

The Zope Object Database (ZODB)

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Plan

- 1 Introduction
- 2 Database models
 - Relational model
 - Object model
- 3 Object Oriented Programming
 - Presentation
 - The python programming language
- 4 ZODB
- 5 Conclusion



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« *A database is a collection of records stored in a computer in a systematic way, so that a computer program can consult it to answer questions.* »

Main properties of a database

- a record (tuple) is organized a set of data elements
- a schema gives the structure of the database
- the Database Management Systems (*DBMS*) is a program which allows management and queries



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Specifications

- the data are organized in table, also known as relation
- a table consists in two-dimensional array

A relation can have two kinds of keys :

- primary keys
- foreign keys

An operation is usually written in Structured Query Language (*SQL*)



Examples

User table		
<i>nickname</i>	name	surname
aaa	bbb	ccc
xxx	yyy	zzz

- Operations available on tuples : SELECT, INSERT, UPDATE and DELETE
- Operations available on tables : CREATE, DROP



Specifications

- information is represented in the form of objects
- closer to the application programming

This kind of database allows programmers to write object oriented code in a more transparent way



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Specification

- programs are composed of a collection of individuals units, also known as object
- closer to the *real world*

Concepts

- class
- inheritance
- polymorphism



Specifications

- high level interpreted language
- cross platform
- dynamically type-checked
- object orientation
- extensibility
- easy to learn

Python versus traditional language

```
int factorial(int x)
{
    if (x == 0) {
        return 1;
    }
    else {
        return x * factorial(x-1);
    }
}
```

```
def factorial(x):
    if x == 0:
        return 1
    else:
        return x * factorial(x-1)
```



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Specification

- persistence
- python-specific OODB
- optimize for reading
- history

Like postgresql or mysql SQL implementation, we have :

- atomicity
- consistency
- isolation
- durability



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Finally, ZODB :

- is a pythonic database
- provides all the needed database stuff
- is a robust database included in ZOPE

