

SCQL

- “SCQL: A formal model and a query language for source control repositories”
- A model, a query language, and an implementation.
- Globally query CVS for logical invariants.
- Ask first order logic queries over time and against multiple projects.
- Relationally address entities in the CVS repository.
- Model consists of a graph of vertices (entities) and edges (relationships)
- Query language allows for easy traversal of edges (mr.revisions)

SCQL Model

- 4 Entities: Authors, MRs, Revisions, Files

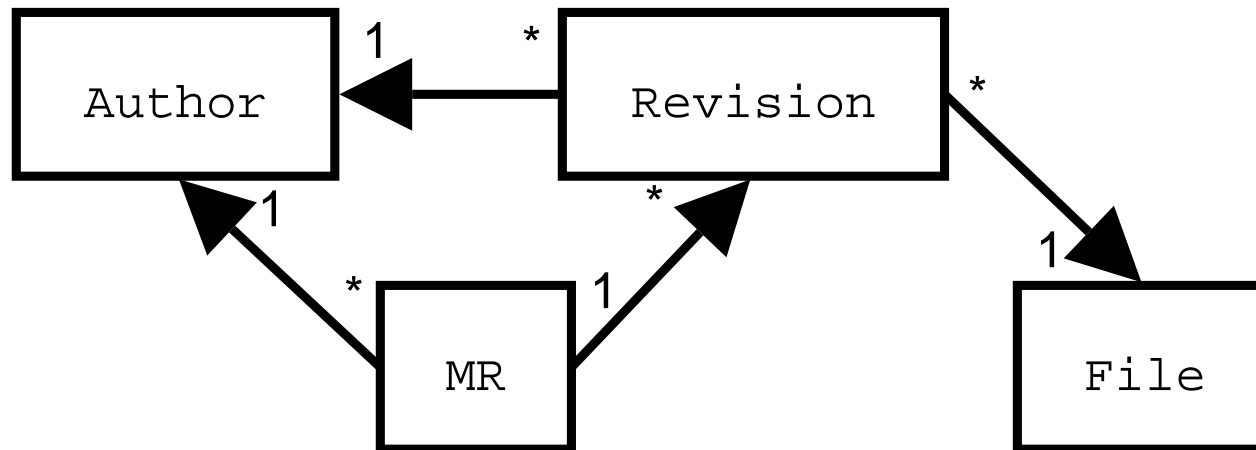


Figure 1: Cardinality and Directions of Edges in the Model

SCQL Language Example

- Is there an author a who only modifies files that author b has already modified?

$$\begin{aligned} & \exists a, b \in \text{Author } s.t. a \neq b \wedge \\ & \forall r \in \text{Revision } s.t. \text{isAuthor}(a, r) \implies \\ & \quad \exists r_b \in \text{Revision } s.t. \text{before}(r_b, r) \wedge \\ & \quad \text{isAuthor}(b, r_b) \wedge r.\text{file} = r_b.\text{file} \end{aligned}$$

```
E(a, Author) { E(b, Author) {
  a!=b && A(r, a.revisions) { A(f, r.file) {
    Ebefore( r2, f.revisions, r) {
      isAuthorOf( b, r2)
    }
  }
}
}}}}
```