Functional Documentation Using Tabular Expressions

An Integrated Approach to the Use of Mathematics in Computer System Design

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Over a period of more than 40 years, Computer Scientists have been proposing mathematical approaches to software development. We have seen countless papers about:

- Description and analysis of networks of hardware elements (logic design)
- Specification and verification of sequential programs.
- Specification and verification of concurrently executing programs
- Specification and description of module and component interfaces
- Description of a module or component's internal design decisions
- Description/Specification of a component or module's external behaviour
- Description/Specification of a computer system's external behaviour

In this talk I present an approach that can be applied to all of these problems. It allows designers to use the same notation throughout and to check on the correctness of the results at the end of each design phase. The functional approach defines the content of each document. Tabular expressions have the precision of conventional mathematics but present information in a way that is easy for developers to use.