Chapter 6
Ontologies, Repository, and Information Mining in Component-Based Software Engineering Environment

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ABSTRACT

This chapter reviews some ontologies, tools, and editors used in building and maintaining the ontology from those reported in the literature, and the main focus is on the interoperability between them. The essential thing while developing an ontology or using an ontology from world web are tools. Through tools, ontology can either be developed or aligned in a manner that the researcher wants and given direction in term of opinion from the source files as meta data. This chapter presents various editors for building the ontology and various tools for matching between the two ontologies and conclusion based on the repository extracted as from the data in term of mining results. Comparison of various ontologies, tools, and editors are also there in order for the ease of user to access a particular ontology tool for selection of data in term of repository or components from the enormous data.

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INTRODUCTION

Component based software engineering commences a new field in research area by introducing the term "component". A component is a non trivial, nearly independent and replaceable part of the system that can be plugged with any software and then they are played according to its specification. Component based software engineering helps the component developer to reuse the component rather than building it, by using application developer (XJIN, 2007). Component developer only uses the component which is present in repository. Now a day, searching and retrieving of components are not easy, as repositories have become very large and complex. So, to over-come this problem, well defined repository are required that not only matches the query syntactically but is also related to the query semantically, so that best component is retrieved.

Ontologies play a vital role in retrieval of component as not only does it provides description of the component but also provides the relationship between different components linked together. Ontologies are always misunderstood and there are various misinterpretations for the word ontology. Different authors have different definition regarding ontology. For example, according to author ontology is simply an extension of vocabulary by providing relation and rules to the terms, while as per another author it is explicit specification for conceptualization. But actually ontology in precise term is nothing but the complete overview or jist of the whole scenario by providing hierarchies and taxonomies.

In this chapter the emphasis is given on the comparison between various ontologies. Section 2 explains the basic concept used in ontology. What is semantic web, what is ontology, how ontology is linked to semantic web, and the process of building an ontology. Section 3 explains various types of ontologies and comparison of ontologies by stating their pros and cons. Section 4 describes the various types of editor tools used in ontology. Section 5 compares the results and at the end we wind up with the conclusion.

BASIC TERMINOLGY

In computer science, ontology concerns with systematic arrangement of components that is based on concept and formal specification in such a way that repositories can be extended easily. Ontology is a collection of classes, objects and relationship between these two that provide precise output based on query. Ontology gives brief overview of the entire scenario which user wants to retrieve from the large collection