

Logistics

This assignment covers material from Chapters 5 and 11 of *Access Control, Security, and Trust: A Logical Approach* (ACSTLA). It is officially due in class on **Thursday, November 7**. However, it comes with an automatic extension: anything submitted by **1pm on Friday, November 8** will be accepted as being on time.

You may work singly or in pairs on this assignment: if you work with someone else, then turn in a single assignment with both names on it.

Exercises

1. ACSTLA, Exercise 5.5.2
2. ACSTLA, Exercise 13.2.3 (parts a, b, and c only)
3. Consider a set \mathcal{L} of compound security levels given by combining the standard military security levels (TS, S, C, UC) with categories drawn from the set ENG, BUD, and PER:

$$\mathcal{L} = \{(t, X) \mid t \in \{\text{TS}, \text{S}, \text{C}, \text{UC}\}, X \in \mathcal{P}(\{\text{ENG}, \text{BUD}, \text{PER}\})\}.$$

The ordering on this set is the standard componentwise ordering:

$$(t_1, X_1) \leq (t_2, X_2) \quad \text{iff} \quad (t_1 \leq_M t_2 \text{ and } X_1 \subseteq X_2),$$

where \leq_M is the standard military ordering ($\text{UC} \leq_M \text{C} \leq_M \text{S} \leq_M \text{TS}$).

Suppose the files A , B , and C and assigned the following security levels:

File	Level Assigned
A	(C, {PER, BUD})
B	(S, {ENG, BUD})
C	(S, {ENG})

For each of the following situations, give both the **highest** and the **lowest** security levels that would allow Willa to be given the indicated discretionary access, in accordance with the *Simple Security Condition* and the **-Property*. If no such level exists, explain why.

- (a) Discretionary **write** access to file A and discretionary **write** access to file B
- (b) Discretionary **read** access to file A and discretionary **write** access to file B
- (c) Discretionary **read** access to file A and discretionary **read** access to file C