

The thesis introduces a tool for analyzing models written in the specification language DeSpec and translating them into the Zing modeling language. Resulting models can be verified by the Zing model checker. The DeSpec language is designed primarily to specify the Windows NT kernel driver environment. It makes it possible to abstract this environment in the object-oriented way and it uses temporal logic patterns to capture rules imposed by the Windows kernel on drivers. The Zing language is designed to describe executable concurrent models of software, which can be explored by the Zing model checker. Properties to check are expressed by the assertions. So far, there has been no way to automatically extract a model from DeSpec specification and verify its properties by a model checker. The DeSpec-to-Zing compiler takes a crucial part in this task. The thesis demonstrates that it is feasible to translate DeSpec specifications into Zing models and that DeSpec is a suitable language for model checking of the Windows kernel driver environment. The introduced analyzer is capable to check correctness of DeSpec specifications and under the constrained conditions given by absence of other necessary tools it is capable to translate a subset of specifications into the Zing model.