Outline

1. What is a Query? Query Language?
2. Example Database Tables
3. SQL Overview: 3 Components
4. SELECT statement with 1 table
5. Multi-table SELECT statements
6. Why spatial extensions are needed?
7. 1-table spatial queries
8. Multi-table spatial queries
9. Trends
Learning Objectives

• After this segment, students will be able to
  • List trends in Spatial Query Languages
  • Facilities for user defined data types in SQL3
Defining Spatial Data Types in SQL3: Libraries

- Third party libraries implementing OGIS are available
- Almost all users use these libraries
- Few users need to define their own data types
- We will not discuss the detailed syntax of CREATE TYPE
Defining Spatial Data Types in SQL3: Overview

- CREATE TYPE statements
- Defines a new data types
- Attributes and methods are defined
- Separate statements for interface and implementation
- Example:

```
CREATE TYPE Point AS OBJECT ( 
  x    NUMBER, 
  y    NUMBER, 
  MEMBER FUNCTION Distance (P2 IN Point) RETURN NUMBER, 
  PRAGMA RESTRICT _REFERENCES (Distance, WWDS));
```
Summary

- Queries to databases are posed in high level declarative manner
- SQL is the “lingua-franca” in the commercial database world
- Standard SQL operates on relatively simple data types
- SQL3/OGIS supports several spatial data types and operations
- Additional spatial data types and operations can be defined
  - CREATE TYPE statement
More Details


