

# The Coq Proof Assistant

## The standard library

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Version 8.16.0<sup>1</sup>

$\pi r^2$  Project (formerly LogiCal, then TypiCal)

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This document is a short description of the COQ standard library. This library comes with the system as a complement of the core library (the **Init** library ; see the Reference Manual for a description of this library). It provides a set of modules directly available through the **Require** command.

The standard library is composed of the following subdirectories:

**Logic** Classical logic and dependent equality

**Bool** Booleans (basic functions and results)

**Arith** Basic Peano arithmetic

**ZArith** Basic integer arithmetic

**Reals** Classical Real Numbers and Analysis

**Lists** Monomorphic and polymorphic lists (basic functions and results), Streams (infinite sequences defined with co-inductive types)

**Sets** Sets (classical, constructive, finite, infinite, power set, etc.)

**Relations** Relations (definitions and basic results).

**Sorting** Sorted list (basic definitions and heapsort correctness).

**Wellfounded** Well-founded relations (basic results).

**Program** Tactics to deal with dependently-typed programs and their proofs.

**Classes** Standard type class instances on relations and Coq part of the setoid rewriting tactic.

Each of these subdirectories contains a set of modules, whose specifications (GALLINA files) have been roughly, and automatically, pasted in the following pages. There is also a version of this document in HTML format on the WWW, which you can access from the COQ home page at <http://coq.inria.fr/library>.