

### 2.1.3 Object Based data model

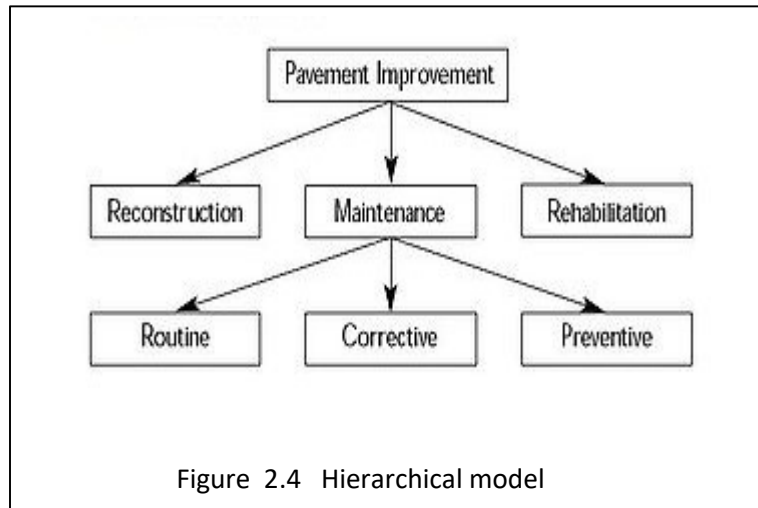
An object database (also object-oriented database) is a database model in which information is represented in the form of objects as used in object-oriented programming

Today's trend in programming languages is to utilize objects, thereby making OODBMS ideal for OO programmers because they can develop the product, store them as objects, and can replicate or modify existing objects to make new objects within the OODBMS

### 2.1.4 Hierarchical and Network data model

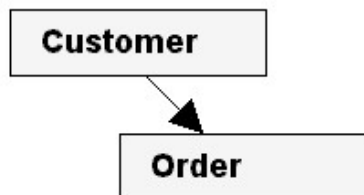
A ***hierarchical database model*** is a data model in which the data is organized into a tree-like structure. The structure allows representing information using parent/child relationships: each parent can have many children, but each child has only one parent (also known as a 1-to-many relationship). All attributes of a specific record are listed under an entity type. Figure 2.4 shows as example.

This model is recognized as the first database model created by IBM in the 1960s.



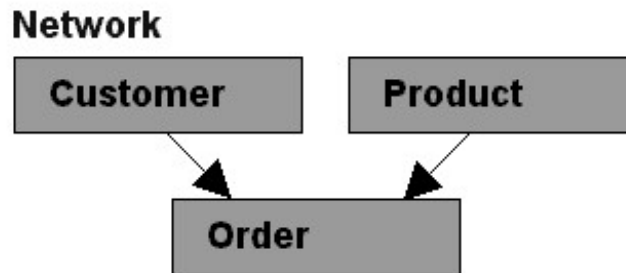
In the following example, orders are owned by only one customer. This model often restrictive in linking real-world structures.

#### Hierarchical



In **network databases**, data is organized as a graph ,a record type can have multiple owners. In the hierarchical model, each record having one parent

record and many children, the network model allows each record to have multiple parent and child records, forming a generalized graph structure. In the example below, orders are owned by both customers and products, reflecting their natural relationship in business.



Relational databases do not link records together physically, but the design of the records must provide a common field, such as account number, to allow for matching. Often, the fields used for matching are indexed in order to speed up the process.

In the following example, customers, orders and products are linked by comparing data fields and/or indexes when information from more than one record type is needed. This method is more flexible for ad hoc inquiries.

**Relational**

