

Relational databases are widely used in software engineering, but the language used to access them, SQL, was created in the 1970s and has numerous problems that make writing complex queries unnecessarily difficult. In this thesis we will present some flaws of SQL, go through select existing alternatives, and define a new query language, PPPQL, based on the concept of a query pipeline. PPPQL improves on SQL by having a consistent syntax and semantics, allowing complex queries to be expressed more simply.

We will first introduce PPPQL through a series of examples, then define the syntax and semantics of the language, using a formal description for part of the language.

To validate PPPQL's design, the language was implemented as an extension to Postgres. We will discuss the most interesting parts of its implementation and see how an alternative query language can be implemented in Postgres.