

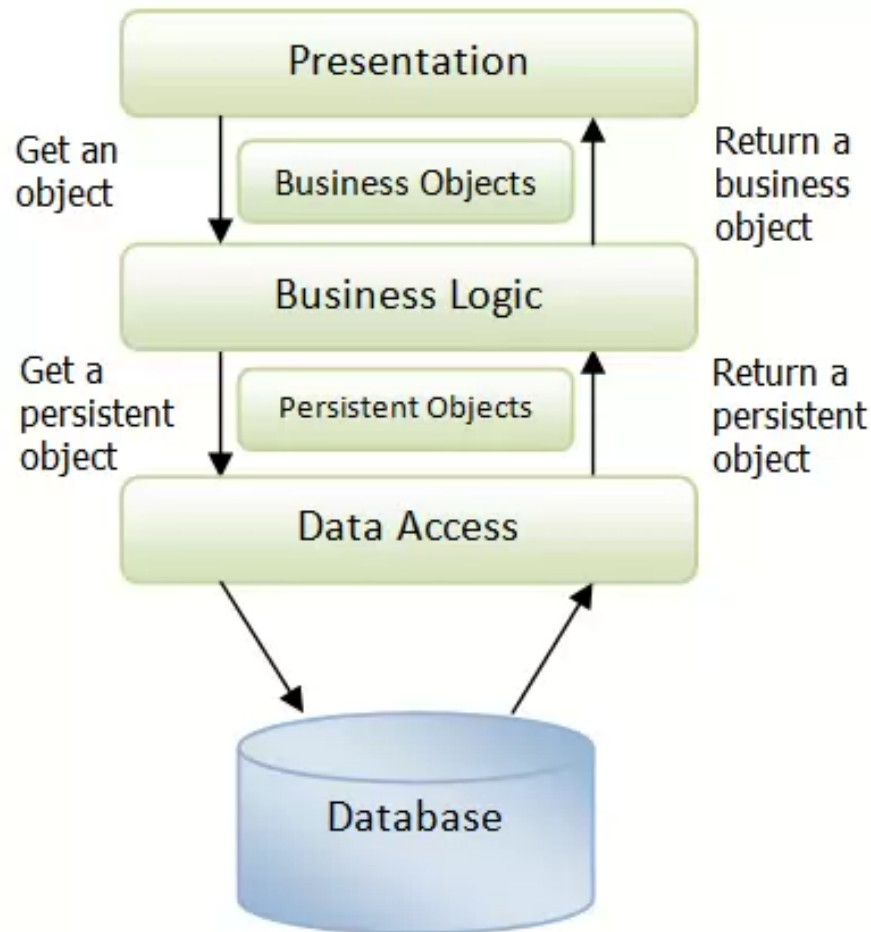
Data Access Layer

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Data Access Layer

- bottom layer of multilayered architecture
- provides access to storage generally (RDBMS, NoSQL, CMS, DMS, CRM...)
- allows application to be independent of storage type (separates data access from business logic)
- easy adaptation to a new storage system

Data Access Layer



Data Source Arch. Patterns

- Table Data Gateway
- Row Data Gateway
- Active Record
- Data Mapper

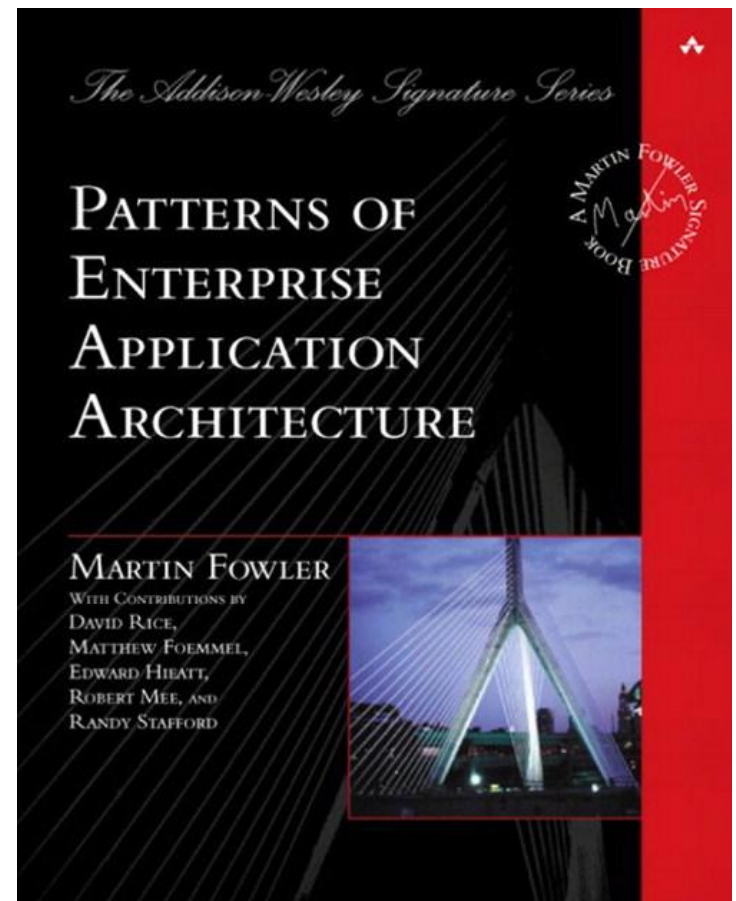
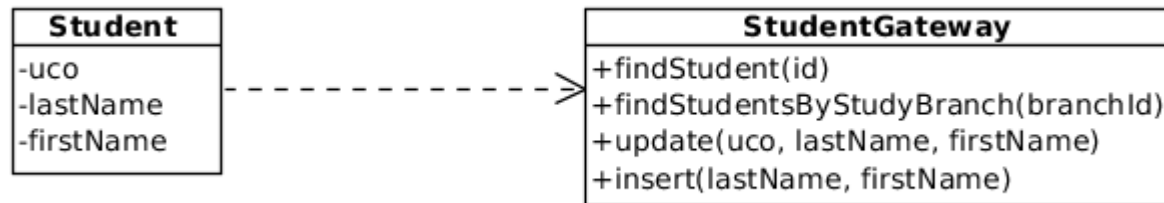


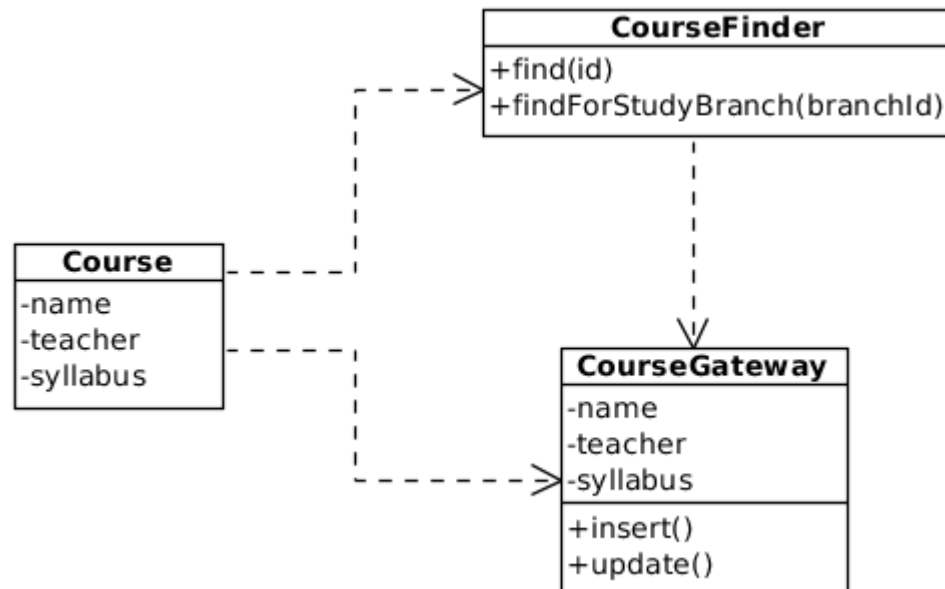
Table data gateway pattern

- an object that acts as a gateway to a database table
- one instance handles all the rows in the table
- a table data gateway holds all the SQL
- other code calls its methods for all interaction with the database



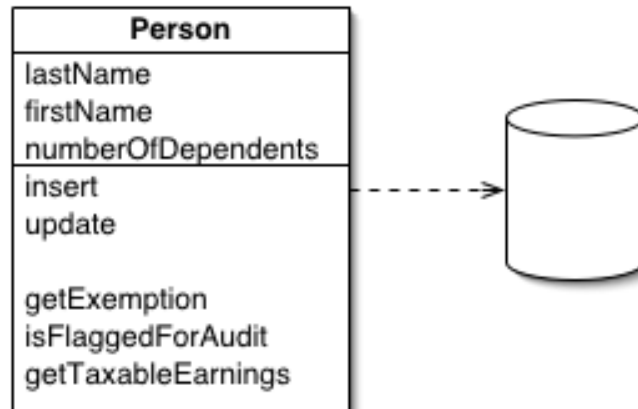
Row data gateway pattern

- an object that acts as a gateway to a single record in a data source
- one instance per row



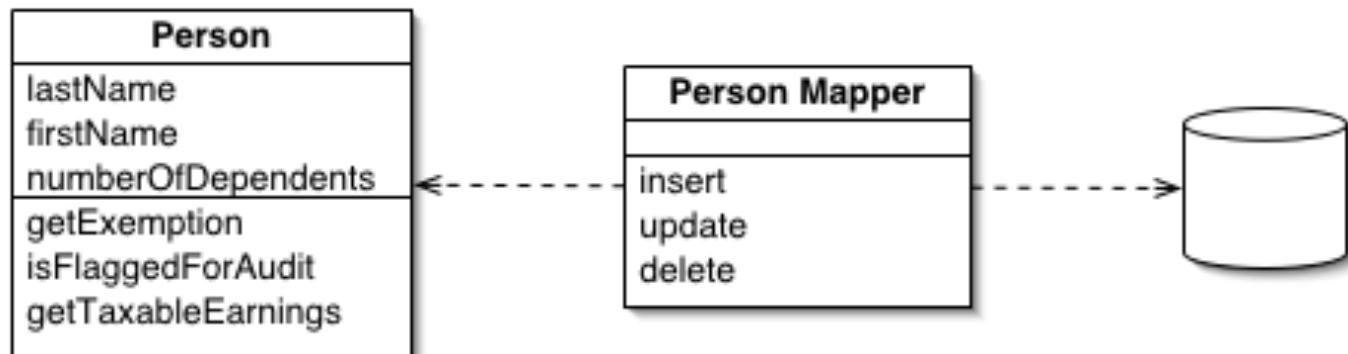
Active record pattern

- an object that wraps a row in a database table or view
- encapsulates the database access, and adds domain logic on that data
- carries both data and behavior



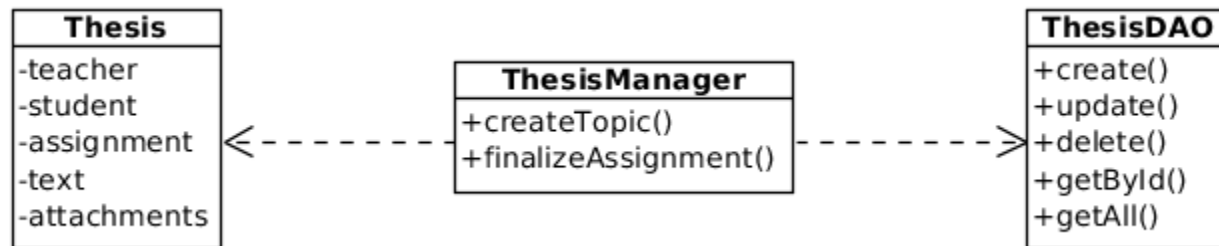
Data mapper pattern

- a data mapper performs bidirectional transfer of data between a persistent data store and an in-memory data representation
- makes in-memory data independent of persistent data and vice versa



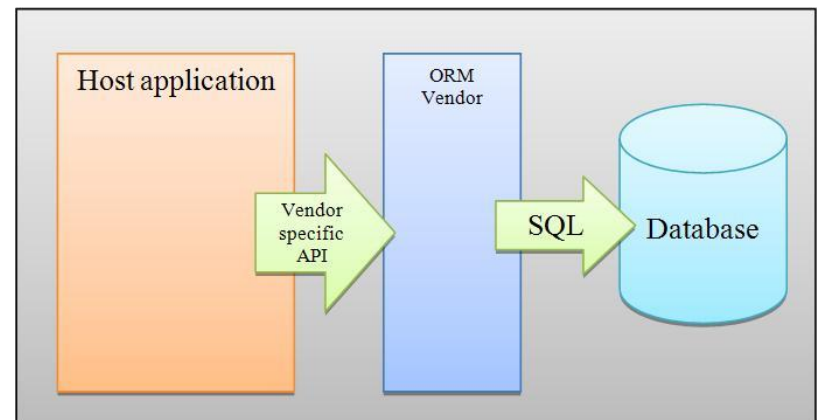
Data Access Object

- provides an abstract interface to database or other persistence mechanism
- CRUD operations
- related to Table data gateway pattern



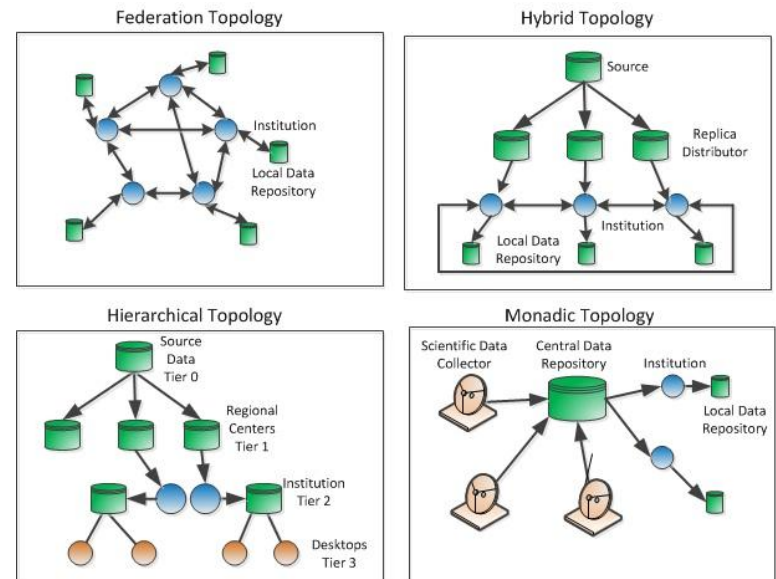
Object-Relational Mapping

- related to Data mapper pattern
- conversion between in-memory objects and rows in relational database
- provided by many frameworks
- e.g. Entity Framework (.NET), Hibernate (Java), ODB (C++)



Data grid

- architecture that allows to access, modify and transfer large amounts of geographically distributed data
- massive clustering and scalability
- e.g. Infnispan
(used mostly for caching)



Sources

- <https://msdn.microsoft.com/en-us/library/ee658127.aspx>
- <http://martinfowler.com/eaCatalog/>
- <http://www.oracle.com/technetwork/java/dataaccessobject-138824.html>