

Abstract

As a result of the fast growing mobile (application) market the need for reliable and trusted mobile applications is growing. Telecom operators need to guarantee that software can be trusted and behaves according to its specification. In particular investigation is done of the current informal use of flow charts, also known as midlet navigation graphs, as a basis for formal specification that enables rigorous testing and program verification. Midlets are the most common applications running on a mobile device.

This research mostly describes the basis for a solution for modeling software specifications in such a way that it can be checked using a formal verification tool. The midlets, written in Java, are annotated with JML and verified with the tool ESC/Java2. This annotation is based on the formal specification described in this paper.

A basic definition of a formalism for midlet navigation graphs is given for modeling and verification of a midlet. A midlet navigation graph is actually a state diagram which represents the basic behavior of a midlet. The possible displays, display changes, command events and simple policies are defined in the midlet navigation graphs. Also the translation of the building blocks of midlet navigation graphs to JML is given.

The result of this research is only a first step. But the most important conclusion is that it is possible to define a standard specification to verify a midlet. First a implementation of a more complicated midlet must be produced to ensure the practical value of the definition. After that the definition of a formalism for midlet navigation graphs must be extended with more advanced aspects of a midlet like for example multi-threading.