

Information Security Information & Network Security Classwork 2

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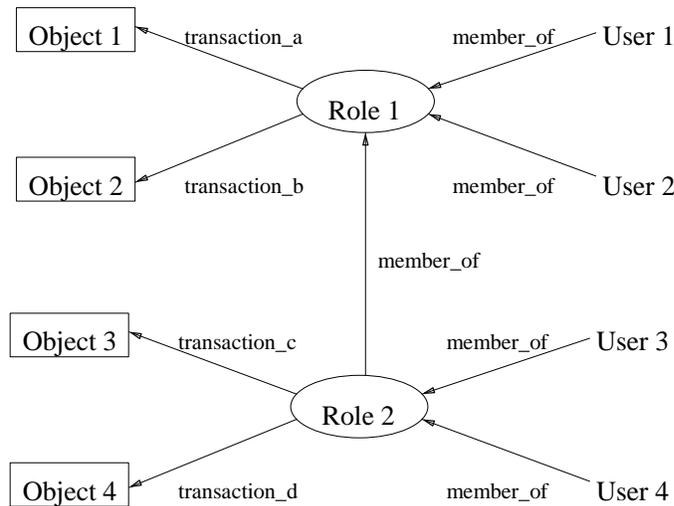
Classwork is *not* marked, but done during the lecture. All classwork and the solutions are also available online.

1. Assume that you are using the Bell-La Padula security model with the levels top secret (ts), secret (s), confidential (c), and unclassified (uc). In addition to these levels, you have the categories development (D), production code (PC), and software tools (T). The following documents are stored in a secure repository:
 - Document 1: s, {D, T}
 - Document 2: c, {PC}
 - Document 3: ts, { }
 - Document 4: uc, {D, PC}

Below is a list of users with their clearances. Determine for each user which of the above documents he or she is allowed to access.

- (a) Alice: s, {D, PC}
- (b) Bob: ts, {D}
- (c) Carol: c, {D, PC, T}

2. In an extension of Role-Based Access Control (RBAC), roles are allowed to be members of other roles, creating a hierarchy of roles:



- (a) What is the main advantage of this extension?
 (b) How could you map the following roles of a development team and the transactions they are allowed to execute to this RBAC extension?

Role	permitted transaction
project member	runCode, runTest
test engineer	runCode, runTest, modifyTest
programmer	runCode, runTest, modifyCode
project supervisor	runTest modifyTest, runCode, modifyCode, releaseCode

3. A company organizes the purchases of goods using a system following the Clark-Wilson integrity model. The process works as follows: a purchasing agent places an order with a supplier and reserves an amount needed for the payment in a purchasing account. The agent also forwards the order to goods-in. The goods manager receives and checks the delivery and creates a receipt form, which is sent to accounting. An accountant compares the invoice with the order and the receipt and pays the supplier. In addition to these people you have a systems developer, who implements the procedures and a security officer who is responsible for realizing the policy. Briefly sketch the most important procedures and CDIs in this system (assume that there are no UDIs) and describe how the rules of the CW-model are enforced.