

Isabelle document preparation with Springer L^AT_EX LNCS style

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Abstract. Isabelle is a formal document preparation system. This example shows how to use it together with the Springer L^AT_EX 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>

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theorem Cantor:  $\nexists f :: 'a \Rightarrow 'a \text{ set}. \forall A. \exists x. A = f x$ 
proof
  assume  $\exists f :: 'a \Rightarrow 'a \text{ set}. \forall A. \exists x. A = f x$ 
  then obtain  $f :: 'a \Rightarrow 'a \text{ set}$  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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Acknowledgments. Isabelle/Scala was of great help to assemble the llncs system component; see also `~/src/Pure/Admin/component_llncs.scala` and `$ISABELLE_LLNC_HOME`.

Disclosure of Interests. I have a long-standing interest in the wealth and prosperity of the Isabelle open-source project.

References

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