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Database views, lenses and monads

The 'view' concept is important for design of database systems. The view update problem: 'when can a change in a view state be extended to the total database state?' has been much studied. An early approach treated states as unstructured sets and updatable views required a 'constant complement' view, although constant factor' would have been a better name. Recently B. Pierce elucidated the older results using the notion of 'lens'. We found that lenses are algebras for a simple monad. An order-based approach with an ordered set of states provides a more appropriate approach to modelling and lenses are still algebras. When the states are the category of models for an appropriate class of sketches, a more general view of updatability emerges.

This is joint work with Michael Johnson and Richard Wood.