# Formalization of the Java$_\lambda$ type system
## – Abstract –

Martin Plümicke

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In Java 7 the language will be expanded by closures ($\lambda$–expressions) and function types. This expansion would be another step to extend the Java type system to a polymorphic type system as we know from functional programming languages like SML or Haskell. We present a motivation for the introduction of closures in Java 7. We give a small overview of the three known approaches [BGGvdA, LLB, CS].

We give a formal definition for an abstract syntax of a reduced language Java$_\lambda$, define the type system, and formalize the subtyping relation along the actual specification [lam10].

We define the set of types as an extension of our definition of Java 5 generic types [Plü09]. We give type inference rules, which describe the typings of Java$_\lambda$ expressions and statements.

The type inference rules are equivalent to the type inference rules which are given by Fuh and Mishra [FM88]. Following this we sketch an approach to adapt their type inference to Java$_\lambda$.

## References

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[lam10] Project lambda: Java language specification draft. `http://mail.openjdk.java.net/pipermail/lambda-dev/attachments/20100212/af8d2cc5/attachment-0001.txt`, 2010. Version 0.1.5.

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