HP BCG BASIC

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ABSTRACT

This paper describes the strategy for developing and maintaining a competitive, compatible BASIC language and compatible BASIC interface to tools (e.g., database, data entry, reports, graphics) for the Business Computer Group families (125, 250 and 3000). BCG BASIC project objectives, features, technology used and conversion aids will be discussed.

BACKGROUND

It has long been a goal at HP to have a single HP standard for BASIC to provide a growth path through the desktop computers to the HP1000 and the commercial machines (HP125, HP250 and HP3000). However, the implementors on single-user single-language machines and those on multi-user multi-language machines differ philosophically with respect to the inclusion of operating system functions at language level. As a result, we have more than a dozen BASICs at HP, most of them are incompatible with one another.

Our near-term goal is to narrow the number of BASICs at HP to two: BCG BASIC and TCG BASIC. In August this year, the General Systems Division has been given the charter of the BCG BASIC. GSD has the total responsibility for developing and maintaining a competitive, compatible BASIC language and compatible BASIC interface to tools (e.g., database, data entry, reports, graphics) for the Business Computer Group families (125, 250, 3000 and future BCG computers).

OBJECTIVES

Compatibility across all BCG machines is the primary objective. It is difficult to write an application program without using any tools such as database, data entry and report writers.

Even if we achieve 100% language compatibility but don't have a common interface to the application tools, then it will be extremely difficult to transport programs from one system to the other. Thus for the BCG BASIC project, we set the following objectives:

- To provide a compatible BASIC language for the HP3000 and future BCG products.
- To provide an upgrade path for current users of BASIC/250, BASIC/125 and BASIC/3000.
- To be a user-friendly system in the 250 tradition.
- To provide uniform interfaces to application tools on all target systems.
- To provide conversion aids for current 125, 250 and 3000 BASIC users ensuring at least 80% automatic conversion.

FEATURES

The new ANSI BASIC standard, expected to be adopted in 1982, describes a very full and powerful BASIC language. It provides the user with capabilities and features previously lacking in the language and necessary for large applications. HP needs a compatible BASIC across all its product lines, and conforming to the BASIC ANSI standard is the best way to accomplish that.

BCG BASIC will include all of the features specified in the ANSI BASIC Level I standard proposed by ANSI-ECMA. In addition, many of the better features of the HP250 and HP125 will be implemented.

Highlights of the BCG BASIC include:

- Identifier names up to 31 characters long
- Named subprograms
- Sophisticated exception handling
- Integrated file system
- Arrays up to six dimensions
- Commercial formatter
- 250-like programmer interface
- Built-in application tools for database and Forms Management
- Alphanumeric labels
- IF-THEN-ELSE, WHILE-LOOPS AND CASE constructs
- Templates for reading files written by other languages
- Enhanced string handling
- Support for non-English character sets and collating sequences

TECHNOLOGY USED

The BCG BASIC will use our Portable Compiler Writing System (PCWS) which is an integrated compiler system for a set of Programming languages and machine architecture and has been under development at HP for the last two years. The PCWS consists of a Common Intermediate Data Structure (CIDS), which is source language and architecture independent, and a Code Generator for each machine. With PCWS, it permits the production of M different languages for N different machines with only (M+N) rather than the traditional (MxN) programs.

Other advantages of the PCWS approach include the following:

1. Provides the user with uniformity across architectures for a given language and across languages for a given architecture.

2. Reduce development and maintenance costs.

3. Increase reliability and efficiency.

4. A global optimizer can be produced to work on the CIDS and hence all compiled languages.

In order to provide the friendly, interactive environment of the HP250, and to eliminate the current problem of having inconsistencies between the compiler and interpreter, BCG BASIC will be a hybrid interpreter/compiler implementation. Run-time performance should be somewhere between the current HP3000 interpreter and compiler. Special terminal drivers will be implemented for BCG BASIC to provide the 250 "personality".

CONVERSION AIDS

Utility programs will be developed which will attempt to automatically convert 125, 250 and 3000 BASIC programs and data files to BCG BASIC. A report will be generated detailing the changes made to the program. If the converter has problems or cannot translate certain constructs, the user will be asked for more information and/or the statement in question will be flagged for manual conversion.

Our goal is to have at least 80% automatic conversion for current 125, 250 and 3000 BASIC programs. This means that the users' conversion effort will be no more than 20% of the effort required to rewrite the application.