

data independence

The separation of [data](#) from the [programs](#) that use the data. Nearly all modern applications are based on the principle of data independence. In fact, the whole concept of a [database management system \(DBMS\)](#) supports the notion of data independence since it represents a system for managing data separately from the programs that use the data. In contrast, it is possible to write [applications](#) in which the data being processed is actually represented in the program's [source code](#). This *data-dependent* approach is very inflexible because it makes it difficult to modify the data and it also makes the data inaccessible to other programs.

1. The ability to modify a scheme definition in one level without affecting a scheme definition in a higher level is called **data independence**.
2. There are two kinds:
 - **Physical data independence**
 - The ability to modify the physical scheme without causing application programs to be rewritten
 - Modifications at this level are usually to improve performance
 - **Logical data independence**
 - The ability to modify the conceptual scheme without causing application programs to be rewritten
 - Usually done when logical structure of database is altered
3. Logical data independence is harder to achieve as the application programs are usually heavily dependent on the logical structure of the data. An analogy is made to abstract data types in programming languages.

Data Independence

- **Applications are insulated from how data are structured and stored**
- **Logical data independence: Protection from changes in logical structure of data**
- **Physical data independence: Protection from changes in physical structure of data**
- One of the most important benefits of a DBMS