**CS402 - Fall 2022.**

**Graded Board Discussion.**

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**Answer:**

As a coder, according to the above scenario, the most appropriate solution for the password verification and security of the file is **non-deterministic finite automata (NFA)**.

**Reason:**

A Finite Automata (FA) is a simple state machine that can only recognize patterns that are defined by a fixed set of models or rules, and it cannot handle more complex patterns or variations. On the other hand, the Non-deterministic Finite Automata (NFA) is more flexible and can handle complex password patterns easily. It also has multiple transitions for any given input, which makes it easy to handle the complex password patterns.

Therefore, for simple and short password patterns Finite Automata may be used, but if the R.E is of any length and password pattern security is strong and complex as here in our case, so I must use Non-deterministic Finite Automata for password verification.

**Conclusion:**

Being a coder, I will implement a Regular Expression (RE) for the password verification for Punjab Forensic Science Agency (PFSC) using **Non-deterministic Finite Automata (NFA)**.