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14. Mathematical Aspects of Computer Science

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RGPG: A Graph for Software Modeling
The Generalized Program Graph (GPG) is a useful tool for the analysis of the interdependencies between variable definitions and the relationship between control flow and data dependencies. When analyzing system interconnection, we are interested in the mechanisms within individual procedures that connect the procedures. Such mechanisms include the definitions of variables used as parameters and the procedure/function calls. In order to analyze the system interconnection, the necessary information is captured from the GPG and is contained in a reduced form of the GPG. The reduced GPG (RGPG) contains only the nodes for parameter definitions and edges to represent control and data dependency relationships between the nodes. The paper will present the RGPG and its applications to software modeling.