Esterel and Jazz : Two Synchronous Languages for Circuit Design

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Abstract. We survey two synchronous languages for circuit design. Esterel is dedicated to controllers implemented either in software or in hardware. Esterel programs are imperative, concurrent, and preemption-based. Programs are translated into circuits that are optimized using specific sequential optimization algorithms. A verification system restricted to the pure control part of programs is available. Esterel is currently used by several CAD vendors and circuit design companies.

Jazz is a newer language designed for fancy arithmetic circuits. Jazz resembles ML but has a richer type-system that supports inheritance. The current environment comprises a compiler, simulators, and code generators for the Pamette Xilinx-based board. Both languages are not only formal but based on real mathematics. We discuss why this is essential for good language design.

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