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Collaboration-based Components: A New Programming Paradigm

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Abstract

The gap between the architecture and implementation of programs causes problems in the analysis, implementation, understanding, and evolution of software systems. To fill this gap, component-based programming languages were emerged. In such languages, there is an explicit abstraction to denote a component. A component is a special kind of object that communicates with other components in a structured way. It can implement several interfaces, providing a different view or port for each service. To summarize, in this approach, a component is an object with multiple ports.

However, examining real applications shows that a component is a group of classes that collaborate to accomplish a specific task. Therefore, it is necessary to extend the definition of a component to encompass several classes of objects. Moreover, a component does not define the whole functionality of an object but just a fraction which is related to the component functionality. In other words, a collaboration only specifies the roles of the objects that involve in the collaboration. As an object may be involved in many collaborations, it has several roles (one per collaboration). The union of the roles forms the object layout (class in the OOP).

In this talk, the collaboration-based programming paradigm is introduced. It is implemented in the Parham programming language.

Biography

Ali Mahjur is an assistant professor at Malek Ashtar University of Technology. He received his BS, MS and PhD from Sharif University of Technology. His research interests are the design of programming languages and design of algorithms. In the past ten 0years he has worked on the design of programming languages. In this period, he developed a new programming paradigm. Currently, he is working on the design of an algebra which generates an algorithm for a function from its specification.

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