



Object Database Queries: OQL

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Object Query Language (OQL)

- ❖ Declarative (like SQL)
- ❖ No updates
- ❖ Computationally incomplete (like SQL)
- ❖ Query result: Any object or value
- ❖ Ad-hoc or embedded (like SQL)
- ❖ Can invoke methods easily
- ❖ All queries “start with” named, top-level database objects
- ❖ OQL is a freely composable, functional language

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Object identity and equalities

- ❖ Can compare referenced objects in 3 ways
- ❖ Two referenced objects are identical if both references are the same OID
- ❖ Two referenced objects are shallow equal if the referenced objects contain the same values in all value (e.g. scalar) fields and identical references in object fields
- ❖ Two referenced objects are deep equal if they contain the same values in all value fields and the objects they reference are also deep equal
- ❖ ID → shallow equal → deep equal

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OQL: Summary

- ❖ SQL-like; declarative and functional
- ❖ Freely composable: clean semantics
- ❖ No need for *having* or *order by*
- ❖ *forall* and *exists* both available
- ❖ Query processing / optimization techniques:
 - Algebras can be defined:
 - ◆ Extended relational algebras
 - ◆ New algebras
 - Indexes used (O2, for example)
 - QP/Opt. research results slowly making their way into products

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State of the Art (Object DB Queries)

- ❖ Improving indexing techniques
- ❖ Benchmarking
- ❖ Support for advanced data types (lists, trees, graphs, images, audio, video, documents,...)
- ❖ Algebras and calculi for query processing
- ❖ Object storage managers (vs. full DBMS)
- ❖ Query languages (SQL3, OQL, others)
- ❖ Optimization techniques (cost models, etc.)

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