Consistency Models

Definition

A consistency model is a contract between processes and the data store. It says that if processes agree to obey certain rules, the store promises to work correctly.

Strict consistency

- Any read to a shared data item x returns the value stored by the most recent write operation on x.
- This means there is an absolute time ordering of all shared accesses.
- This doesn't make sense in a distributed system since it requires absolute global time. This is impossible (limit: speed of light).

Sequential consistency

- The result of any execution is the same as if operations of all processes were executed in some sequential order and the operations of each process appear in the order specified by the program.
- ~~Best~~ Analogie: Zwei Kartenstapel, jeweils einer in jeder Hand, Karten werden ineinander gemischt.
  Die Reihenfolge des Zusammenmischens ist beliebig, aber die Reihenfolge der beiden Stapel wird beibehalten.
- Example: