**Brief T-sql From T-Sql Fundamental Book**

**Chapter 1:**

**T-SQL is both a subset and a superset of SQL**

**An RDBMS: is a database management system based on the relational model (a semantic model for representing data), which in turn is based on two mathematical branches: set theory and predicate logic**

**Important book:** SQL and Relational Theory: How to Write Accurate SQL Code, Third Edition by C. J. Date (O’Reilly Media, 2015).

**The SQL standard is made of multiple parts. Part 1 (Framework) and Part 2 (Foundation) pertain to the SQL language, whereas the other parts define standard extensions, such as SQL for XML and SQL-Java integration**

**That is, SQL requires you to specify what you want to get and not how to get it, letting the RDBMS figure out the physical mechanics required to process your request.**

**Set theory: no meaning for order set attribute {a,b,c} or {b,c,a also called Columns and set of tuble**

**Also called rows**

**Predicate: is expression hold true or false like that (salary >500) this expression either true or false**

**The first version of the relational model was proposed by Codd in 1969 in an IBM research report called “Derivability, Redundancy, and Consistency of Relations Stored in Large Data Banks.”**

**A proposition is an assertion or a statement that must be true or false. For example, the statement, “Employee Itzik Ben-Gan was born on February 12, 1971, and works in the IT department” is a proposition**

**Three-valued predicate logic refers to the three possible logical values that can result from a predicate—true, false, and unknown.**

**Attribute: any attributes or headers of table has name and type**

**ex:employeeId Integer**

**Normalization : is a formal mathematical process to guarantee that each entity will be represented by a single relation.**

**1NF**

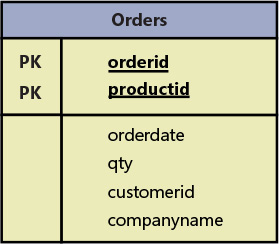
**The first normal form says that the tuples (rows) in the relation (table) must be unique and attributes should be atomic. This is a redundant definition of a relation; in other words, if a table truly represents a relation, it is already in first normal form.**

**You achieve unique rows in SQL by defining a unique key for the table.**

**2NF**

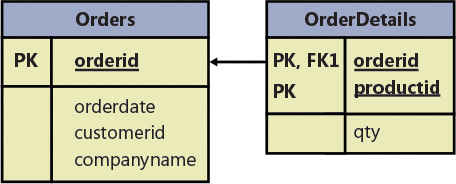
**The second normal form involves two rules. One rule is that the data must meet the first normal form. The other rule addresses the relationship between nonkey and candidate-key attributes.**

**Fig 1 violate 2NF**



Figure

Solution Split this entity into two

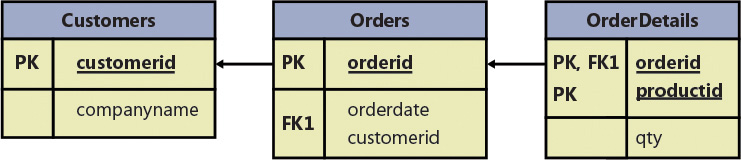


Figure

**3NF**

**The third normal form also has two rules. The data must meet the second normal form. Also, all nonkey attributes must be dependent on candidate keys nontransitively. Informally, this rule means that all nonkey attributes must be mutually independent. In other words, one nonkey attribute cannot be dependent on another nonkey attribute.**

**Fig3 solve problem**



Figure