PROJECT 3 REPORT

for Operating System COP 4600

completed by,
Ankit Dave
UFID: 9211 - 5520

Project Design:

The project has been designed to implement changes in the Reptilian Operating system such that it can support an custom security attribute. User, with permission to access a certain file can set custom attribute value, which can be retrieved anytime later to figure out the level of security to a file. Using a custom library, a user can make sure certain files are limited to access to only certain other file or process.

Attribute set : securitytag
Initial value : 0
Stored as an external attribute to file.

System calls implemented:

1. get_sec(int fd, ptr to value);

In this function, user with kernel access can call this, by sending the file descriptor value and the user space char pointer to an string that can receive value sent by kernel. Initially, while calling the char value pointer needs to be set to “user.securitytag” so that the kernel knows which attribute needs to be changed.

Returns 0 on success, -1 on failure.

2. put_Sec (int fd, ptr to value)

This particular system call allows user to set the custom attribute of a file, by sending the file descriptor and the string of the value now wishes to send.

Returns 0 on success, -1 on failure.

Bugs:

Initial project was designed to make changes in the node structure of the file. This worked fine, but the value set by the user did not persist after the OS was rebooted. This was the flaw in the system as the attribute not being available after reboot had no value to anyone.

Other implementations:

Library file, libfilesecurittatg:

This particular custom library was designed in c to allow users, with access to files (i.e permission level to access a file), to make changes in the custom securitytag attributes.