State of system – collection of current values of all memory locations,

all secondary storage and all registers and other components of the system.

Subset of this collection that deals with protection is the protection state of system.

**Protection State:** This is a focused part of the overall system state. The protection state zeroes in on aspects of the system that are related to security and access control.

This includes information about which users or processes have access to which resources, what kind of access (read, write, execute) they have, and any other security-related configurations or statuses.

An access control matrix is the one tool that can describe the current protection state.

Set of possible protection states P.

Subset Q of P – those states in which system is authorized to reside.

Current state is in P-Q ,system is not secure.

Preventing system from entering a state in P-Q is function of security mechanism

Access control matrix – characterizes rights of each subject with respect to every other entity. As system changes protection state changes. When command changes state of system, state transition occurs.

ACM -rights of all subjects over all entities in a matrix.

Set of subjects – set of active processes and users.  
Own right -special can add or delete other rights.

UNIX – read, write and execute rights.

Read – list contents of directory.

Write – create, rename and delete files in directory.

Execute – access files or subdirectories in the directory.