Datasheet
Fujitsu Software BS2000
COBOL2000 V1.5

COBOL compiler for the BS2000 operating system for object-oriented programming with the main functions of the COBOL2002 standard.

Topics

COBOL2000 (Common Business Oriented Language for BS2000) is a high-level, object-oriented programming language. COBOL is by far the most commonly used programming language worldwide for solving commercial data processing tasks.

The strength of COBOL lies in its efficient processing and manipulation of extensive data resources. COBOL notation is modeled on natural English language, so COBOL programs are easy to read and understand, even when written by other programmers.

Product characteristic

The implementation of the international standard is being taken another step forward in COBOL2000 V1.5. Beside the functional range of the previous version COBOL2000 V1.4 beginning with this version will offer the processing of XML-Documents from this version.

The product CRTE will be used as the runtime system for COBOL2000 V1.5.

Object-oriented techniques have become established in programming languages such as C++ and Java and are now making inroads into the COBOL language. Conforming to the COBOL2002 standard, Fujitsu Technology Solutions COBOL compiler COBOL2000 provides elements (classes, interfaces, methods, inheritance, polymorphism) for programming with the new paradigm. Method calls and classical subroutine calls can now be programmed recursively. Exception handling offers an effective means of responding to error situations on a program-specific basis. A Repository supports the management of the interfaces between the individual programs and permits conformance checks. Needless to say, COBOL2000 provides full upward compatibility with COBOL85. As well as the functionality for programming in the OO paradigm, the new COBOL compiler also provides greatly extended options for control of compilation and program execution, for communication and for data exchange with other programs. These systematically improved and extended features are primarily responsible for making life easier for BS2000 customers when

programming in the COBOL language and effectively support them in producing top-quality software at high levels of productivity and reliability.

POSIX extensions:
COBOL2000 supports the POSIX functionality and the POSIX file system in BS2000.
The COBOL2000 compiler is available in the following selectable units:

COBOL2000 full configuration:
Compiler without runtime system
with AID support
with POSIX/XPG4 support
with UDS-DML (native UDS support)
with Report Writer

COBOL2000-BC basic configuration variant:
Compiler without runtime system
without AID support
without POSIX/XPG4 support
without UDS-DML (native UDS support)
without Report Writer
without Starter phase

CRTE is the common runtime environment for COBOL85, COBOL2000 and C/C++.

CRTE is a software requirement for use of the COBOL2000 V1.5 compiler and for running COBOL2000 V1.5 applications.

CRTE is not supplied together with the COBOL2000 compiler. CRTE is a part of the corresponding BS2000 operating system.

COBOL2000 supports the symbolic debugging of COBOL programs with the AID interactive debugger (not with COBOL2000-BC). AID version V3.4 is required for debugging COBOL applications generated with COBOL2000 V1.5

Functional description

Enhancements in COBOL2000 compared to COBOL85

- Support of data type NATIONAL in order to display characters in the character set Unicode UTF-16
- user-defined types in tables
- data fields and data file sets with length 0
- Optimization of SORT-calls
- Usage parallel installed compiler versions
- Support for parameterized classes and parameterized interfaces as part of object-oriented programming according to the COBOL2000 standard
- Extension of the functionality by user-defined types (TYPE and TYPDEF clause).
- Extension of the functionality with the ALLOCATE and FREE statements for reserving and releasing
- dynamic memory
- Basic exception handling functions
- TURN directive for controlling exception handling
- Language elements for handling exception statuses in USE procedures
- RAISE and RESUME statements
- EXCEPTION-STATUS function for querying the last exception status
- Extension of the SET statement
- Extension of the INITIALIZE statement by the VALUE clause
- Compiler directives
- Extension of compiler control with the CALL-CONVENTION, IMP and TURN directives
- Support for free-format coding
- Extension of the classical program text area to the entire line. The program text may be written freely on a line up to a length of 248 characters.
- VERDI list, condensed source code listing with addresses, lengths and cross-references
- PROGRAM POINTER, new language element
- Extensions to the object-oriented language elements
- IMPLEMENTS clause,
- ACTIVE-CLASS and Object view as parameter
- Interface definitions of the BASE system class (BASEINTERFACE, BASEFACTORYINTERFACE)
- Support for additional BS2000 SORT functionality (XHCS, SORT-CCSN, sort sequence control option)
- Support for 31-character names
- Optional PICTURE clause
- Conditional compilation functionality conforming to COBOL2002 standard.
- XS capability of the compiler

- Garbage collection for OO objects if storage bottlenecks occur during the instantiation of new objects
- ANY LENGTH clause for formal parameters in methods
- Overwrite option in the NEW method for special object-specific initializations
- Support for files in objects
- Support for hexadecimal literals
- Numeric data fields extended from 18 to 31 decimal places
- Extensions to the INITIALIZE statement
- READ PREVIOUS for access to indexed and relative files
- Extensions to the compiler directives for controlling conditional compilations

Exit from Outline Perform procedures (EXIT PARAGRAPH statement).

Extensions in this version

Language tools to process XML-documents:
- provisioning of XML-documents
- Uses from XML-language-tools in programs
- binding, loading and starting of programs with XML-language features
- recognition of character sets, which are used for the presentation of XML-documents
- provisioning of the XML-parser
- expanded I/O-status for XML-commands

Product description

The COBOL2000 development system consists of the COBOL2000 compiler and the Common Runtime Environment CRTE (BS2000). CRTE is the common runtime environment for COBOL2000, COBOL85 and C/C++.
The COBOL source program is input to the COBOL2000 compiler via files, via SYSDTA, via program libraries (PLAM) or from the POSIX file system. The output from the compiler is an object module or LLM and compilation listings.
The object modules are output to the temporary module file (OMF), to program libraries (PLAM) or to the POSIX file system. The object modules resulting from one or more independent compilation runs must be linked together with CRTE to form a load module.
A PLAM library is also used for input and output of repository data.

The generated /390 format guarantees module compatibility for running BS2000 customer applications even through future architectural changes.

The compilation is controlled via the SDF interface, by COMOPT control options or from the POSIX shell. Error messages are output in English or German.
A syntax and semantic check on a COBOL program can be performed by starting a compiler run without code generation.
Objects generated by COBOL2000 can be shared. This means a reduction in storage space and load calls.
Objects generated by COBOL2000 can be run above the 16 MB address space level.
The COBOL2000 applications can make use of an address space of up to 2 GB.
A COBOL program can process files with different organizational structures. The form of organization selected by the user determines the access method used by the file management system.
COBOL2000 supports the POSIX functionality and the POSIX file system in BS2000. BS2000 and POSIX files can be processed simultaneously in a COBOL program.
Programs can be linked with other COBOL2000 or COBOL85 programs or with C/C++, Fortran, Pascal, PL/I, RPG3 and Assemble programs via the language-interfacing component of the CRTE (Common Run-Time Environment).
Communication with other COBOL programs and with the operating system is made possible by user and task switches, job variables, command line parameters and shell variables.
If required, symbol information for symbolic interactive debugging with AID can be generated with the full configuration variant of COBOL2000.
Language enhancements compared to COBOL Standard 1985 and aged language elements can be marked with special hints
Statements to the UDS/SQL database system can be integrated into COBOL programs using the COBOL DML (Data Manipulation Language).
The ESQL-COBOL precompiler implements the COBOL program interface to the SESAM/SQL database systems via embedded SQL. This enables SQL functions to be invoked directly from within COBOL programs (separate software).

Technical Details

Requirements	
Technical Requirements Hardware	BS2000 Business Server
Technical Requirements Software	BS2000 OSD/BC V11.0, OSD/XC V11.0
User Requirements	Knowledge of BS2000

Installation	
Operating Mode	Batch and interactive dialog
Implementation Language	C/C++, COBOL, SPL4 and Assembler
User Interface	Commands in English Messages in English or German
Installation	Please refer to the relevant release notices.

Documentation and Training	
Documentation	The manuals for COBOL2000 are available on the manual server.
Training	See course offer (German only)

Purchase and Delivery	
Conditions	This software product is provided to customers under the terms and conditions for the use of software products in return for ongoing or one-time payment.
Order and Delivery	This software product may be obtained from your local Fujitsu regional office. This software product may be obtained from

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