Isabelle document preparation with Springer LaTeX LNCS style

Makarius Wenzel[0000−0002−3753−8280]

Augsburg, Germany
https://sketis.net

Abstract. Isabelle is a formal document preparation system. This example shows how to use it together with the Springer LaTeX LNCS style. See https://www.springer.com/gp/computer-science/lncs/conference-proceedings-guidelines for further information.

Keywords: Document preparation

1 Some section

1.1 Some subsection

1.2 Some subsubsection

Some subsubsubsection

A paragraph. Informal bla bla.

definition *foo* = *True* — side remark on *foo*

definition *bar* = *False* — side remark on *bar*

lemma *foo* ⟨*proof*⟩

Another paragraph. See also [1, §3].

2 Formal proof of Cantor's theorem

Cantor's Theorem states that there is no surjection from a set to its powerset. The proof works by diagonalization. E.g. see

- http://mathworld.wolfram.com/CantorDiagonalMethod.html
- https://en.wikipedia.org/wiki/Cantor%27s%5fdiagonal%5fargument

theorem *Cantor*: $\nexists f :: 'a \Rightarrow 'a\ set.\ \forall A.\ \exists x.\ A = f\ x$
proof
  assume $\exists f :: 'a \Rightarrow 'a\ set.\ \forall A.\ \exists x.\ A = f\ x$
  then obtain $f :: 'a \Rightarrow 'a\ set$ **where** $*$: $\forall A.\ \exists x.\ A = f\ x$ **..**
  let *?D* $= \{x.\ x \notin f\ x\}$
  from $*$ **obtain** a **where** *?D* $= f\ a$ **by** *blast*
  moreover have $a \in$ *?D* $\longleftrightarrow a \notin f\ a$ **by** *blast*
  ultimately show *False* **by** *blast*
qed

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References

1. Wenzel, M.: The Isabelle System Manual, `https://isabelle.in.tum.de/doc/system.pdf`