QUIZ1 CMPE-552 11.11.2019 (60 min, 2 points)

St. Name, Surname_____ St.Id#_____

Closed book, electronic devices are not allowed

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Totally 3 questions, 4 pages

Good Luck!

1	2	3	Total

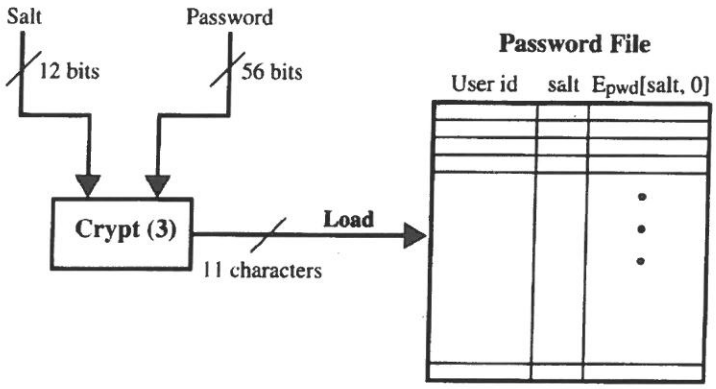
Task 1. (0.6 points) What is user-oriented access control? What is data-oriented access control? Why they both are important for access control?

User oriented access control aims deciding whether a user shall be allowed accessing a system, or not,

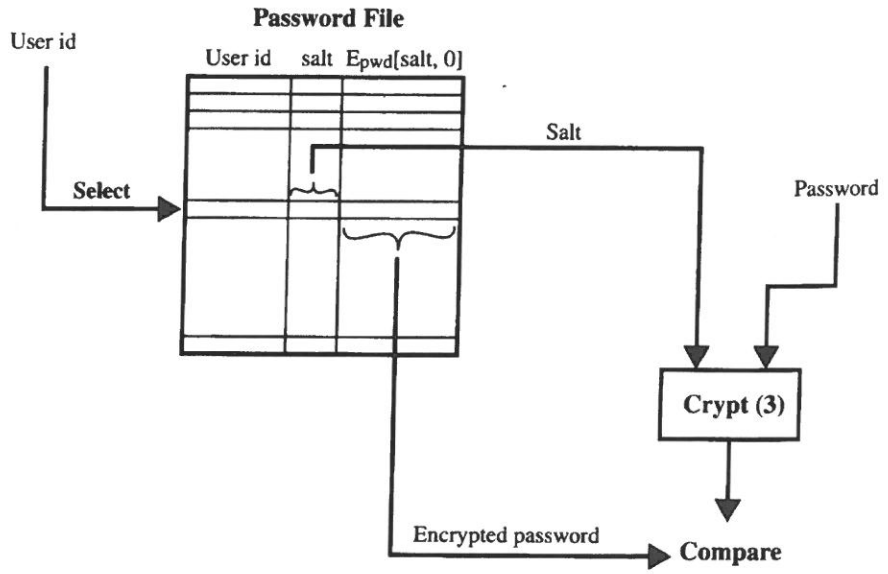
Data-oriented access control aims deciding what resources and in what mode of operation shall be accessible to valid users

The both are important for access control since it is necessary distinguishing between valid and invalid users, and to constrain valid access to resources necessary to them.

Task 2. (0.7 points) Explain how user passwords are defined, stored, and used for user authentication in Fig. 15.4 from Lecture notes below



(a) Loading a new password



(b) Verifying a password

Figure 15.5 UNIX Password Scheme

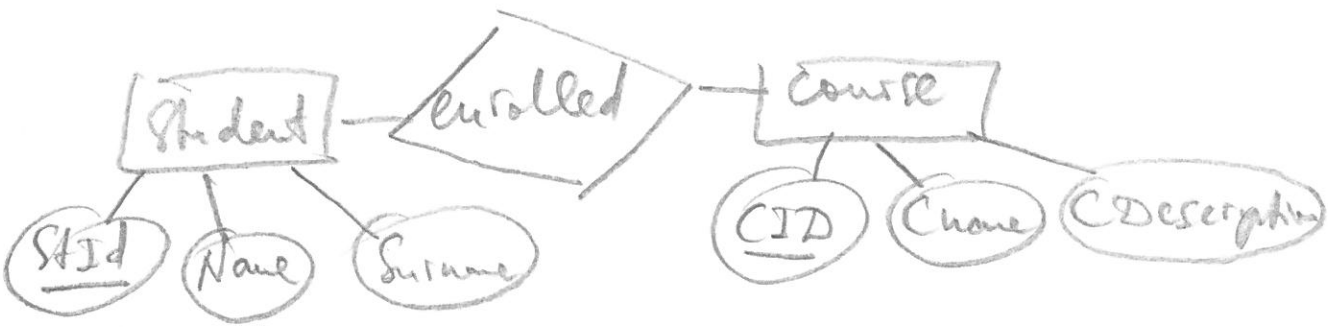
What is salt? What is $E_{PWD}(0,salt)$? Is salt kept encrypted in the password file?

Passwords are defined by users as 8-character strings. After hashing with Crypt(3) together with salt, they are kept in a password file. For user authentication, a user re-enters his password, which together with the salt token from the password file is Crypt(3) hashed and compared versus the value kept in the password file. If they agree, the user is accepted, otherwise, rejected.

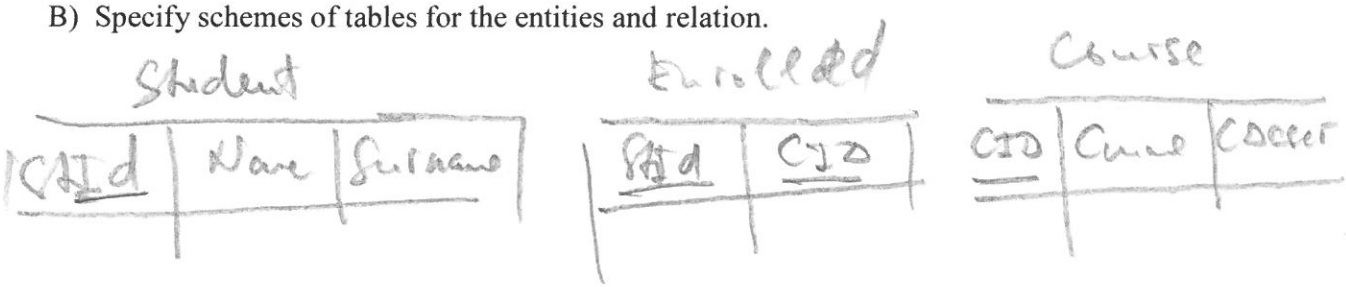
Salt is a 12-bit time dependent value. $E_{pwd}(0, salt)$ represent a result of multiple DES encryptions of 64bit block of zeroes with a key, pwd, with outputs permuted using salt. Salt is kept non-encrypted in the password file.

Task 3. (0.7 points)

A) Draw E-R diagram for a database keeping records on students enrolled to offered courses with two entities and one relation. Specify primary key and two more attributes of entities in the E-R diagram.



B) Specify schemes of tables for the entities and relation.



C) What are the primary key attributes of the relation table? What foreign keys are used in the relation table?

Primary key of Enrolled relation table is (SID, CID). SID and CID are foreign keys referencing to Student and Course tables, respectively

D) What is the mapping cardinality type of the relation (1-1, 1-m, m-1, m-m)? Why?

m-m since any student can be enrolled to 1 or more courses (side courses is many) any course can have many enrolled students (side student is many)

E) Give an example of violation data consistency for the database under consideration

Primary key constraint violation in student table:

StId	Name	Surname
1	Hasan	Ali
1	Mehmet	Tolun

two records have the same StId value