

Security Writeup

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Our basic idea is to rate each honeyword in the honeyword set, based on their properties. And choose among the highest rated ones.

The strong indicators of human chosen passwords are as follows:

- Is in Rockyou
- Contains valid dictionary word
 - This is important because in the last homework we cannot use dictionaries or other NLP tools to identify and preserve valid word.
- Contains special number sequences
 - E.g. "1234" or "66666" or date format.
- Block information
 - E.g. all numbers are organized in one block.
- Most Common words components
 - E.g. in a honeywords set of "word1234, word939, book1234, password, 1234hello", We can guess that the "word" and "1234" are parts of the true password, because they appear most frequently in the honeyword set. The intuition behind this approach is that when the algorithm tweaks the password, it tends to maintain part of it so they look similar. And if a character block appears most frequent then others in the honeyword set, it is a strong indicator of the true password.

We grade each honeyword with the above metrics, and choose among the highest graded ones. Additionally, if only one of the honeyword appears / doesn't appear in the Rockyou dataset, we just treat it as a special case and return this honeyword as the really password.

We tested our algorithm against our homework 3 with some randomly picked passwords, and reported accuracy of more than 50%.