

NEW INHERITANCE COMPLEXITY METRICS FOR OBJECT-ORIENTED SOFTWARE SYSTEMS: AN EVALUATION WITH WEYUKER'S PROPERTIES

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Abstract

Two inheritance complexity metrics, one at class level CCI (Class Complexity due to Inheritance) and another at program level ACT (Average Complexity of a program due to Inheritance), have been proposed for object-oriented software systems. These proposed metrics are evaluated with Weyuker's properties and compared with other well known object-oriented inheritance metrics. It has been found that the proposed metrics better represent the complexity, due to inheritance, of a class and a program. Weyuker's property 7 (Significance of Permutation) has received a negative response regarding its applicability to object-oriented software metrics. It has been observed that this property is not satisfied by any of the object-oriented inheritance metrics proposed so far. Contrary to past beliefs, the relevance of this property to object-oriented systems has been brought out in this paper. Examples with C++ code are also presented to support the applicability of this property.