In the fields of physical security and information security, access control (AC) is the selective restriction of access to a place or other resource while access management describes the process. The act of accessing may mean consuming, entering, or using. Permission to access a resource is called authorization.

Locks and login credentials are two analogous mechanisms of access control.

Geographical access control may be enforced by personnel (e.g., border guard, bouncer, ticket checker), or with a device such as a turnstile. There may be fences to avoid circumventing this access control. An alternative of access control in the strict sense (physically controlling access itself) is a system of checking authorized presence, see e.g. Ticket controller (transportation). A variant is exit control, e.g. of a shop (checkout) or a country.

The term access control refers to the practice of restricting entrance to a property, a building, or a room to authorized persons. Physical access control can be achieved by a human (a guard, bouncer, or receptionist), through mechanical means such as locks and keys, or through technological means such as access control systems like the mantrap. Within these environments, physical key management may also be employed as a means of further managing and monitoring access to mechanically keyed areas or access to certain small assets.

Physical access control is a matter of who, where, and when. An access control system determines who is allowed to enter or exit, where they are allowed to exit or enter, and when they are allowed to enter or exit. Historically, this was partially accomplished through keys and locks. When a door is locked, only someone with a key can enter through the door, depending on how the lock is configured. Mechanical locks and keys do not allow restriction of the key holder to specific times or dates. Mechanical locks and keys do not provide records of the key used on any specific door, and the keys can be easily copied or transferred to an unauthorized person. When a mechanical key is lost or the key holder is no longer authorized to use the protected area, the locks must be re-keyed.

Electronic access control uses computers to solve the limitations of mechanical locks and keys. A wide range of credentials can be used to replace mechanical keys. The electronic access control system grants access based on the credential presented. When access is granted, the door is unlocked for a predetermined time and the transaction is recorded. When access is refused, the door remains locked and the attempted access is recorded. The system will also monitor the door and alarm if the door is forced open or held open too long after being unlocked.

When a credential is presented to a reader, the reader sends the credential's information, usually a number, to a control panel, a highly reliable processor. The control panel compares the credential's number to an access control list, grants or denies the presented request, and sends a transaction log to a database. When access is denied based on the access control list, the door remains locked. If there is a match between the credential and the access control list, the control panel operates a relay that in turn unlocks the door. The control panel also ignores a door open signal to prevent an alarm. Often the reader provides feedback, such as a flashing red LED for an access denied and a flashing green LED for an access granted.

The above description illustrates a single factor transaction. Credentials can be passed around, thus subverting the access control list. For example, Alice has access rights to the server room, but Bob does not. Alice either gives Bob her credential, or Bob takes it; he now has access to the server room. To prevent this, two-factor authentication can be used. In a two factor transaction, the presented credential and a second factor are needed for access to be granted; another factor can be a PIN, a second credential, operator intervention, or a biometric input.

There are three types (factors) of authenticating information:

something the user knows, e.g. a password, pass-phrase or PIN

something the user has, such as smart card or a key fob

something the user is, such as fingerprint, verified by biometric measurement

Passwords are a common means of verifying a user's identity before access is given to information systems. In addition, a fourth factor of authentication is now recognized: someone you know, whereby another person who knows you can provide a human element of authentication in situations where systems have been set up to allow for such scenarios. For example, a user may have their password, but have forgotten their smart card. In such a scenario, if the user is known to designated cohorts, the cohorts may provide their smart card and password, in combination with the extant factor of the user in question, and thus provide two factors for the user with the missing credential, giving three factors overall to allow access.

Components of an access control system include:

An access control panel (also known as a controller)

An access-controlled entry, such as a door, turnstile, parking gate, elevator, or other physical barrier

A reader installed near the entry. (In cases where the exit is also controlled, a second reader is used on the opposite side of the entry.)

Locking hardware, such as electric door strikes and electromagnetic locks

A magnetic door switch for monitoring door position

Request-to-exit (REX) devices for allowing egress. When a REX button is pushed, or the motion detector detects motion at the door, the door alarm is temporarily ignored while the door is opened. Exiting a door without having to electrically unlock the door is called mechanical free egress. This is an important safety feature. In cases where the lock must be electrically unlocked on exit, the request-to-exit device also unlocks the door.