com/> and try to determine the types of passwords that require 1 minute to crack. What about 1 hour? 1 month? 1 year? 100 years? The calculations done by this website presume that a hacker is going through all combinations with some hacking software. Based on the numbers, try to estimate how many combinations can be checked by this particular software per second.