

Reductions of Control Flow Graphs

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Abstract : Control flow graphs are a well-known representation of the sequential control flow structure of programs with a multitude of applications. Not only single functions but also sets of functions or complete programs can be modelled by control flow graphs. In this case the size of the graphs can grow considerably and thus makes it difficult for software engineers to analyse the control flow. Graph reductions are helpful in this situation. In this paper we define reductions to subsets of nodes. Since executions of programs are represented by paths through the control flow graphs, paths should be preserved. Furthermore, the composition of reductions makes a stepwise analysis approach possible.

Keywords : control flow graph, graph reduction, software engineering, software applications

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