We introduced the following rule, which appears to capture our intuition about when a subject can read an object.

**The Simple Security Property:** Subject $S$ with clearance $(L_S, C_S)$ may be granted read access to object $O$ with classification $(L_O, C_O)$ only if $(L_S, C_S) \geq (L_O, C_O)$.

*Is it all we need? What about other types of access?*

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**Do We Need Secure Writing?**

The Simple Security property codifies restrictions on read access to documents. What about write access?

Suppose someone with access to a Top Secret document copies the information onto a piece of paper and sticks it into an Unclassified folder.

Has Simple Security been violated? *No!* Has confidentiality been violated? *Clearly.*

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**Secure Writing**

In general, subjects in the world of military documents are *persons* trusted not to write classified information where it can be accessed by unauthorized parties.

Subjects in the world of computing are often *programs* operating on behalf of a trusted user (and with his or her clearance).

Some program I run may have embedded malicious logic (a “trojan horse”) that causes it to “leak” information without my knowledge or consent.
The *-Property

We restrict write access according to the following rule:

**The *-Property:** Subject $S$ with clearance $(L_S, C_S)$ may be granted write access to object $O$ with classification $(L_O, C_O)$ only if $(L_S, C_S) \leq (L_O, C_O)$.

This is pronounced “the star property.” How does it help?

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**Lessons**

- Control over read and write operations is needed to prevent confidentiality breaches.
- The *-property uses dominates to decide whether a write access should be allowed.
- Controlling write access is especially crucial for computers because the accessing subject may be a program executing on behalf of a user. The user has been cleared; the program has not.

**Next lecture:** Tranquility and BLP

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**Does this rule make sense? Is it too restrictive? Is it too lax?**

- Can a commanding general with a Top Secret clearance email marching orders to a foot soldier with no clearance? No!
- Can a corporal with no clearance overwrite the war plan? Nothing in our rules stops it, but that’s an integrity problem!

Simple security and the *-property are sometimes characterized as “read down” and “write up,” respectively. Alternatively, they’re characterized as “no read up” and “no write down.”