

Title: Systems for formal mathematics

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Abstract: The Mizar type system is a relatively sophisticated system as it allows for many properties, such as independent types, attributes, overloading, subtyping, structures and many others. All these properties make formalization of mathematics more intuitive in Mizar than in other systems. However, there is a need to verify mathematical results formalized in Mizar in other systems, so that belief in consistency of Mizar system is strengthened. Attempts at reconstruction of this type system in other mathematics formalization systems follow directly from this requisite.

The present work seeks to reconstruct Mizar type system in HOL Light system. The basic idea here is to represent Mizar types as predicates in this system (HOL Light). The present work also aims at precise description of relevant parts of Mizar type system. The thesis concludes by reviewing some of the insights that were arrived at in the course of designing and implementing suggested reconstruction.

Keywords: type system, Mizar, HOL Light