EXHIBIT 4

WHAT IS CLAIMED IS

1. In a computer system comprising a program in source code form, a method for generating executable code for said program and resolving data references in said generated code, said method comprising the steps of:

a) generating executable code in intermediate form for said program in source code form with data references being made in said generated code on a symbolic basis, said generated code comprising a plurality of instructions of said computer system;

b) interpreting said instructions, one at a time, in accordance to a program execution control;

c) resolving said symbolic references to corresponding numeric references, replacing said symbolic references with their corresponding numeric references, and continuing interpretation without advancing program execution, as said symbolic references are encountered while said instructions are being interpreted; and

d) obtaining data in accordance to said numeric references, and continuing interpretation after advancing program execution, as said numeric references are encountered while said instructions are being interpreted;

said steps b) through d) being performed iteratively and interleavingly.

2. The method as set forth in claim 1, wherein, said program in source code form is implemented in source code form of an object oriented programming language.

3. The method as set forth in claim 2, wherein, said programming language is C.

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4. The method as set forth in claim 2, wherein, said programming language is C++.

5. The method as set forth in claim 1, wherein,

said program execution control is a program counter;

said continuing interpretation in step c) is achieved by performing said step b) after said step c) without incrementing said program counter; and

said continuing interpretation in said step d) is achieved by performing said step b) after said d) after incrementing said program counter.

6. In a computer system comprising a program in source code form, an apparatus for generating executable code for said program and resolving data references in said generated code, said apparatus comprising:

a) compilation means for receiving said program in source code form and generating executable code in intermediate form for said program in source code form with data references being made in said generated code on a symbolic basis, said generated code comprising a plurality of instructions of said computer system;

b) interpretation means for receiving said generated code and interpreting said instructions, one at a time;

c) dynamic reference handling means coupled to said interpretation means for resolving said symbolic references to corresponding numeric references, replacing said symbolic references with their corresponding numeric references, and continuing interpretation by said interpretation means without advancing program execution, as said symbolic references are encountered while said instructions are being interpreted by said interpretation means; and

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d) static reference handling means coupled to said interpretation means for obtaining data in accordance to said numeric references, and continuing interpretation by said interpretation means after advancing program execution, as said numeric references are encountered while said instruction are being interpreted by said interpretation means;

said interpretation means, said dynamic reference handling means, and said static reference handling means performing their corresponding functions iteratively and interleavingly.

7. The apparatus as set forth in claim 6, wherein, said program in source code form is implemented in source code form of an object oriented programming language.

8. The apparatus as set forth in claim 7, wherein, said programming language is C.

9. The apparatus as set forth in claim 7, wherein, said programming language is C++.

10. The apparatus as set forth in claim 6, wherein,

said program execution control is a program counter,

said continuing interpretation in step c) is achieved by performing said step b) after said step c) without incrementing said program counter; and

said continuing interpretation in said step d) is achieved by performing said step b) after said d) after incrementing said program counter.

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