

Description

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Relational Database

Formal	Common	Other
Relation	Table	Entity
Tuple	Row	Record
Attribute	Column	Field

Relational Database

- Data are the values stored in the database. On its own, data mean very little.
- Information is data that is processed to have a meaning.
- A database is a collection of tables.
- Each table contains records. These are also called tuples.
- Each record contains fields. These are also called attributes.
- Fields can be of many different data storage types.

Relational Database

- The domain refers to the possible values each field can contain.
- A field is said to contain a null value when it contains nothing at all.
- A key is a logical way to access a record in a table.
- An index is a physical mechanism that improves the performance of a database.
- A view is a virtual table made up of a subset of the actual tables.

Relational Database

- A one-to-one (1:1) relationship occurs where, for each instance of table A, only one instance of table B exists, and vice-versa.
- A one-to-many (1:m) relationship is where, for each instance of table A, many instances of the table B exist, but for each instance of table B, only once instance of table A exists.

Relational Database

- A many to many (m:n) relationship occurs where, for each instance of table A, there are many instances of table B, and for each instance of table B, there are many instances of the table A.
- A mandatory relationship exists where, for each instance of table A, one or more instances of table B must exist.
- An optional relationship is where, for each instance of table A, there may exist instances of table B.

Database for Ontology

- Consider a table that describes concepts
- Name, description, characteristics, is-A, has-A, is-apart-of, and more
- Consider a table that holds the instances of a concept
- Consider a table that describes the parts of a concept
- Work this.

Wikipedia

- A **computer program** is a collection of instructions that describes a task, or set of tasks, to be carried out by a computer. More formally, it can be described as an expression of a *computational method* written in a precisely defined computer language.
- Computer programs, also known as software, may be categorized along functional lines. These functional categories include *application software*, *operating systems*, *video games*, and *compilers*, among others. Computer programs embedded in hardware devices are called *firmware*.
- The formal expression of computational methods in a human-readable computer language is often referred to as source code, while the machine-executable expressions of computational methods are commonly referred to as *executables*, *object code*, or simply as *binaries* — a reference to the binary file format commonly used to store the executable code.

Wikipedia

- The executable form of a program (that is, usually object code) is often treated as being different from the data the program operates on. In some cases this distinction is blurred with programs creating, or modifying, data, which is subsequently executed as part of the same program.
- A program is likely to contain a variety of data structures and a variety of different algorithms to operate on them.
- Creating a computer program is the iterative process of writing new source code or modifying existing source code, followed by testing, analyzing and refining this code. A person who practices this skill is referred to as a computer programmer or software developer. The sometimes lengthy process of computer programming is now referred to as "software development", or more specifically "software engineering". The latter becoming more popular due to the increasing maturity of the discipline.

“How stuff works” - Java

- **Computer program** - A computer program is a set of instructions that tell a computer exactly what to do. The instructions might tell the computer to add up a set of numbers, or compare two numbers and make a decision based on the result, or whatever. But a computer program is simply a set of instructions for the computer, like a recipe is a set of instructions for a cook or musical notes are a set of instructions for a musician. The computer follows your instructions exactly and in the process does something useful....
- **Programming language** - In order for a computer to recognize the instructions you give it, those instructions need to be written in a language the computer understands -- a programming language. There are many computer programming languages... just like there are many spoken languages. They all express approximately the same concepts in different ways.
- **Compiler** - A compiler translates a computer program written in a human-readable computer language (like Java) into a form that a computer can **execute**. You have probably seen EXE files on your computer. These EXE files are the output of compilers. They contain **executables** -- machine-readable programs translated from human-readable programs.

“How stuff works” - C

- C is a computer programming language. That means that you can use C to create lists of instructions for a computer to follow. C is one of thousands of programming languages currently in use. C has been around for several decades and has won widespread acceptance because it gives programmers maximum control and efficiency. C is an easy language to learn. It is a bit more cryptic in its style than some other languages, but you get beyond that fairly quickly.
- C is what is called a compiled language. This means that once you write your C program, you must run it through a C compiler to turn your program into an executable that the computer can run (execute). The C program is the human-readable form, while the executable that comes out of the compiler is the machine-readable and executable form.

Begin

- What are the terms we need to talk about?
- What are the properties of these terms?
- What do we want to say about the terms?
- Define classes and the class hierarchy
- Define properties of classes – slots
- Class inheritance
- Documentation

For Relational Database

- Convert all notions: concepts, slots, hierarchy and so on
- Build relations, tuples and attributes (tables, rows, columns)

Jess Templates

- Every fact has a template. The template has a name and a set of slots, and each fact gets these things from its template. The template is like the class of a Java object, or like a relational database table. The slots are like the properties of the JavaBean, or the columns of a table. A fact is therefore like a single JavaBean, or like a row in a database table.
- Every fact has a template. A fact gets its name and its list of slots from its template.
- The deftemplate construct is the most general and most powerful way to create a template.

Jess Templates

```
(deftemplate template-name
  ["Documentation comment"]
  [(declare (slot-specific TRUE | FALSE)
            (backchain-reactive TRUE | FALSE)
            (from-class class name)
            (include-variables TRUE | FALSE)
            (ordered TRUE | FALSE))]
  [extends template-name]
  (slot | multislot slot-name
    [(type ANY | INTEGER | FLOAT |
        NUMBER | SYMBOL | STRING |
        LEXEME | OBJECT | LONG)]
    [(default default value)]
    [(default-dynamic expression)])*)
```

Jess Templates

- A template declaration includes a name, an optional documentation string, an optional "extends" clause, an optional list of declarations, and a list of zero or more slot descriptions. Each slot description can optionally include a type qualifier or a default value qualifier. In the syntax diagram, defaults for various options are indicated in bold letters.

Jess Templates

- The template-name is the head of the facts that will be created using this template. There may be an arbitrary number of slots. Each <slot-name> must be a symbol. The default slot qualifier states that the value of that slot in a new fact is the given default value; the default is the symbol nil. The default-dynamic version will evaluate the given expression each time a new fact using this template is asserted. The type slot qualifier is accepted but not currently enforced by Jess; it specifies what data type the slot is allowed to hold. Acceptable values are ANY, INTEGER, FLOAT, NUMBER, SYMBOL, STRING, LEXEME, and OBJECT.
