

LinuxDay 2011

LATEX

by Alessandro Sivieri



Antefatto



Correva l'anno 1978

TEX

by Donald Knuth



τέχνη

"arte" nel senso di "perizia", "saper fare", "saper operare"

Linguaggio di *markup*



Come HTML

```
<body>
  <h1>If</h1>

  <p>Perform some tasks based on whether a given condition holds
  true or not.</p>

  <p>This task is heavily based on the Condition framework that can
  be found in Ant 1.4 and later, therefore it cannot be used
  inconjunction with versions of Ant prior to 1.4. Due to numeruos
  bugs in Ant 1.4(.1) that affect this task, we recommend to use Ant
  1.5 or later.</p>

  <h2>Parameters</h2>

  <p>This task doesn't have any attributes, the condition to test is
  specified by a nested element - see the documentation of your
  <code>&lt;condition&gt;</code> task (see <a
  href="http://ant.apache.org/manual/CoreTasks/condition.html">the
  online documentation</a> for example) for a complete list of
  nested elements.</p>

  <p>Just like the <code>&lt;condition&gt;</code> task, only a
  single condition can be specified - you combine them using
  <code>&lt;and&gt;</code> or <code>&lt;or&gt;</code>
  conditions.</p>

  <p>In addition to the condition, you can specify three different
  child elements, <code>&lt;elseif&gt;</code>, <code>&lt;then&gt;</code> and
  <code>&lt;else&gt;</code>. All three subelements are optional.

  Both <code>&lt;then&gt;</code> and <code>&lt;else&gt;</code> must not be
  used more than once inside the if task. Both are
  containers for Ant tasks, just like Ant's
  <code>&lt;parallel&gt;</code> and <code>&lt;sequential&gt;</code>
  tasks - in fact they are implemented using the same class as Ant's
  <code>&lt;sequential&gt;</code> task.</p>
```



Contiene circa 300 comandi base, di fatto non usati da nessuno direttamente

A questi sono stati aggiunti 600 comandi di più alto livello (*PlainTeX*)

Numerose versioni personalizzate



L'ultima versione stabile è la
3.1415926



Due anni dopo (1980)

L^AT_EX

by Leslie Lamport



Possibilità di concentrarsi sul contenuto e lasciare al modello corrente i dettagli di visualizzazione



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L^AT_EX

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Formule



Alessandro Sivieri - LinuxDay 2011



$$\frac{1}{\sqrt{2} + \frac{1}{\sqrt{2} + \frac{1}{\sqrt{2} + \frac{1}{\sqrt{2} + \frac{1}{\sqrt{2} + \dots}}}}}$$

$$W(\Phi) = \left\| \begin{array}{cccc} \frac{\varphi}{(\varphi_1, \varepsilon_1)} & 0 & \dots & 0 \\ \frac{\varphi^{k_{n2}}}{(\varphi_2, \varepsilon_1)} & \frac{\varphi}{(\varphi_2, \varepsilon_2)} & \dots & 0 \\ \dots & \dots & \dots & \dots \\ \frac{\varphi^{k_{n1}}}{(\varphi_n, \varepsilon_1)} & \frac{\varphi^{k_{n2}}}{(\varphi_n, \varepsilon_2)} & \dots & \frac{\varphi^{k_{nn-1}}}{(\varphi_n, \varepsilon_{n-1})} \quad \frac{\varphi}{(\varphi_n, \varepsilon_n)} \end{array} \right\|$$

Let us consider now the general case $n > 1$. Let $\nu \in \mathbf{R}^n$ be such that $|\nu| = 1$, and let $\pi_\nu = \{y \in \mathbf{R}^n : \langle y, \nu \rangle = 0\}$. In the following, we shall identify \mathbf{R}^n with $\pi_\nu \times \mathbf{R}$, and we shall denote by y the variable ranging in π_ν and by t the variable ranging in \mathbf{R} . By the just proven one-dimensional result, and by Theorem 3.3, we get

$$\lim_{h \rightarrow 0} \frac{f(\tilde{u}(y + t\nu) + h \frac{\tilde{D}u_y}{|\tilde{D}u_y|}(t)) - f(\tilde{u}(y + t\nu))}{h} = \frac{\tilde{D}v_y}{|\tilde{D}u_y|}(t) \quad \left| \tilde{D}u_y \right| \text{-a.e. in } \mathbf{R}$$

for \mathcal{H}_{n-1} -almost every $y \in \pi_\nu$. We claim that

$$\frac{\langle \tilde{D}u, \nu \rangle}{|\langle \tilde{D}u, \nu \rangle|}(y + t\nu) = \frac{\tilde{D}u_y}{|\tilde{D}u_y|}(t) \quad \left| \tilde{D}u_y \right| \text{-a.e. in } \mathbf{R} \quad (34)$$

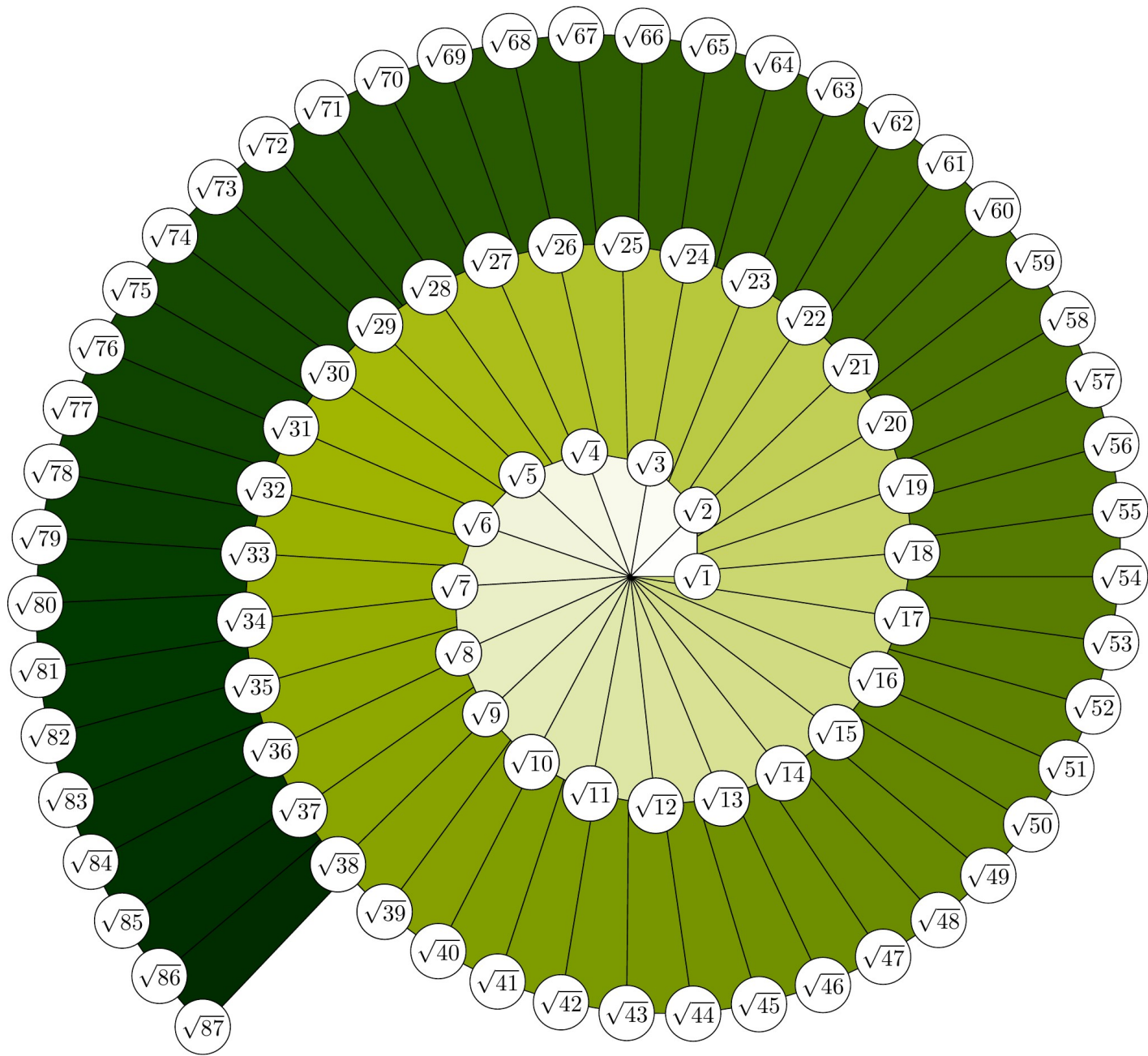
for \mathcal{H}_{n-1} -almost every $y \in \pi_\nu$. In fact, by (16) and (18) we get

$$\begin{aligned} \int_{\pi_\nu} \frac{\tilde{D}u_y}{|\tilde{D}u_y|} \cdot \left| \tilde{D}u_y \right| d\mathcal{H}_{n-1}(y) &= \int_{\pi_\nu} \tilde{D}u_y d\mathcal{H}_{n-1}(y) \\ &= \langle \tilde{D}u, \nu \rangle = \frac{\langle \tilde{D}u, \nu \rangle}{|\langle \tilde{D}u, \nu \rangle|} \cdot |\langle \tilde{D}u, \nu \rangle| = \int_{\pi_\nu} \frac{\langle \tilde{D}u, \nu \rangle}{|\langle \tilde{D}u, \nu \rangle|}(y + \cdot\nu) \cdot \left| \tilde{D}u_y \right| d\mathcal{H}_{n-1}(y) \end{aligned}$$

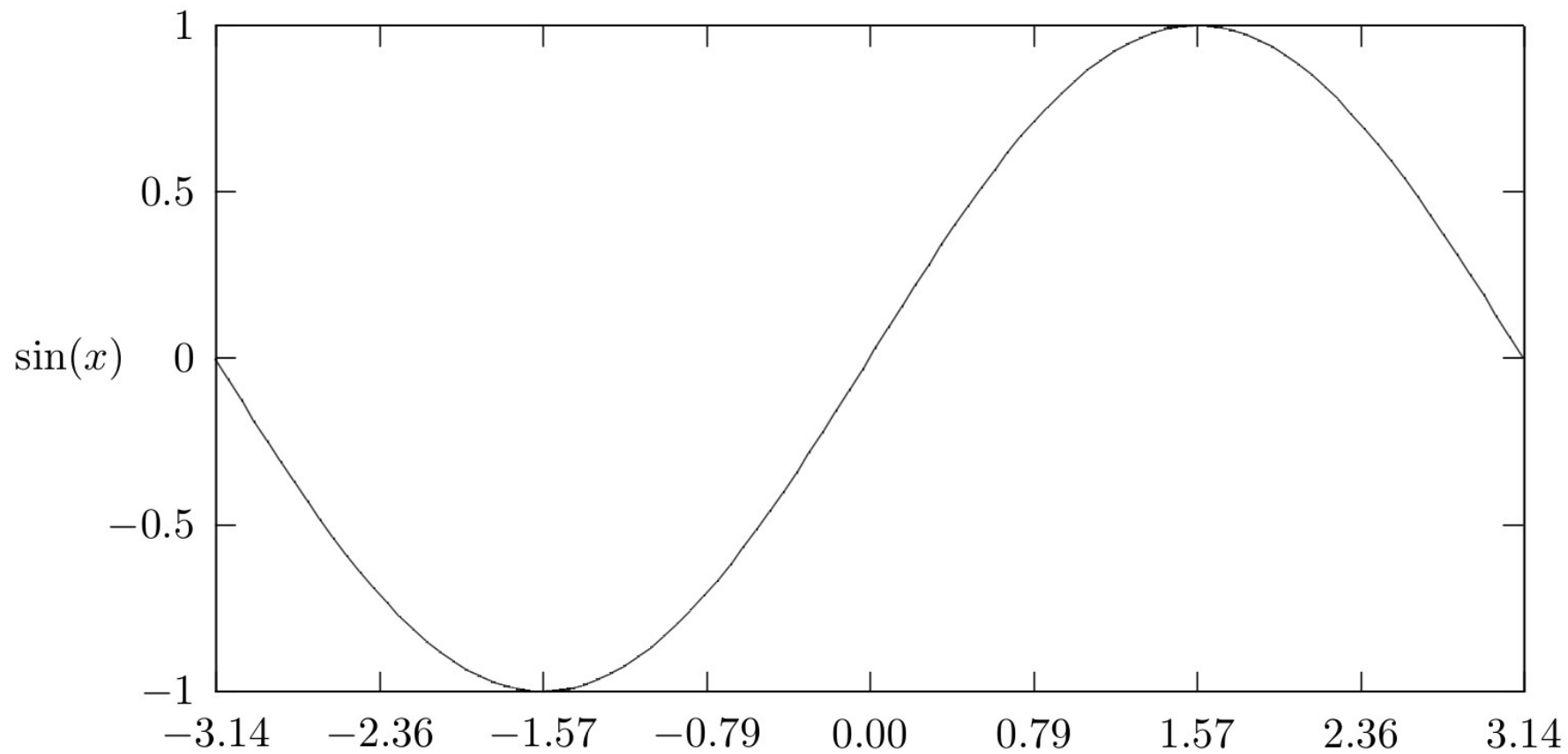
$$\begin{aligned}
|I_1| &= \left| \int_{\Omega} gRu \, d\Omega \right| \\
&\leq C_3 \left[\int_{\Omega} \left(\int_a^x g(\xi, t) \, d\xi \right)^2 d\Omega \right]^{1/2} \\
&\quad \times \left[\int_{\Omega} \left\{ u_x^2 + \frac{1}{k} \left(\int_a^x cu_t \, d\xi \right)^2 \right\} c\Omega \right]^{1/2} \\
&\leq C_4 \left\| |f| \tilde{S}_{a,-}^{-1,0} W_2(\Omega, \Gamma_l) \right\| \left\| |u| \overset{\circ}{\rightarrow} W_2^{\tilde{A}}(\Omega; \Gamma_r, T) \right\|. \\
|I_2| &= \left| \int_0^T \psi(t) \left\{ u(a, t) - \int_{\gamma(t)}^a \frac{d\theta}{k(\theta, t)} \int_a^{\theta} c(\xi) u_t(\xi, t) \, d\xi \right\} dt \right| \\
&\leq C_6 \left\| |f| \int_{\Omega} |\tilde{S}_{a,-}^{-1,0} W_2(\Omega, \Gamma_l)| \right\| \left\| |u| \overset{\circ}{\rightarrow} W_2^{\tilde{A}}(\Omega; \Gamma_r, T) \right\|.
\end{aligned}$$

Figure / Immagini / Grafici





This is $\sin(x)$



This is the x axis

Musica



Alessandro Sivieri - LinuxDay 2011



LILYPOND EXAMPLE

GLEN MARK MARTIN

In Western music, the primary reference tone is the pitch A above middle C, which is defined by ISO standards as having a fundamental frequency of 440Hz. In twelve-tone equal temperament, the frequencies of all other tones within that octave are related to this pitch according to the following formula:

$$F(n) = 440 \times 2^{\frac{n}{12}}$$

To find the frequency of the note in the next octave up, simply double the frequency. To go down an octave, divide the frequency by two.

With frequency intervals thus defined, we can begin dividing the continuous acoustic spectrum into discretized structures known as scales. Here is a one octave chromatic scale:



Formati

- Input
 - Latex + bibtex
 - Postscript
 - JPEG, PNG, BMP...
- Output
 - DVI
 - Postscript
 - PDF

Alcuni comandi

- latex
- bibtex
- dvips
- dvipdf
- ps2pdf
- pdflatex
- rubber



Alcune istruzioni del linguaggio

- `\usepackage{}`
- `\[sub*]section{}`
- `\chapter{}`
- `\begin{}`
- `\cite{}`
- `\input{}` vs. `\include{}`
- `\newcommand{\siv}[1]{\footnote{\bf Siv: #1}}`
 - `\siv{}`

I pacchetti

- Babel
- Inputenc
- URL
- Listings
- Graphicx
- Amsmath
- ...



Le distribuzioni

- TeXlive (Linux & Windows)
- MiKTeX (Windows)
- MacTeX vs. XeTeX (Mac OS X)
- Diversi pacchetti personalizzati
 - AMS TeX
 - ConTeXt
 - Plain TeX

Gli editor

- Kile
- Texmacs
- Texlipse
- Texmaker
- Lyx*
- ... qualunque editor di testo



LyX

- What You See Is What You Mean
- Graphical interface for LaTeX
- Integrated equation editor
- Support for reference lists and bibliographies
- Support for external packages with previews
- Cross platform

Programmi di supporto



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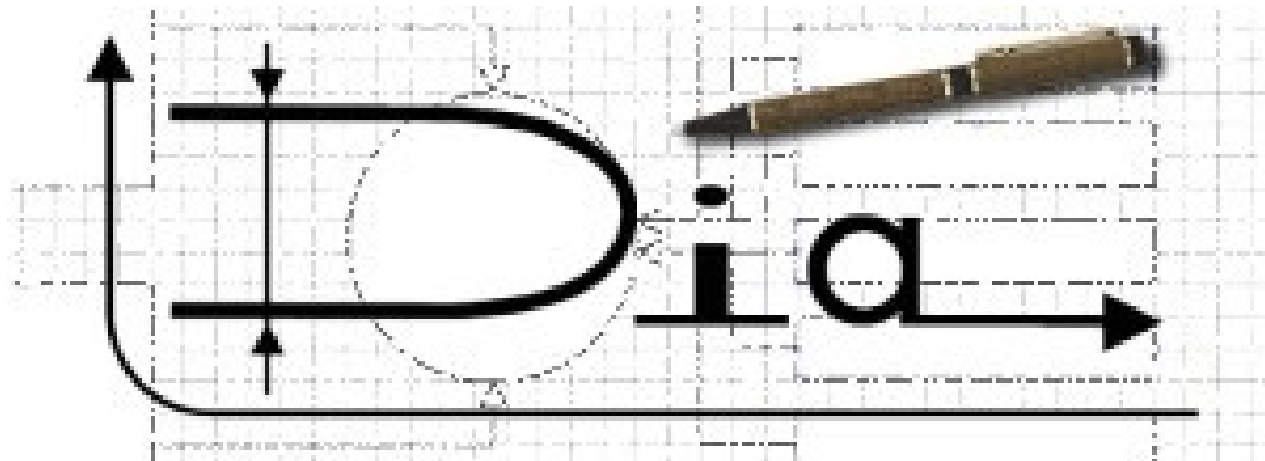


INKSCAPE

Draw Freely.

Scalable Vector Graphics (SVG)

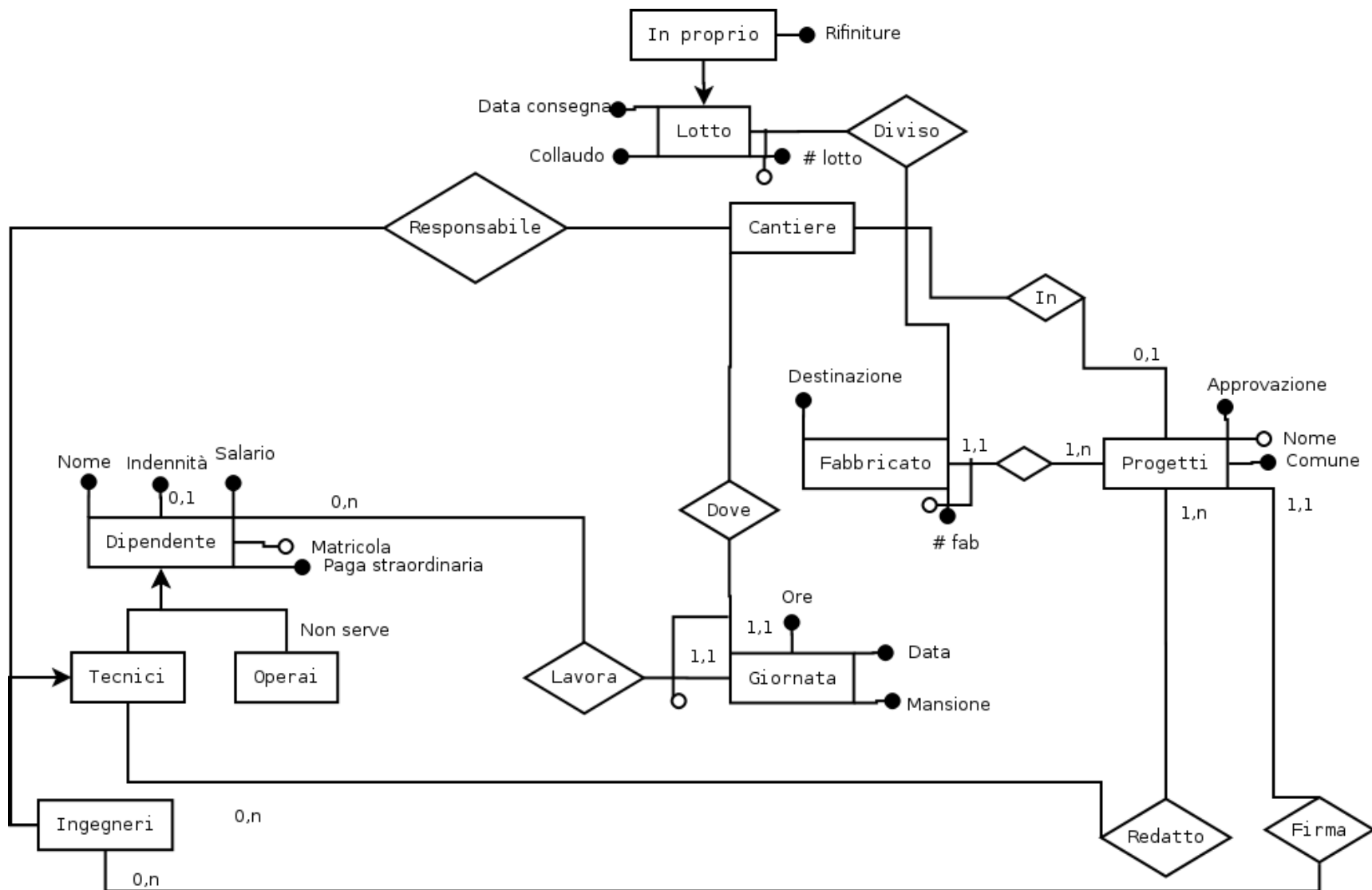




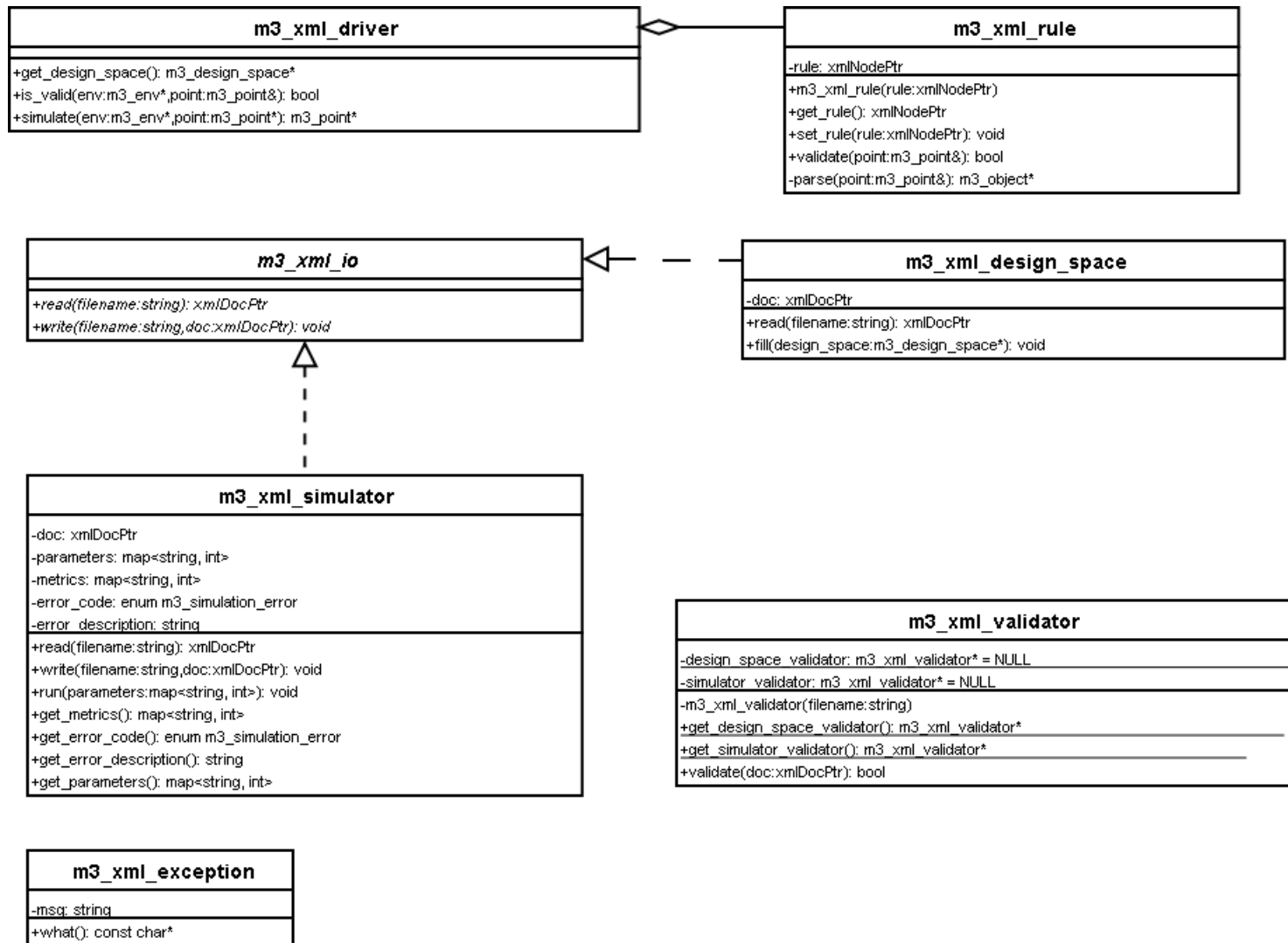
Dia

- UML
- Entità-Relazione
- Diagrammi di flusso
- Reti di computer
- Circuiti elettrici
- ...

Esempi (E-R)



Esempi (UML)



Domande?



Grazie per l'attenzione!



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