

Document generation for Fortran90/95 programs by RDoc

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We improve Ruby Documentation System (RDoc) so as to generate reference manuals of Fortran90/95 programs automatically. The improved RDoc parses Fortran90/95 source codes, and extracts definitions for modules, subroutines, and variables, etc. The RDoc generates HTML format documents in which these definitions are described with optional documents contained in comment blocks. Dependences between modules are also described as hyperlinks in HTML documents.

Maintenances of documents are important not only for necessity as a software offered to third parties, but also for efficiencies of developments and maintenances. However, when document files and source code files are separately managed, a similar but different update with these files is needed. In this situation, developers of a small-size development group bear a large burden. This problem becomes more severe, especially in a stage when programs are frequently updated. A way to reduce the burden is to embed documents in source codes and to manage as a single file.

There have been a lot of attempts for facilitating generation of documents, especially, reference manuals, for a numerical model written in Fortran90/95. For example, in Balaji (2002), the XML format descriptions are embedded in comment sentences, and are extracted by script. As more automated method, there exists a method using a parser of Fortran90/95 source codes of RDoc which is a standard library of the object-oriented scripting language Ruby. The parser analyzes source codes and comment sentences, and a HTML generator bundled in RDoc creates HTML format documents based on the comment sentences.

RDoc has source codes parsers and document generators, separately. The parsers handle source codes written in well-known programming languages, including Fortran90/95. Because RDoc parses dependences between modules automatically, descriptions about the dependences is unnecessary in documents. However, an official version of RDoc has following problems. The first one is that a Fortran90/95 parser cannot extract definitions for functions and variables, etc. The second problem is that RDoc cannot take comment sentences into documents satisfactorily.

We improve the Fortran90/95 source codes parser of RDoc, and enrich information described in generated documents. The improved RDoc parses Fortran90/95 source codes, and extracts definitions for modules, subroutines, functions, variables, constants, derived-types, defined operators, and defined assignments. It generates HTML format documents which describes these definitions associated with optional documents contained in comment block. It also parses dependences between modules, and describes the dependences in documents as hyperlinks. For subroutines and functions, the types of argument with comment sentences about arguments are parsed and described in documents automatically. The improved version of RDoc reduces the cost for maintenance of reference manual of a numerical model written in Fortran90/95. We release this improved version of RDoc Fortran90/95 parser in <http://www.gfd-dennou.org/library/dcmmodel/>

References

Balaji, V., 2002: <http://www.gfdl.noaa.gov/~vb/FMSManual/FMSManual.html>