PEARL

Language Reference Manual

P E A R L

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NOTICE

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PREFACE

PEARL (Process and Experiment Automation Realtime Language)
is a general purpose high order language designed to meet the requirements
of realtime programming in all fields of process and experiment automation
by means of computers.

PEARL has been developed in the period from 1969 until 1976 by cooperation
of German manufacturers (e.g. AEG , BBC , Siemens), software and systems
houses (e.g. ESG , GEI , GPP , IDAS , mbp , Werum), scientific institutes (e.g.
Hahn-Meitner-Institute of Berlin, Nuclear Research Centre of Jülich,
Universities of Erlangen, Heidelberg and Stuttgart) and users, organized
by GMR - VDI/VDE, the German association of engineers. The development
has been managed by the project PDV of the Kernforschungszentrum
Karlsruhe GmbH; it has been supported by the Federal Ministry of Re-
search and Technology of Germany. More detailed information about
history and applications of PEARL can be read in Martin 78 and Martin 79.

In the mid of 1978 the draft standard of Basic PEARL was published
(Standard 78). This standard defines that subset of the full language PEARL,
which has to be common to all PEARL implementations. Basic PEARL
is candidate for ISO standard. The draft standard of Full PEARL was
finished in mid of 1980 (Standard 80).

Since 1979 the PEARL Association cares about PEARL activities of
common interest, especially about interests of PEARL users.

This language reference manual describes a subset of Full PEARL, which
contains in addition to Basic PEARL those language features of Full PEARL
necessary for elegant and efficient programming of complex applications.
In principal only those features of Full PEARL are not considered, which
require additional storage and administration effort at runtime. The exten-
sions and restrictions in contrast to Basic PEARL and Full PEARL, resp.,
are listed in the appendix.

For this language Werum developed a portable compiler, which has been used by Werum and other institutions to implement the language on the computers

- Amdahl 470/6   (for cross compilation)
- Hewlett Packard HP 1000
- Hewlett Packard HP 3000
- Norsk Data NORD 10 , NORD 100
- RDC   (a Really Distributed Control System; see Syrbe 78)
- Siemens 404/3
- Siemens 310
- Siemens 330
- Siemens 7.760   (for cross compilation)

The manual consists mainly of three parts: first, the introduction characterizes the "new" features of PEARL, i.e. the most important differences to older high order languages like FORTRAN or PL/I.
For reasons of good understanding the second part describes only those features necessary to write simple programs. Additional possibilities are presented in the third part, which is followed by selected references to literature. For further references see Martin 78, Martin 79 and Kappatsch 79.

The appendix contains a list of all keywords, a table showing the valid possibilities to use the data types and a complete syntax description.
(In order not to confuse the reader, the paragraphs often don't define the complete syntax of a language feature.) Paragraph 4 and 5 of the appendix list the extensions and restrictions in contrast to Basic PEARL and Full PEARL , respectively.

The language reference manual presented here is a translation of Werum 78 taking into account most recent standardization results (Standard 80).