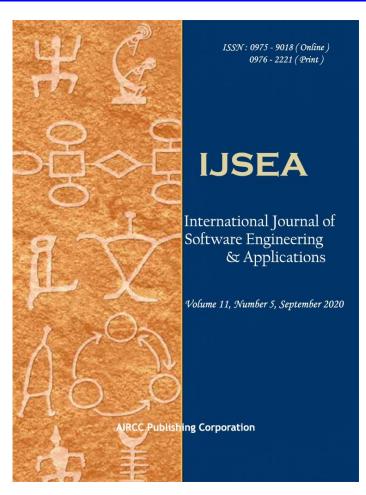
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SECURE DESCARTES: A SECURITY EXTENSION TO DESCARTES SPECIFICATION LANGUAGE

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ABSTRACT

With increase in demand for the security aspects of software, every phase of the Software Development Life Cycle (SDLC) is experiencing major changes with respect to security. Security designers, developers, and testers are keen on improving various security aspects of a system. Specification of security requirements propagates to different phases of an SDLC and there exist different techniques and methodologies to specify security requirements. Business level security requirements are specified using policy specification languages. The current literature has specification languages that are domain based, web based, network based, syntax based, semantics based, predicate based, and protocol based. In this research effort, a generic secure policy prototype and components of the generic secure policy were defined using formal methods. The Descartes specification language, a formal executable specification language, has been developed to specify software systems. The development of a secure policy framework along with extended constructs of the Descartes specification language for specifying secure policies are some of the deliverables of this research effort. Concepts of secure policies were adopted from the SPromela, Ponder, and REI methodologies for secure policy specification, analysis, and design.

KEYWORDS

Policy language, Secure policy language, Formal methods, Descartes specification language, & SDLC

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ITERATIVE AND INCREMENTAL DEVELOPMENT ANALYSIS STUDY OF VOCATIONAL CAREER INFORMATION SYSTEMS

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ABSTRACT

Software development process presents various types of models with their corresponding phases required to be accordingly followed in delivery of quality products and projects. Despite the various expertise and skills of systems analysts, designers, and programmers, systems failure is inevitable when a suitable development process model is not followed. This paper focuses on the Iterative and Incremental Development (IID)model and justified its role in the analysis and design software systems. The paper adopted the qualitative research approach that justified and harnessed the relevance of IID in the context of systems analysis and design using the Vocational Career Information System (VCIS) as a case study. The paper viewed the IID as a change-driven software development process model. The results showed some system specification, functional specification of system and design specifications that can be used in implementing the VCIS using the IID model. Thus, the paper concluded that in systems analysis and design, it is imperative to consider a suitable development process that reflects the engineering mind-set, with heavy emphasis on good analysis and design for quality assurance.

KEYWORDS

Iterative, incremental development, vocational carrier, system development process

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MASRML - A DOMAIN-SPECIFIC MODELING LANGUAGE FOR MULTI-AGENT SYSTEMS REQUIREMENTS

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ABSTRACT

MASRML – Multi-Agent Systems Requirements Modeling Language – is a UML-based Domain-Specific Modeling Language conceived for the requirements modeling in multiagent system projects. Along this work the extended metamodel developed to support the language is described and the applicability of this DSML in the requirements identification of a multi-agent system is demonstrated using the new mechanisms produced to model specific functional requirements for this kind of system. This work also includes how the DSML was validated and the impressions collected during the validations.

KEYWORDS

UML, Metamodels, Stereotypes, Requirements Engineering, Multi-Agent Systems, Agent Roles, AgentRoleActors, InternalUseCases

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