The methods used are “optimistic” in the sense that they rely mainly on transaction backup as a control mechanism, “hoping” that conflicts between transactions will not occur.

Any sequence of accesses to the database that preserves the integrity constraints of the data is called a transaction

However, as is well known, unrestricted concurrent access to a shared database will, in general, cause the integrity of the database to b6 lost.

Disadvantages of locking approach

1. Even read-only transactions (queries), which cannot possibly affect the integrity of the data, must, in general, use locking in order to guarantee that the data being read are not modified by other transactions at the same time.
2. To allow a transaction to abort itself when mistakes occur, locks cannot be released until the end of the transaction. This may again significantly lower concurrency.

The idea behind this optimistic approach is quite simple, and may be summa- rized as follows.

(1) Since reading a value or a pointer from a node can never cause a loss of integrity, reads are completely unrestricted (however, returning a result from a query is considered to be equivalent to a write, and so is subject to validation as discussed below).

(2) Writes are severely restricted. It is required that any transaction consist of two or three phases: a read phase, a validation phase, and a possible write phase (see Figure 1). During the read phase, all writes take place on local copies of the nodes to be modified. Then, if it can be established during the validation phase that the changes the transaction made will not cause a loss of integrity, the local copies are made global in the write phase. In the case of a query, it must be determined that the result the query would return is actually correct. The step in which it is determined that the transaction will not cause a loss of integrity (or that it will return the correct result) is called validation.

Concurrency control is the management of simultaneously executing transactions