CLAIMS

CLAIM 1. An embedded apparatus displaying an error message upon detection of a failure during execution of a program which is executed in the embedded apparatus, the embedded apparatus comprising:

a central processing unit configured to execute the program;

a program storage unit configured to store an executable compressed file where a plurality of files are combined as the program;

a failure detection unit configured to detect a failure based on storage contents of addresses storing execution results of instructions in a memory included in the embedded apparatus; and

an error message display unit configured to output the error message on a display device when the failure detection unit detects the failure, the error message including version information of the program, file identification information of the file, and line numbers of the instruction being executed in the file, the error message being described in the instruction.

CLAIM 2. The embedded apparatus according to

claim 1,

wherein the error message further includes error numbers for identifying error contents.

CLAIM 3. The embedded apparatus according to claim 1 or 2,

wherein the error message display unit is configured to read the version information described in the program, the file identification information, and the line numbers from predetermined addresses in a memory included in the embedded apparatus.

CLAIM 4. The embedded apparatus according to claim 3,

wherein the error message display unit is configured to read a first character string and a second character string from predetermined addresses of a memory included in the embedded apparatus, the first character string corresponding to a first argument of an instruction described in the program, the second character string corresponding to a second argument of an instruction described in the program.

CLAIM 5. The embedded apparatus according to claim 4,

wherein the first character string indicates that a failure occurs, and the second character string indicates a resolving means.

CLAIM 6. The embedded apparatus according to claim 3, further comprising:

an error table where a first character string and a second character string are associated and stored with a first argument of an instruction described in the program,

wherein the error message display unit is configured to read the first character string and the second character string corresponding to the first argument of the instruction in the error table, and arrange the first character string and the second character string at predetermined positions in the error message.

CLAIM 7. The embedded apparatus according to claim 6,

wherein the first character string indicates

an error name, and the second character string indicates error contents.

CLAIM 8. The embedded apparatus according to any one of claims 1 through 7, further comprising:

a program download unit configured to download the program from a connected server via a network,.

CLAIM 9. The embedded apparatus according to claim 2, further comprising:

a transmission unit configured to transmit the error message and identification information to an information processing apparatus connected via a network, the error message including at least the error number, the identification information identifying the embedded apparatus.

~~CLAIM 10. A program generation apparatus generating an executable compressed file where plural files are combined, the program generation apparatus comprising:~~

~~a file storage unit configured to store file designation information designating the plural files and the file to be combined;~~

~~a version information acceptance unit configured to accept an input of version information of the program;~~

~~an identification table generation unit configured to generate a file identification table by adding file identification information to the plural files designated in the file designation information; and~~

~~a symbol replacement unit configured to replace predetermined symbols described in the file with the version information accepted by the version information acceptance unit, the file identification information of the file registered in the file identification table, and line number of lines or nearby lines where the symbols are described.~~

CLAIM 10~~1~~. A ~~program~~ process for displaying an error message upon detection of a failure during execution of a program which is executed in ~~causing~~ an embedded apparatus, the embedded apparatus including

a central processing unit for executing the program and

a program storage unit for storing an executable compressed file where a plurality of files are combined as the program ~~and~~, the process comprising:

~~displaying an error message upon detection of a failure during execution of a program, to execute~~:

a failure detection step of detecting a failure based on storage contents of addresses storing execution results of instructions in a memory included in the embedded apparatus; and

an error message display step of outputting an error message on a display device when the failure detection step detects the failure, the error message including version information of the program, file identification information of the file, and line numbers of the instruction being executed in the file, and the error message being described in the instruction.

~~CLAIM 12. A program causing a program~~

~~generation apparatus, including a file storage unit storing file designation information designating plural files and a file to be combined and generating a compressed file by combining the plural files, to execute:~~

~~a version information acceptance step of accepting an input of version information of the program;~~

~~an identification table generation step of generating a file identification table by adding file identification information to the plural files designated by the file designation information; and~~

~~a symbol replacement step of replacing predetermined symbols described in the file with the version information accepted in the version information acceptance step, the file identification information of the file registered in the file identification table, and line numbers of lines or nearby lines where the symbols are described.~~

~~CLAIM 13. The program generated by the program generation apparatus according to claim 10, wherein the version information of the program, the file identification information identifying the file, and the line numbers of instructions being executed in the file are described in the compressed file where the plural files are combined.~~