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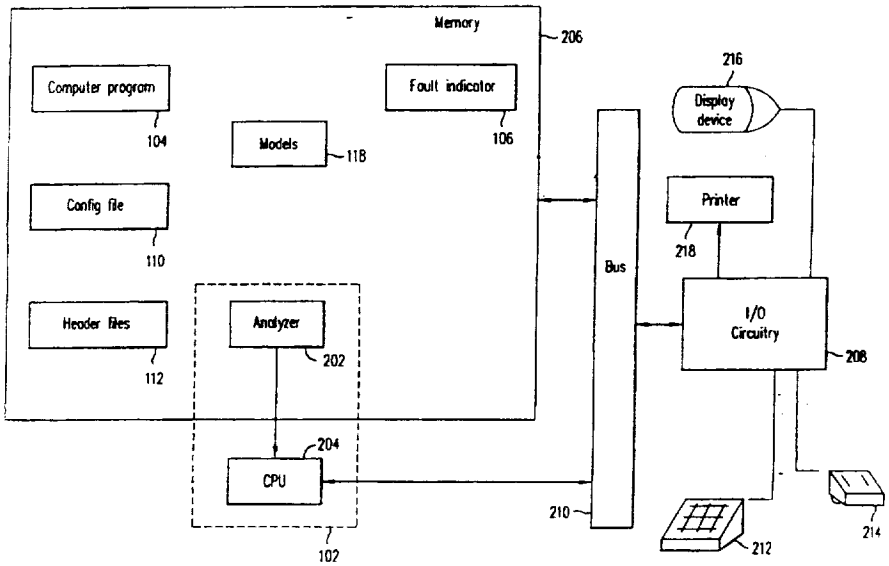

(57) Abstract

A computer program error detection system that by simulating execution of program statements (204) detects error in the program. An internal format structure (110) is retrieved along with a list of all functions defined by the program. The internal format structure is analyzed (202) to determine all call and function ordering. External behavior models corresponding to the function calls are stored in a model table (118). As control flow paths are traversed, a structural memory model is maintained to represent the effects of the simulated execution statement upon that path. A statement is simulated by executing a built-in model of the operation, while a function call is emulated by executing the external behavior model. The execution of the behavioral model updates the structural memory model. Information describing the memory model is logged for automodelling purposes. The automodelling information logged is analyzed (202), errors are detected/reported (106), and the results of each path are processed.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/14051

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G06F 13/00, 9/45
US CL :395/183.13-183.15, 183.01-183.05, 183.09, 701, 704
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 395/183.13-183.15, 183.01-183.05, 183.09, 701, 704

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, E	US 5,687,375 A (SCHWIEGELSHOHN) 11 November 1997, entire document.	1-41
A, P	US 5,590,329 A (GOODNOW, II ET AL.) 31 December 1996, entire document.	1-41
A, P	US 5,583,988 A (CRANK ET AL.) 10 December 1996, entrie document.	1-41
A, P	US 5,581,696 A (KOLAWA ET AL.) 03 December 1996, entire document.	1-41
A, P	US 5,574,854 A (BLAKE ET AL.) 12 November 1996, entire document.	1-41
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International application No.
PCT/US97/14051

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,446,900 A (KIMELMAN) 29 August 1995, entire document.	1-41
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A	MALLOY, B.A. Trace-driven and Program-driven Simulation: A Comparison, MASCOTS '94: Modeling, Analysis, and Simulation Int'l Workshop, IEEE, 1994, pp. 395-396.	1-41
A	ROSENBLUM, M. ET AL., Complete computer system simulation: the SimOs approach, IEEE Parallel and Distributed Technology, Vol. 3, Issue 4, 1995, pp. 34-43.	1-41