CSE 250 Recitation

April 24 - 28: Hash Tables
In PA4 you will be de-anonymizing data based on a person's voter record and health record. Each record contains a birthday and a zip code field, which will be used to determine unique matches.

How can we tell if two records are "unique"?
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How can we tell if two records are "unique"?

How do we deal with null values? (they act as wildcards)
Hashing

Take the items A-E and their corresponding hash values:

- \( \text{hash}(A) = 636 \)
- \( \text{hash}(B) = 712 \)
- \( \text{hash}(C) = 459 \)
- \( \text{hash}(D) = 12 \)
- \( \text{hash}(E) = 154 \)

1. Start with a 5-bucket hash table (with chaining) and insert the above items
2. Rehash the table, doubling its size to 10
Open Addressing

Take the items A-E and their corresponding hash values:

- hash(A) = 636
- hash(B) = 712
- hash(C) = 459
- hash(D) = 12
- hash(E) = 154

1. Start with a 5-bucket hash table (with open addressing) and insert the above items
2. Run through the process of looking up records A-E and F (hash(F) = 232)
3. Remove item B
4. Rehash, doubling the array size to 10 and repeat steps 2 and 3
Cuckoo Hashing

Take the items A-E and their corresponding hash values:

- $\text{hash}_1(A) = 312 \quad \text{hash}_2(A) = 636$
- $\text{hash}_1(B) = 242 \quad \text{hash}_2(B) = 712$
- $\text{hash}_1(C) = 684 \quad \text{hash}_2(C) = 459$
- $\text{hash}_1(D) = 871 \quad \text{hash}_2(D) = 12$
- $\text{hash}_1(E) = 154 \quad \text{hash}_2(E) = 939$

1. Start with a 5-bucket hash table (with cuckoo hashing) and insert the above items (rehash as needed)