

# **Physical Design**

**Read section 1.6 of Atzeni et al. BD:  
Architetture e linee di evoluzione**

# Physical Design

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- Design of the physical structures of the database
- Last phase of database design
- Input:
  - Database logical schema
  - Information on the load
- Output:
  - Definition of the primary structures of tables
  - Definition of indexes on tables
  - Setting of a number of DBMS specific parameters

# Choice of Indexes

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- Very important
- Usually one index on the primary key
  - Sometimes compulsory
  - Useful because the primary key is often involved in joins and selections
- Other indexes for easing certain selections and joins
- It is possible to investigate how the indexes are used in queries by the command
  - SHOW PLAN
- If the performances are unsatisfactory, indexes can be added or removed

# Index Creation

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- Pattern common to different DBMS
  - CREATE [UNIQUE] INDEX *IndexName* ON *TableName(AttributeList)*
  - DROP INDEX *IndexName*
- Syntax details vary widely among DBMS
- UNIQUE: *AttributeList* is a superkey
- No way to specify the type of index (B+Tree, Hash,...)

# Physical Structures

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- Primary structures:
  - heap ("unclustered")
  - ordered ("clustered"), also on a pseudokey
  - hash ("clustered"), also on a pseudokey
  - clustering of different tables
- Indexes (primary/secondary)
  - ISAM
  - B+-tree