Homework 13

CS307-Operating System (D), Chentao Wu, Spring 2020.

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- (13.7) Consider a system that supports 5000 users. Suppose that you want to allow 4990 of these users to be able to access one file.

  a. How would you specify this protection scheme in UNIX?

  b. Can you suggest another protection scheme that can be used more effectively for this purpose than the scheme provided by UNIX?

  Solution. Here are the answers to the sub-questions.

  a. According to the description in the textbook, here are two methods that can specify the protection scheme in UNIX.

     1. We can put these 4990 users in one user group (or several user groups) and set the group access permission as "able to access the file", but this method is more difficult to implement because the system may have restrictions about the user groups.
     2. We can also create an access-control-list (ACL) containing the names of all 4990 users in it so that these users can access the file.

  b. We can set the default permission of every users as "able to access the file", and maintain an access-control-list (ACL) containing the users who have different access permissions (such as no accessing privilege and so on) other than the default one. Therefore, we only need to put the names of the rest 10 users with no accessing privilege in the access-control-list (ACL). Under this circumstance, it's much simpler than original UNIX scheme.

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