



## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

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The **BASE properties** of a database management system are a set of principles that guide the design and operation of modern databases.

The acronym BASE stands for Basically Available, Soft State, and Eventual Consistency.

### Basically Available

This property refers to the fact that the database system should always be available to respond to user requests, even if it cannot guarantee immediate access to all data. The database may experience brief periods of unavailability, but it should be designed to minimize downtime and provide quick recovery from failures.

### Soft State

This property refers to the fact that the state of the database can change over time, even without any explicit user intervention. This can happen due to the effects of background processes, updates to data, and other factors. The database should be designed to handle this change gracefully, and ensure that it does not lead to data corruption or loss.

### Eventual Consistency

This property refers to the eventual consistency of data in the database, despite changes over time. In other words, the database should eventually converge to a consistent state, even if it takes some time for all updates to propagate and be reflected in the data. This is in contrast to the immediate consistency required by traditional ACID-compliant databases.

### Uses of BASE Databases

BASE databases are used in modern, highly-available, and scalable systems that handle large amounts of data. Examples of such systems include online shopping websites, social media platforms, and cloud-based services.

## Difference between Base Properties and ACID Properties

| ACID  | BASE  |
|---|---|
| ACID (Atomicity, Consistency, Isolation, Durability) is a set of properties that guarantee the integrity and consistency of data in a traditional database. | The BASE properties are a more relaxed version of ACID that trade off some consistency guarantees for greater scalability and availability. |



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| The primary difference between the two is that ACID requires immediate consistency, | while BASE only requires eventual consistency.                              |
| ACID is better suited to traditional transactional databases.                       | The BASE is more suitable for use in large-scale, highly-available systems, |