

REDUCER: An Architectural Design Pattern for Reducing Large and Noisy Data Sets

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Abstract : To relieve the burden of reasoning on a point to point basis, in many domains there is a need to reduce large and noisy data sets into trends for qualitative reasoning. In this paper we propose and describe a new architectural design pattern called REDUCER for reducing large and noisy data sets that can be tailored for particular situations. REDUCER consists of 2 consecutive processes: Filter which takes the original data and removes outliers, inconsistencies or noise; and Compression which takes the filtered data and derives trends in the data. In this seminal article, we also show how REDUCER has successfully been applied to 3 different case studies.

Keywords : design pattern, filtering, compression, architectural design