Introduction to Small Device C Compiler

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Abstract

Small Devices C Compiler (SDCC) is an ANSI C compiler suite designed especially for microprocessors. This suite is a collection of components based on different sources, but all are under FOSS licenses. Notable components include a complete toolchain (C preprocessor, C compiler, assembler and linker), runtime libraries, simulators and a debugger. The compiler implements almost whole ANSI C specification with several exceptions. It also supports a large number of generic and MCU specific extensions. Significant generic extensions includes binary constants (0b1010), absolute addressing of variables and inline assembler directives. SDCC compiler performs many standard optimizations and also some MCU specific ones. This includes for example sub-expression and dead code elimination, copy propagation, loop optimizations and many more. Great effort was put into making bit operations as efficient as possible. SDCC also have tools for debugging of the code. Debugging can be performed either on simulator included in the suite, or even on the target MCU.