

Analyzing RBAC security policy of implementation using AST

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Abstract: Security policy is a critical property in software applications which require high levels of safety and security. It has to be clearly specified in requirement documents and its implementation must be conformed to the specification. In this paper, we propose an approach to check if the implementation is in accordance with its security policy specification. We use the Abstract Syntax Tree (AST), another manner of expressing the program, to analyze the source code and specify user permission policy in software systems by Role-Based Access Control (RBAC). ?? 2009 IEEE.

Index Keywords: Abstract Syntax Trees; Critical properties; Role-based Access Control; Security policy; Software applications; Software systems; Source codes; Computer software; Knowledge engineering; Security systems; Specifications; Systems engineering; Trees (mathematics); Access control

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References:

1. Ferraiolo, D.F., Kuhn, R.D., Chandramouli, R., (2007) Role-based access control, , Norwood, MA, USA: Artech House, Inc., Second Edition
2. Hansen, F., Oleshchuk, V., Conformance checking of RBAC policy and its implementation (2005) Lecture Notes in Computer Science, 3439, pp. 144-155. , Information Security Practice and Experience - First International Conference, ISPEC 2005, Proceedings
3. Ammar, M., Ghafoor, A., Mathur, A., Conformance testing of temporal role-based access control systems (2008) IEEE Transactions on Dependable and Secure Computing
4. Enderton, H.B., (2000) A Mathematical Introduction to Logic, , Second Edition Academic Press
5. Clark, D.D., Wilson, D.R., A comparison of commercial and military computer security policies (1987) 1987 IEEE Symposium on Security and Privacy, pp. 184-194. , IEEE Computer Society Press
6. Nash, M.J., Poland, K.R., Some conundrums concerning separation of duty (1990) IEEE Symposium on Research in Security and Privacy, pp. 201-209
7. Ferraiolo, D., Kuhn, R., Role-based access control (1992) 15th NIST-NCSC National Computer Security Conference, pp. 554-563
8. Sandhu, R.S., S., R.S., Y., H., Coyne, E.J., Feinstein, H.L., Youman, C.E., Role-based access control: A multi-dimensional view (1994) Proceedings of the 10th Conference on Computer Security Applications, pp. 54-62
9. Sandhu, R.S., Coyne, E.J., Feinstein, H.L., Youman, C.E., Role-based access control models (1996) Computer, 29 (2), pp. 38-47
10. Sandhu, R., Ferraiolo, D., Kuhn, R., The NIST model for role-based access control: Towards a unified standard (2000) RBAC '00: Proceedings of the fifth ACM workshop on Rolebased access control, pp. 47-63. , New York, NY, USA: ACM
11. Li, N., Mao, Z., Administration in role-based access control (2007) Proceedings of the 2nd ACM Symposium on Information, Computer and Communications Security, ASIACCS '07, pp. 127-138. , DOI 10.1145/1229285.1229305, Proceedings of the 2nd ACM Symposium on Information, Computer and Communications Security, ASIACCS '07
12. Dekker, M., Crampton, J., Etalle, S., RBAC administration in distributed systems (2008) SACMAT '08: Proceedings of the 13th ACM symposium on Access control models and technologies, pp. 93-102. , New York, NY, USA: ACM
13. Kwon, J., Moon, C.-J., Visual modeling and formal specification of constraints of RBAC using semantic web technology (2007) Knowledge-Based Systems, 20 (4), pp. 350-356. , DOI 10.1016/j.knosys.2006.08.002, PII S0950705106001511
14. Tschantz, M.C., Wing, J.M., Extracting conditional confidentiality policies (2008) SEFM '08: Proceedings of the 2008 Sixth IEEE International Conference on Software Engineering and Formal Methods, pp. 107-116