REAL TIME OPERATING SYSTEMS

Lesson-24:

OS SECURITY ISSUES

1. Important Security Functions

Protection Mechanism

- OS should provide protection mechanisms and implement a system administrator (s) defined security

Flexibility to of change

- when needed to fulfill the need requirements of all the processes.
- For example, a process has control of 32 memory blocks at an instance and the OS configured the system accordingly. t
- Later when more processes are created, this can be reconfigured.

Controlled resource sharing

- Controlling read and write of the resources and parameters by user processes.
- For example, some resources write only for a process and some read only for a set of processes
- Another example, memory buffer to which one process writes at an instant till that buffer is emptied by other process

Confinement Mechanism

- Mechanism that restricts sharing of parameters to a set of processes only .

Security Policy (Strategy)

- Rules for authorizing access to the OS, system and information.
- A policy example is that a communication system may having a policy of peer-to-peer communication (connection establishment preceding the data packets flow).

Authentication Mechanism

- External authentication mechanism for the user and a mechanism meant to prevent an application run unless the user registers and the system administrator (software) authorizes
- Internal authentication for the process, and the process should not appear (impersonate) as some like other processes.
- User authentication can become difficult if the user disseminates password passwords or other authentication methods

Authorization

- User or process (s) allowed to use the system resources as per the security policy

Encryption

- A tool to change information to make it unusable by any other user or process unless without the appropriate key is used for deciphering it.

Summary

We learnt

- OS security issues are important considerations.
- Protection of memory and resources from any unauthorized and without explicit authorization write into the PCB or resource, or mix up of accesses of one by another, becomes imperative from an OS security and protection mechanism

End of Lesson 24 of Chapter 8