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TOUGHEST ASSIGNMENT

This is easy! The PostScript Interpeter at AGFA was a challenge and the garbage collector was the most difficult part of the job.

I was with AGFA for 3 years. The task was to convert their PostScript Level 1 interpreter to PostScript Level 2 and to ship it on a variety of printing devices. The job took 3 years and I contributed 70,000 line of portable C code which ran on Solaris (Sparc and x86), IBM/AIX PPC, DOS and Windows NT 3.5. It supported little-endian and big-endian 32 bit architectures. My role in the project was to write the PostScript Language Interpreter and other engineers dealt with graphics, color, screening, fonts, and product integration with hardware. Every byte that enters an AGFA printing product runs the gauntlet of my code!

I tackled it in three stages:

1) I started adding PostScript Level 2 capability while trying to understand the code that was already written. This stage continued for about 9 months before I came to the conclusion that it would be quicker to rewrite the existing code than to keep patching and fixing it.

2) I rewrote the main body of the interpreter. Within about 3 months I was ahead of where we were at the start of the rewrite and moving much more quickly. In less than a year we were approaching code complete. I wrote around 50,000 lines of the code in less than a year.

3) Test and Integration took about 1 year. We purchased a third-party test suite for PostScript and dealt with every differences between Adobe's implementation and our interpreter. I also polished and optimized the code for performance. The interpreter was about 2x the performance of the Adobe implementation.

The most difficult part was the Garbage Collector. This uses a recursive mark and sweep technique. There's no magic to getting it to work. The design is very simple and the debugging requires a cool and sober head. The garbage collector is often 100 levels deep in recursion.

Things that helped hugely in this task were:

- Good System Architecture Drawings with which to discuss issues with the team

- Liberal Use of ASSERT (and other configurable Macros) sp

- Extensive debugging instrumentation which could be called from PostScript or from dbxtool

- Very good test suite

- Great Team Leader

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