

Difference Between Physical and Logical Data Independence

In a database management system, often known as a DBMS, both of these are categories of data independence. But there is a key difference between physical and logical data independence.

Physical vs. Logical Data Independence

Difference Between Physical and Logical Data Independence	
Physical Data Independence	Logical Data Independence
It primarily concerns the manner in which data is saved within the system.	The structure of the evolving data definition was the key topic.
It is simple to get back.	Data retrieval is challenging since it mostly depends on the logical organization of the data.
The main focus of logical data independence is on altering the definition or structure of the data.	Logical data independence is mostly interested in data storage.
In most cases, a change at the physical level does not necessitate a change at the application program level.	If new fields are added to or removed from the database, changes must be made in the application software.
It is mostly focused on data storage.	It is mostly interested in modifying the data definition or structure.
It may or may not be necessary to make adjustments at the internal levels to enhance the structure's performance.	Anytime the logical structures of the database are modified, there must be significant modifications at the logical levels.

Physical and Logical Data Independence

According to the definition of data independence, a DBMS's ability to alter the database schema at one level of a database system without also needing to update it at a higher level is a key feature. Data independence can be maintained by keeping it separate from any programs that use it. There are two types of data independence- Physical and Logical data independence. Here, we have provided the difference between physical and logical data independence along with a brief introduction to them.

Physical Data Independence

Physical data independence can distinguish between conceptual levels and internal/physical levels. Without mentioning specific physical structures, it gives you a logical description of the database. Physical data independence can be attained more readily than logical data independence.

Physical data independence allows you to quickly alter the physical storage arrangements or equipment without having to worry about how it will affect the conceptual framework. The mapping between the conceptual and internal levels would consider any changes made. By having the database's internal level and then transitioning from the conceptual level to the internal level, physical data independence is accomplished.

Logical Data Independence

The main focus of logical data independence is the structure or alteration of the data definition and logical schema. It divides the logical schema from the outside perspective. It enables us to alter the logical schema level, the middle level of the DBMS, without altering the exterior views, programs, or API.

Due to the fact that data retrieval depends on the logical structure of data, achieving it is difficult and complex. Data that the end user sees is unaffected by any changes to the logical view of the data because it happens at the user interface level.

Key Difference Between Physical and Logical Data Independence

The key difference between physical and logical data independence is given below.

- As opposed to physical data independence, data retrieval is primarily dependent on the logical structure of the data, which makes it challenging. Retrieving it is simple.
- Compared to logical independence, physical data independence is simpler to obtain.
- A change at the physical level typically does not necessitate changes at the application program level, but logical data independence is necessary to make those changes.