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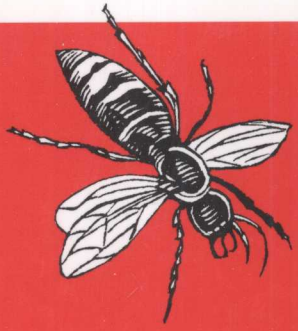

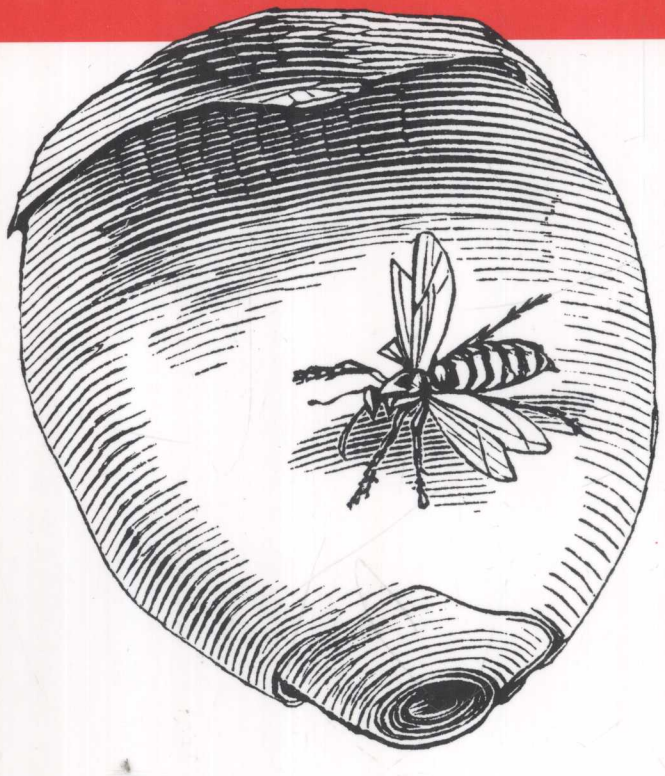

Edward Capriolo,
Dean Wampler &
Jason Rutherglen 著

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Preface

Programming Hive introduces *Hive*, an essential tool in the *Hadoop* ecosystem that provides an *SQL* (Structured Query Language) dialect for querying data stored in the *Hadoop Distributed Filesystem* (HDFS), other filesystems that integrate with Hadoop, such as *MapR-FS* and Amazon's *S3* and databases like *HBase* (the Hadoop database) and *Cassandra*.

Most data warehouse applications are implemented using relational databases that use SQL as the query language. Hive lowers the barrier for moving these applications to Hadoop. People who know SQL can learn Hive easily. Without Hive, these users must learn new languages and tools to become productive again. Similarly, Hive makes it easier for developers to port SQL-based applications to Hadoop, compared to other tool options. Without Hive, developers would face a daunting challenge when porting their SQL applications to Hadoop.

Still, there are aspects of Hive that are different from other SQL-based environments. Documentation for Hive users and Hadoop developers has been sparse. We decided to write this book to fill that gap. We provide a pragmatic, comprehensive introduction to Hive that is suitable for SQL experts, such as database designers and business analysts. We also cover the in-depth technical details that Hadoop developers require for tuning and customizing Hive.

You can learn more at the book's catalog page (*http://oreil.ly/Programming_Hive*).

Conventions Used in This Book

The following typographical conventions are used in this book:

Italic
: Indicates new terms, URLs, email addresses, filenames, and file extensions. Definitions of most terms can be found in the Glossary.

`Constant width`
: Used for program listings, as well as within paragraphs to refer to program elements such as variable or function names, databases, data types, environment variables, statements, and keywords.

champion Hadoop as a solution internally. Even though I am now very familiar with Hadoop internals, Hive is still my primary method of working with Hadoop.

It is an honor to write a Hive book. Being a Hive Committer and a member of the Apache Software Foundation is my most valued accolade.

Dean Wampler

As a "big data" consultant at *Think Big Analytics*, I work with experienced "data people" who eat and breathe SQL. For them, Hive is a *necessary and sufficient condition* for Hadoop to be a viable tool to leverage their investment in SQL and open up new opportunities for data analytics.

Hive has lacked good documentation. I suggested to my previous editor at O'Reilly, Mike Loukides, that a Hive book was needed by the community. So, here we are...

Jason Rutherglen

I work at *Think Big Analytics* as a software architect. My career has involved an array of technologies including search, Hadoop, mobile, cryptography, and natural language processing. Hive is the ultimate way to build a data warehouse using open technologies on any amount of data. I use Hive regularly on a variety of projects.

Acknowledgments

Everyone involved with Hive. This includes committers, contributors, as well as end users.

Mark Grover wrote the chapter on Hive and Amazon Web Services. He is a contributor to the Apache Hive project and is active helping others on the Hive IRC channel.

David Ha and Rumit Patel, at M6D, contributed the case study and code on the Rank function. The ability to do Rank in Hive is a significant feature.

Ori Stitelman, at M6D, contributed the case study, Data Science using Hive and R, which demonstrates how Hive can be used to make first pass on large data sets and produce results to be used by a second R process.

David Funk contributed three use cases on in-site referrer identification, sessionization, and counting unique visitors. David's techniques show how rewriting and optimizing Hive queries can make large scale map reduce data analysis more efficient.

Ian Robertson read the entire first draft of the book and provided very helpful feedback on it. We're grateful to him for providing that feedback on short notice and a tight schedule.

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What Brought Us to Hive?

The three of us arrived here from different directions.

Edward Capriolo

When I first became involved with Hadoop, I saw the distributed filesystem and MapReduce as a great way to tackle computer-intensive problems. However, programming in the MapReduce model was a paradigm shift for me. Hive offered a fast and simple way to take advantage of MapReduce in an SQL-like world I was comfortable in. This approach also made it easy to prototype proof-of-concept applications and also to

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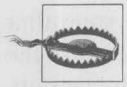

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John Sichi provided technical review for the book. John was also instrumental in driving through some of the newer features in Hive like `StorageHandlers` and Indexing Support. He has been actively growing and supporting the Hive community.

Alan Gates, author of *Programming Pig* (*http://shop.oreilly.com/product/0636920018087.do*), contributed the HCatalog chapter. Nanda Vijaydev contributed the chapter on how Karmasphere offers productized enhancements for Hive. Eric Lubow contributed the SimpleReach case study. Chris A. Mattmann, Paul Zimdars, Cameron Goodale, Andrew F. Hart, Jinwon Kim, Duane Waliser, and Peter Lean contributed the NASA JPL case study.

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