- ***Fingerprinting***: To check if two objects A and B are equal, first choose another object r at random, and compare the combined objects $\langle A, r\rangle$ and $\langle B, r\rangle$ some how, so that if $\langle A, r\rangle = \langle B, r\rangle$ then $A = B$ with good probability.

  Choosing the right random object to combine with is where the creativity lies!

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1. Let A and B be two *sets*, each of size n. Verify whether $A = B$ by comparing at most $O(\log n)$ bits with good probability.
2. Let A and B be two *multisets*, each of size n. Verify whether $A = B$ in polynomial time with good probability.
3. Let A and B be two *multisets*, each of size n. Verify whether $A = B$ by comparing at most $O(\log n)$ bits with good probability.
4. Let A and B be two *binary trees*, each of size n. Verify whether $A = B$ in polynomial time with good probability.