Referential integrity

The relationship between a foreign key and its referenced primary key is the mechanism for maintaining data consistency and integrity. Referential integrity ensures data integrity between tables connected by foreign keys. A foreign key is one or more columns that reference a primary key, i.e. when a value is entered in the foreign key, Firebird/InterBase® checks that this value also exists in the referenced primary key, so maintaining referential integrity.

Referential integrity can occur in the following three cases:

1. In the master table a data set is deleted. For example, the deletion of a customer, for whom there are still existing orders could lead to order data sets without a valid customer number. This could falsify analyses and lists, as the internal relationships no longer appear. The prevention of data set deletion in the master table, when data sets still exist in the detail table, is called prohibited deletion. The relay of deletions to all detail tables is called cascading deletion.
2. The primary key is changed in the master table. For example a customer is given a new customer number, so that all orders relating to this customer need to also relate to the new customer number. This is known as a cascading update.
3. A new data set is created, and the foreign key does not exist in the master table. For example an order is input with a customer number not yet allocated in the master table. A possible solution could be the automatic generation of a new customer. This is called a cascading insert.

Referential integrity is supported natively in Firebird/InterBase®, i.e. all foreign key basic relationships are automatically taken into consideration during data alterations. Since Version 5, InterBase® supports declarative referential integrity with cascading deletes and updates. In older versions, this could be implemented with triggers.

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