Compiler development tool helps deliver high-performance C compilers for embedded processors

When Zilog decided to generate its new compilers in-house, it selected ACE's CoSy® compiler development system because of its ease-of-use, flexibility and quick time to market advantage

Zilog faced an important turning point when they decided to provide customers with ANSI C compilers that they developed in-house. Zilog, based in Campbell, California, has built its reputation by providing its customers with support tools designed in accordance with industry standards whenever possible. They needed a compiler generation tool that offered great flexibility with high-quality and optimal performance for the families of microprocessors, general purpose DSPs and microcontrollers they sell. And, they wanted to hit some particularly tight market windows. After significant research, the development team couldn't find a single tool that did everything they wanted. That is, until they discovered ACE's CoSy compiler development system.

"We were trying to build C compilers for DSP products using standard compiler generation products. However, after three months of limited progress, we determined that other products could not accomplish what we required for our DSP products," said John Elliott, senior member of the technical staff at Zilog. "When I went to an ACE meeting, I knew what type of product we needed. They answered all of my questions correctly and responded satisfactorily to DSP issues. In our opinion, the competition couldn't do the compilers that we needed. We've been using CoSy ever since."

Compiler generation is a tricky proposition, particularly for DSPs when using a standard language such as C or C++. Hand-crafted assembly code will provide the optimal performance, but it takes an experienced programmer and a significant amount of time.

Thanks to CoSy's extensive use of generators, and its DSP-C language extensions, high-performing standard code is delivered quickly and cost-effectively.

According to John Elliott, the first compiler they did was a pleasant surprise. "It's not just as good as, it's actually better than the existing compilers in the market, in terms of code quality and compilation speed."

"Our compilers can compete with the best compilers that are available and we can generate them in one-third or one-quarter of the time, thanks to ACE's CoSy compiler development system. There's no other tool on the market that provides the capabilities and quality of CoSy."

Jack Davis, ZiLOG's Vice President of Development Tools in Austin, Texas

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Timing was a big issue for Zilog's development team. They had a delivery date to meet. Once again, CoSy helped them to achieve their goal.

"It took several weeks to fully come up to speed on the product, but after that, it's pretty much a hands-free development environment. Once you complete the initial experimentation phase with the tool, you can generate high-quality compilers very, very quickly," added John Elliott.

"Our first compiler took quite a bit less than six months to generate. That's probably three or four times faster than what you would ever expect to get from competitive products. It's significantly easier to do good quality compilers using CoSy, with the emphasis on good quality."

John Elliott had a few additional things to be grateful for. "The ACE team is really professional and they understand their product. And, their technical support is excellent. They have a very quick response time to queries; usually within 24 hours they have a solution to any issues that might come up. And, there haven't been that many issues, so I'm very happy with that."

About ACE . . .

ACE Associated Compiler Experts (a wholly owned subsidiary of ACE Associated Computer Experts, Amsterdam, The Netherlands) is a world leader in the production of compiler development tools for professional compiler developers. Its open CoSy compiler development system gives compiler developers the ability to achieve a similar leading edge position in the construction of better and faster optimizing compilers for architectures ranging from 4-bit DSPs to 256-bit VLIW processors.

About CoSy . . .

The revolutionary CoSy compiler development system is used to construct compilers for various languages including C, Fortran and Java, for a wide range of architectures. The extensive use of generators leads to a more robust product with lower development costs, which in turn means that the time to market is appreciably shorter. The modular approach, covering isolated compiler component development, reuse of components and the specialization and focus of compiler development groups, leads in turn to lower development and maintenance costs.

Added Jack Davis, "CoSy is definitely our preferred compiler development environment, and we'll continue to use it in the future."