

METHOD AND APPARATUS FOR PROVIDING INTER-VERSION DOCUMENT COMPATIBILITY

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority under 35 U.S.C. 119 from Chinese Patent Application 200810166375.X, filed Sep. 26, 2008, the entire contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to the field of data processing, and in particular, to a method and apparatus for providing inter-version document compatibility.

[0004] 2. Description of Related Art

[0005] Most computer programs are modified by designers again and again to add new functions and to correct bugs, thus forming a plurality of release versions of the computer programs. Each release version is usually given a particular number as the version number or release number.

[0006] “Backward compatibility” means that a newer release version of a computer program can read a document generated by an earlier release version of the computer program. For example, Visio 2007 of Microsoft can be used to open a document created by Visio 2003. “Forward compatibility” means that an earlier release version of a computer program can read a document generated by a newer release version of the computer program. For example, Visio 2003 of Microsoft can be used to open a document created by Visio 2007.

[0007] Backward compatibility and forward compatibility are key considerations when designers design computer programs. Especially, backward compatibility has been a basic requirement for modern computer programs. However, making a computer program to include the function of backward compatibility or forward compatibility has brought great extra complexity to program development.

[0008] In a collaborating work environment, for example, within an enterprise, it is very difficult to update all desktop applications in a timely manner, and hence different versions of an application may exist at the same time. Different versions of an application usually correspond to different versions of a data model, which makes people who use the different versions of the application hard to cooperate with each other.

[0009] For example, FIG. 1 illustrates an exemplary scenario, in which a user who uses a version 2.0 application has a document which needs to be modified by a user who uses a version 1.0 application. Since it is often the case that a lower version program is unable to read a document produced by a higher version program, a conventional method is to develop a converter program to perform model conversion between versions.

[0010] However, such a conventional method has several defects. For example, in common situations, a program has many versions. Thus, it is necessary to develop many converters and thereby great efforts are needed. It is difficult to test the converters. When the converters convert between documents of different versions, it is easy to lose information. Because the converters are usually standalone applications,

they need to be maintained and distributed separately. This causes large amounts of work for both administrators and users of the applications.

SUMMARY OF THE INVENTION

[0011] In one aspect of the present invention, a method performed in a data processing machine provides inter-version document compatibility, by performing the steps of: providing a conversion stack which includes differentiation models between data models of different versions of an application; and converting between documents of different versions of the application by using the conversion stack to provide compatibility between the documents of the different versions of the application.

[0012] In another aspect of the present invention, computer readable instructions are tangibly embodied in a computer readable medium. When the computer executes the instructions, it is caused to perform the above process steps.

[0013] In still another aspect of the present invention, an apparatus provides inter-version document compatibility. The apparatus includes: a conversion stack which includes differentiation models between data models of different versions of an application; and a conversion module configured for converting between documents of different versions of the application by using the conversion stack, so as to provide compatibility between the documents of the different versions of the application.

[0014] An advantage of the present invention is that it is not necessary to develop a special converter for document conversion between each pair of versions. A general conversion module, a merging module, and a verification module are sufficient so that time and effort required for providing forward/backward compatibility for program designers and developers are reduced. In addition, in embodiments of the present invention, loss of information at the time of document conversion is avoided by providing the merging module. Accordingly, the present invention provides a more convenient and low-cost solution for providing inter-version document compatibility.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The present invention and its preferred modes, objects, features and advantages will be better understood by referring to the detailed description of the exemplary embodiments when read in conjunction with the attached drawings, in which:

[0016] FIG. 1 schematically illustrates a scenario where users using different versions of an application need to cooperate with each other for modification of a document;

[0017] FIG. 2 shows an apparatus for providing inter-version document compatibility according to an embodiment of the present invention;

[0018] FIG. 3 shows an example of data models of different versions of an exemplary application;

[0019] FIG. 4 schematically shows an exemplary editor application editing a document in a user interface and an object graph of the document in a memory;

[0020] FIG. 5 shows an exemplary data model instance represented in XML format;

[0021] FIG. 6 shows an exemplary operation process that an apparatus according to an embodiment of the present invention provides inter-version document compatibility, wherein the apparatus is in the application of each version;