

What Every Developer Should Know About SQL Server Performance

GETTING STARTED



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I hate things that are slow!



A photograph showing a heavy traffic jam on a multi-lane bridge. In the foreground, the rear of a blue car with license plate CM-1821 is visible. To its left are a silver car and a dark grey car. The traffic extends into the distance under a concrete overpass. A green highway sign with a white arrow pointing down and the text "South Capitol Street" is visible. In the background, the U.S. Capitol dome rises above a city skyline under a hazy sky. Trees line the right side of the bridge, and a stone wall runs along the right edge of the frame.

Slow traffic!

A wide-angle photograph of a busy airport terminal. The scene is filled with a large crowd of people, mostly of diverse ages, standing in long, winding lines. Many individuals are carrying luggage, including backpacks and rolling suitcases. The terminal has a high ceiling with large, light-colored panels and a balcony with a glass railing. In the background, there are signs for various airlines: "AIRTRAN", "BRITISH AIRWAYS", "DELTA", "FRONTIER", "LUFTHANSA", "SOUTHWEST", "SUN COUNTRY", "VIRGIN ATLANTIC", and "AMERICAN". The overall atmosphere is one of a busy, crowded public space.

Slow airport security lines!

<https://flic.kr/p/fibKKx>

Course Goals



Help you learn the most important aspects of SQL Server performance

Help you feel comfortable when analyzing SQL performance issues



We'll **focus on the aspects** we have
control over as **developers**



Course Benefits



Faster response time



Higher scalability



Reduced cost



Why Developers Should Understand SQL Server Performance

Overall user experience includes performance

Developers understand what the user is trying to do and how the functionality is implemented

Improved ability to engage the DBA team



What You Will Learn

Tools and
concepts

How SQL Server
executes
statements

Indexing

Querying
performance
statistics

Profiling SQL
Server

Application
practices





Demos done in SQL Server Express 2014

Material applicable to SQL Server 2008,
2012 and 2016

Also applicable to SQL Azure





Expensive tool do not produce better results

SQL Server client installation is all that is required

We will cover features you may not be aware of



Sample Database for Course

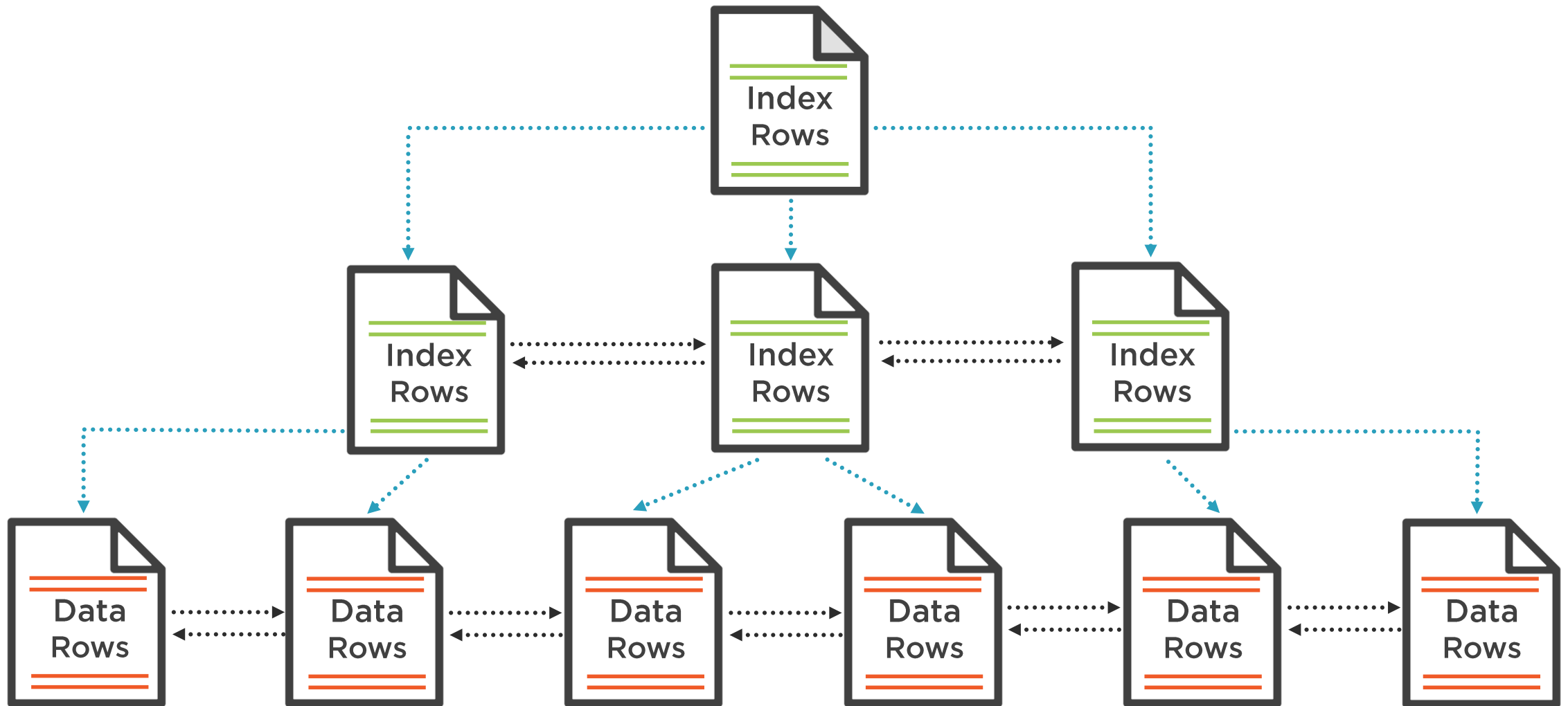
<http://bit.ly/SampleSqlPerformanceDatabase>



SQL Server Concepts



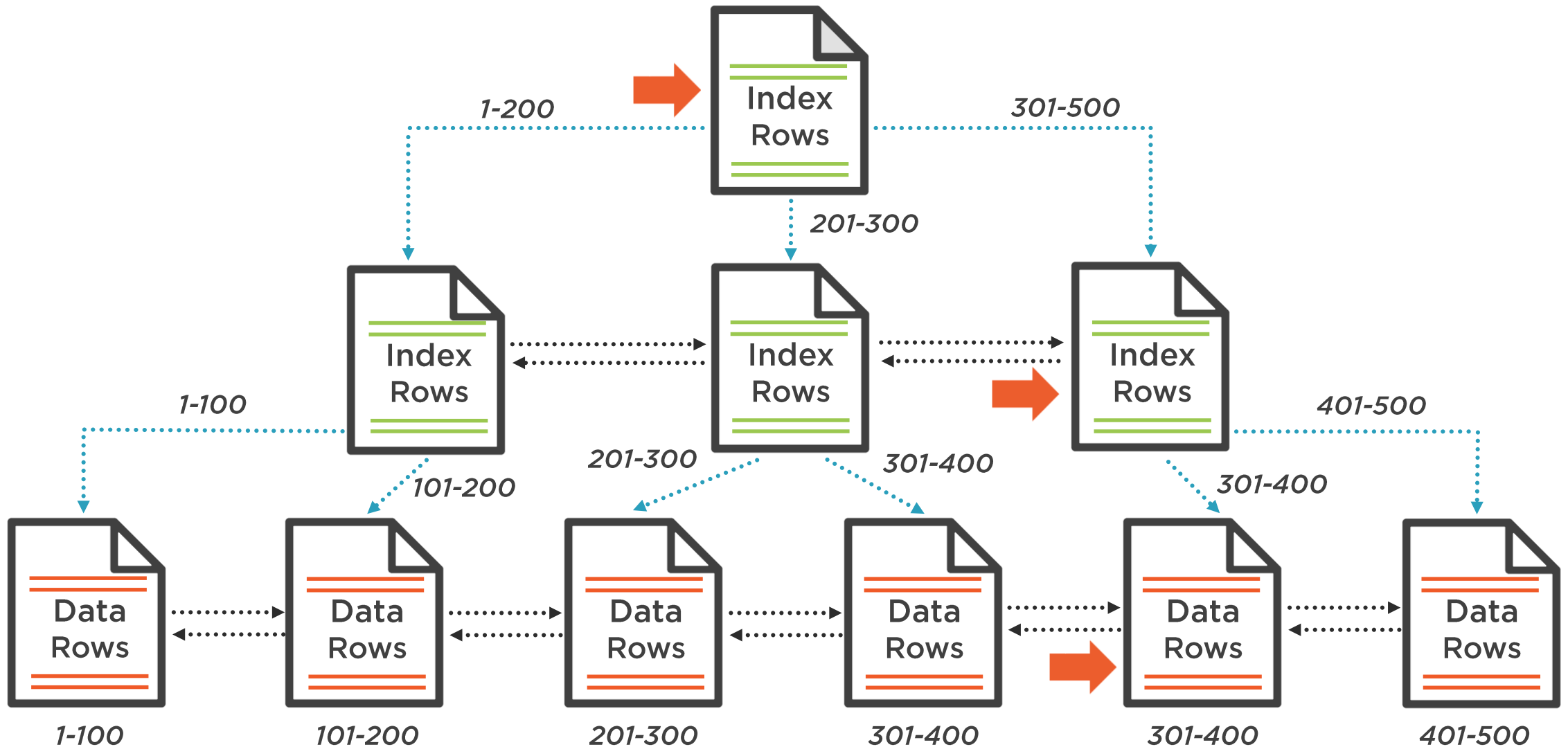
SQL Server Clustered Index Structure



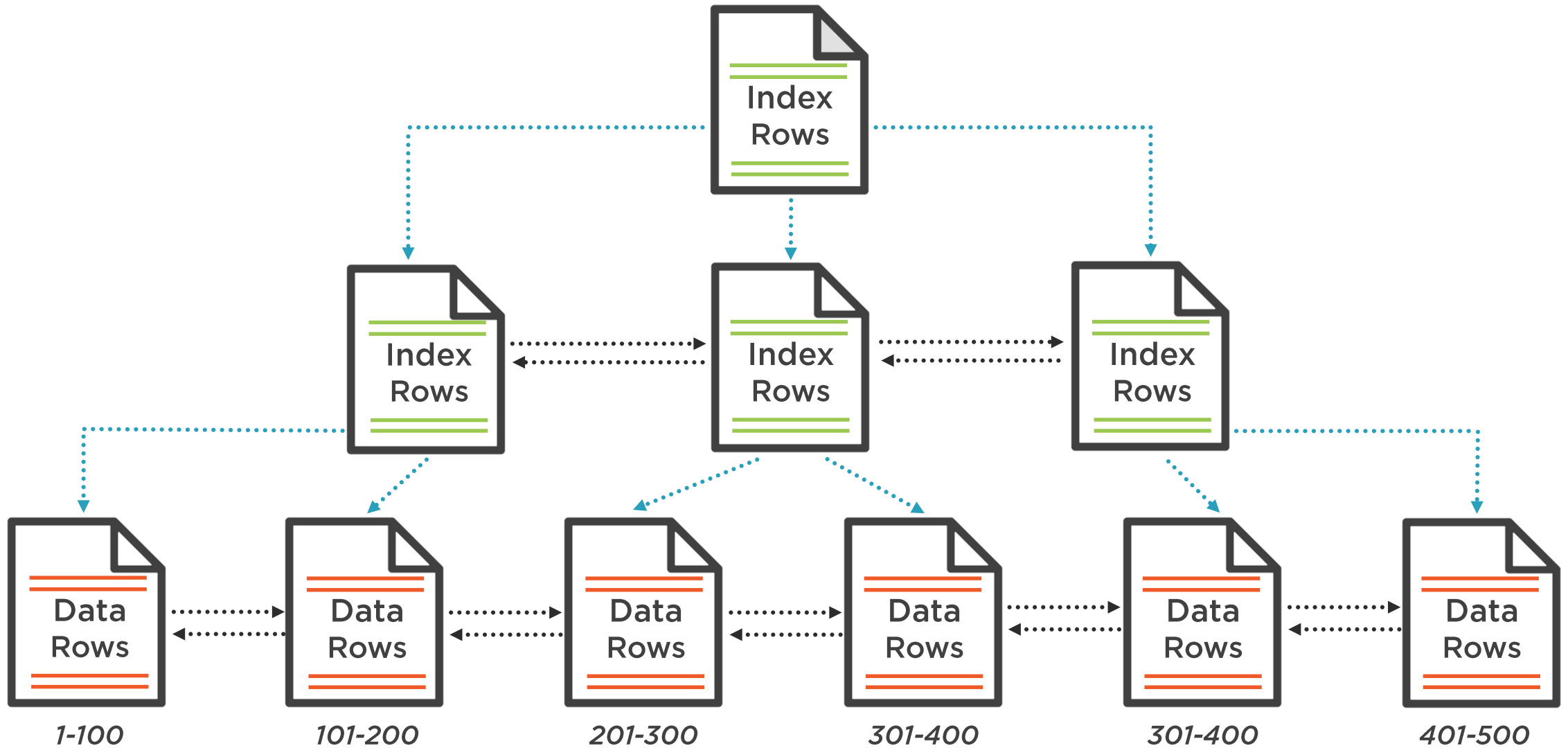
Data is stored in sorted order by the cluster key



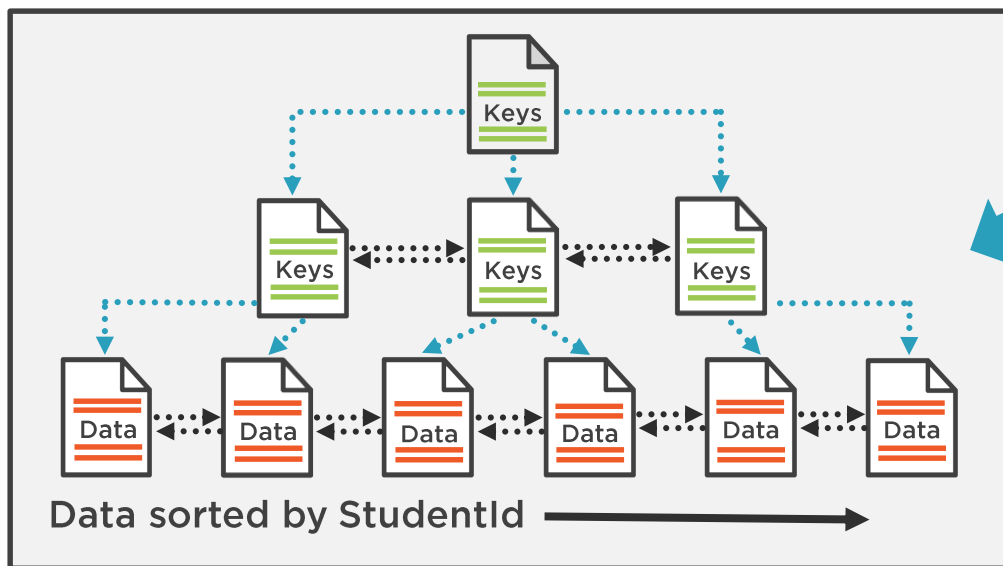
Visualizing the Students Table



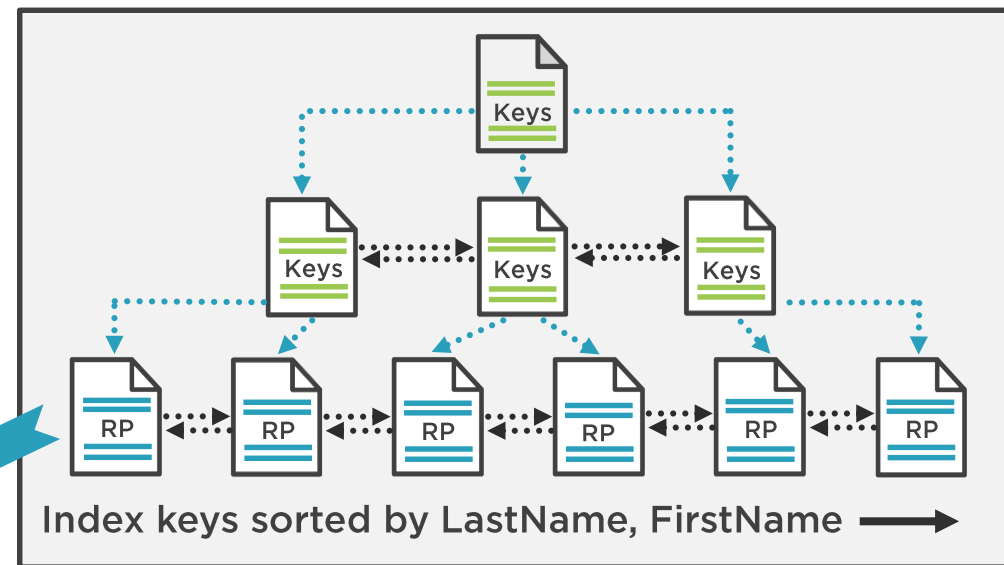
Scanning a Table for Data



Students Table



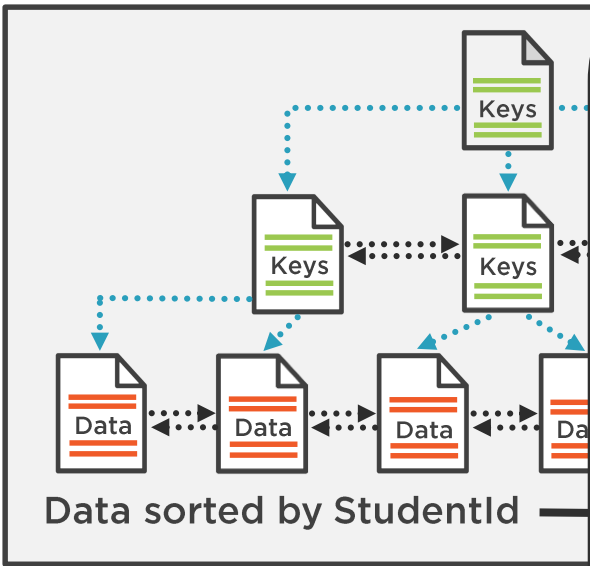
Index on LastName, FirstName



*Index values **point to** where the corresponding data is **in the table***

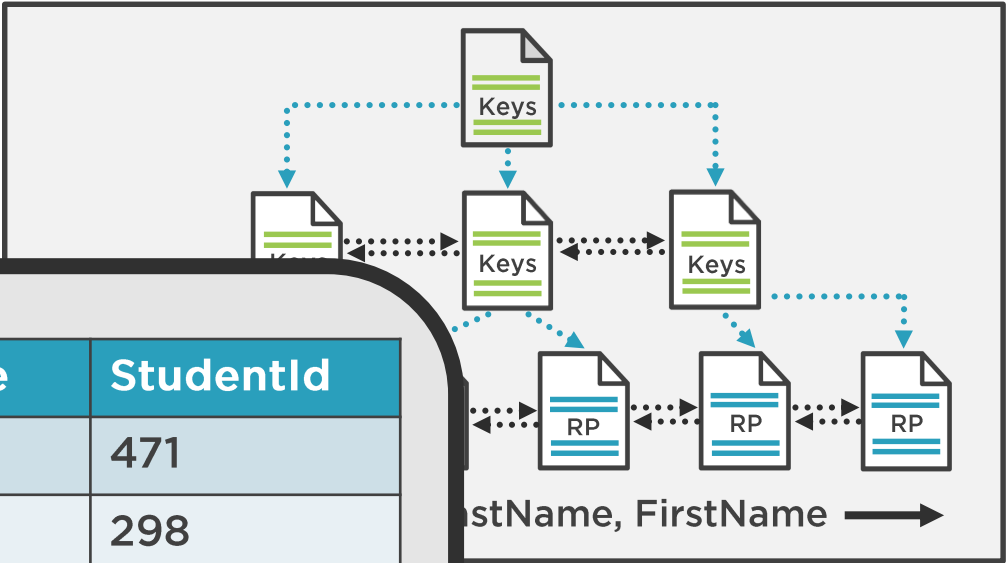


Students Table



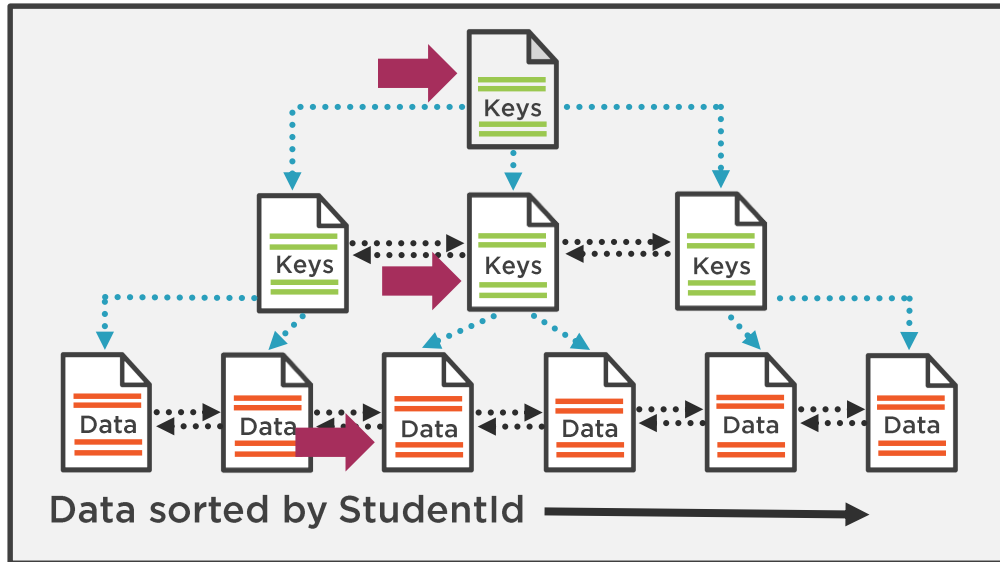
LastName	FirstName	StudentId
Dalton	Chris	471
Daniels	Mark	298
Davis	Karen	239
Davis	Tom	391
Davidson	Steve	57
Donaldson	Greg	144
Duncan	Ashley	384

Index on LastName, FirstName

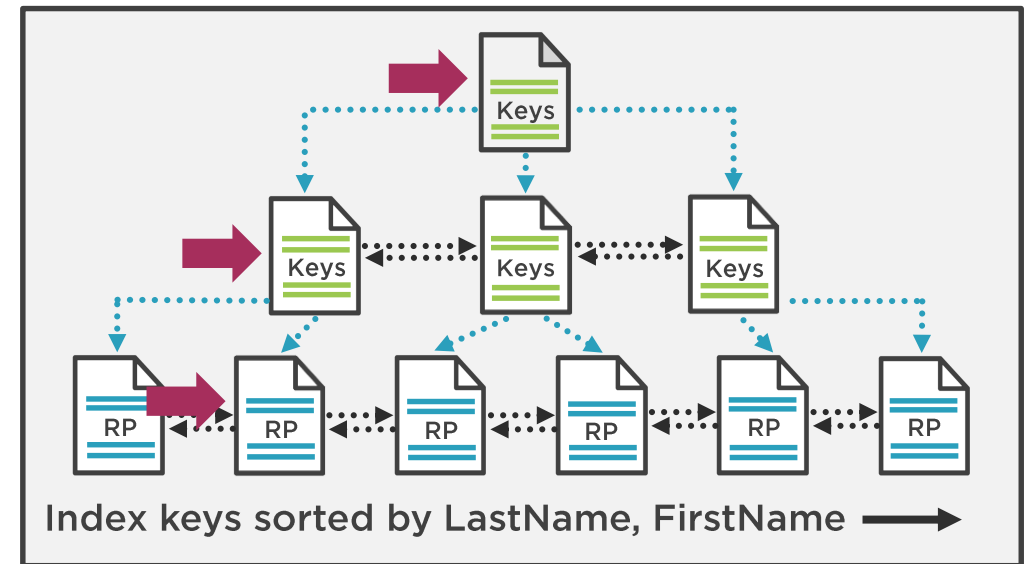


WHERE LastName = 'Duncan' AND FirstName = 'Ashley'

Students Table



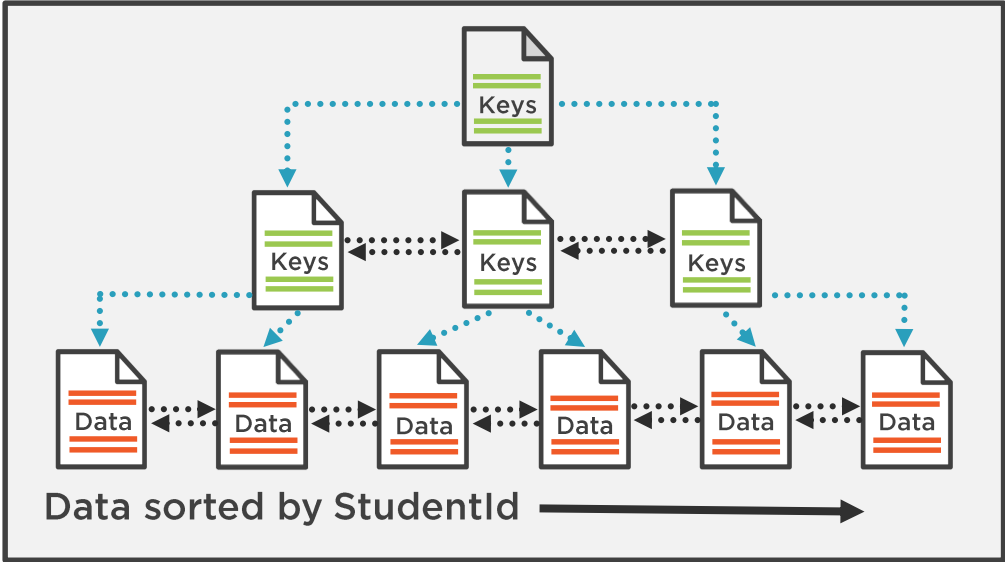
Index on LastName, FirstName



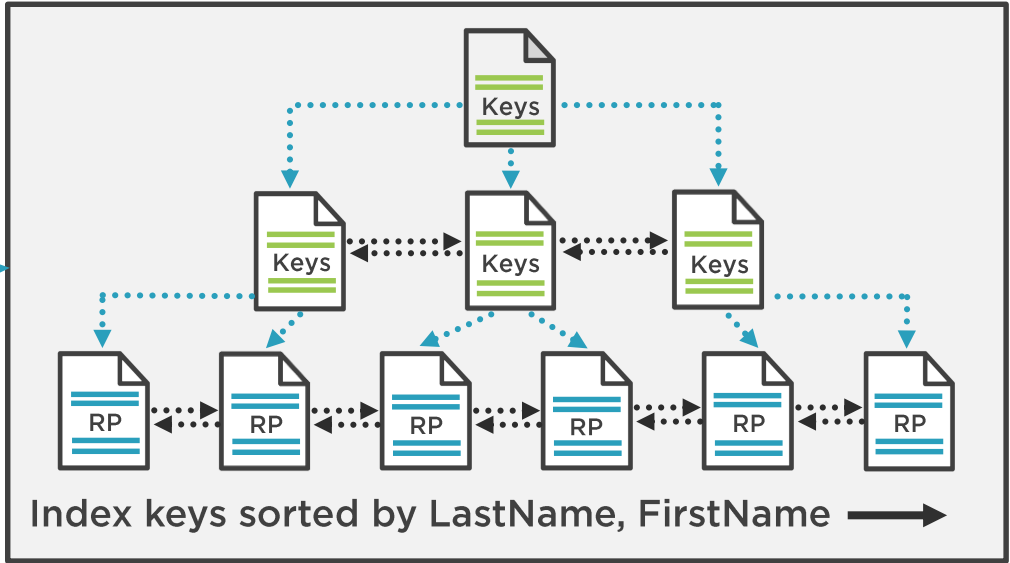
StudentID = 384



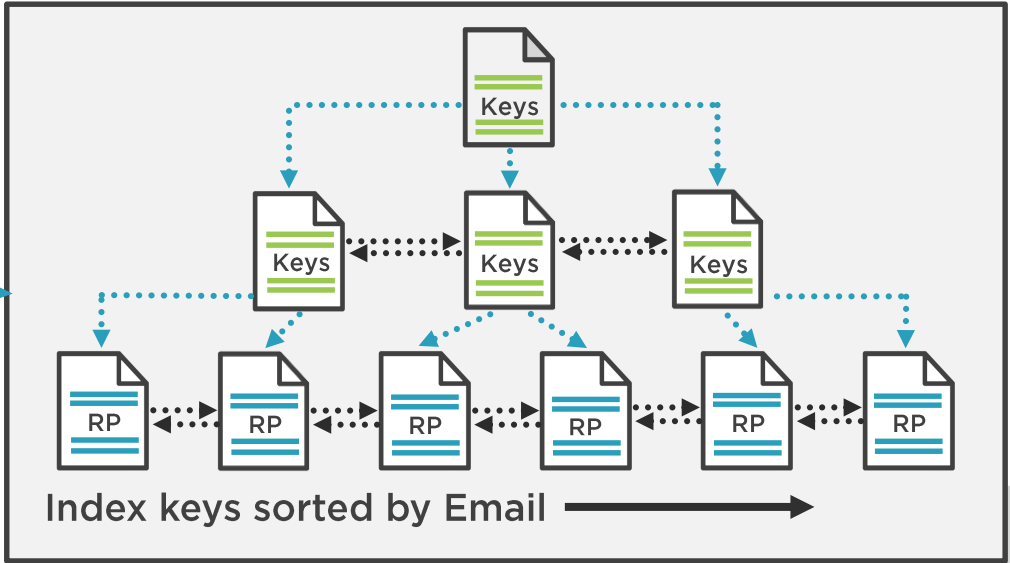
Students Table



Index on LastName, FirstName



Index on Email

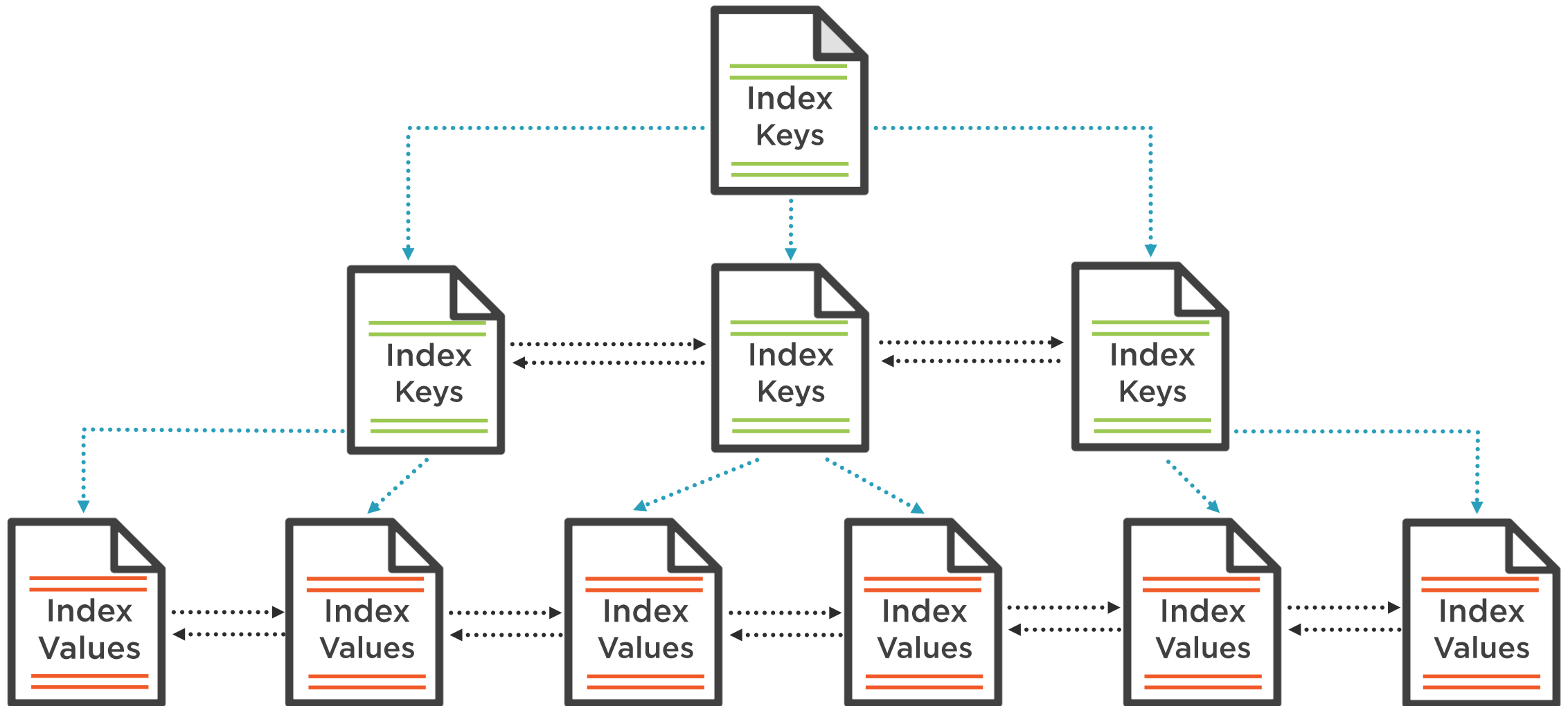


Index Takeaways

Use an index when a statement needs to access data by a criteria other than the primary key



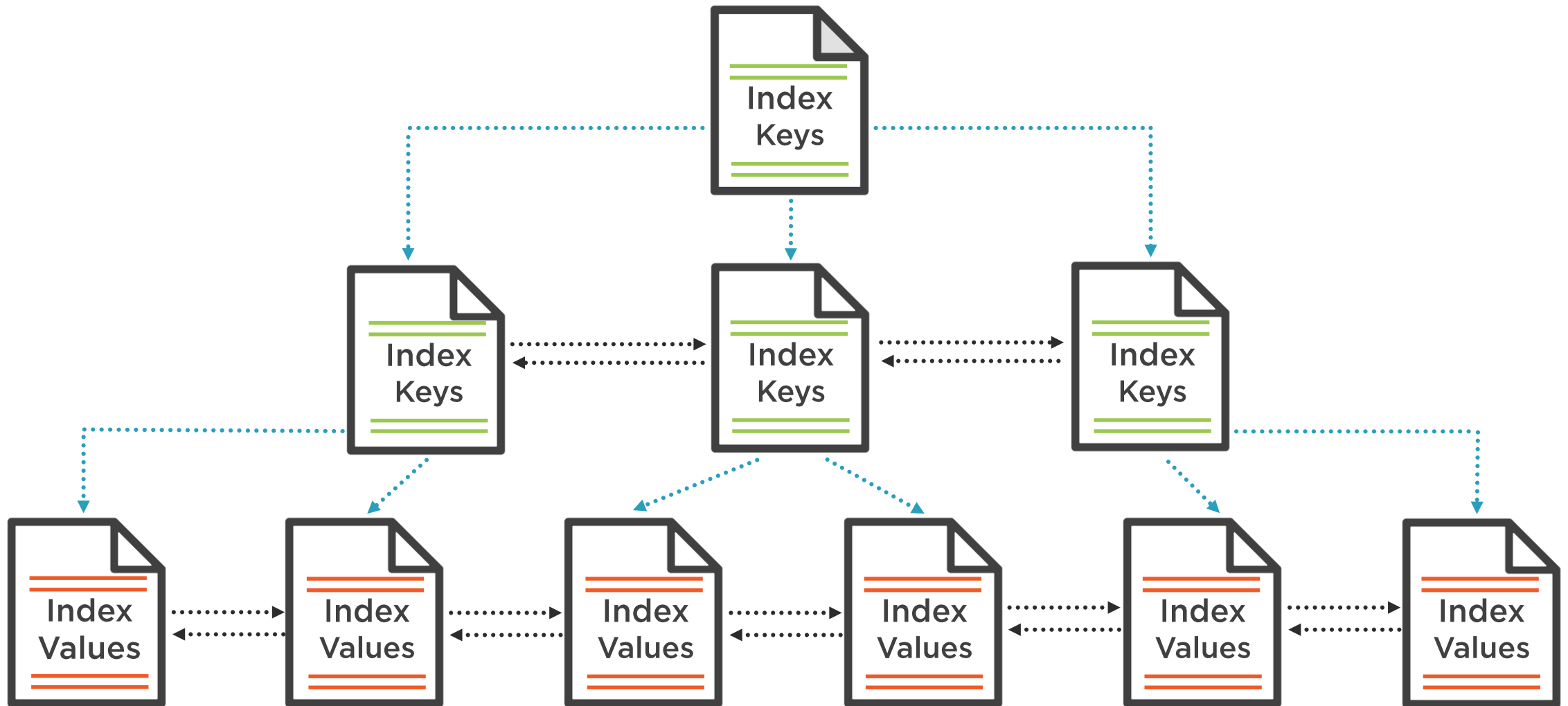
SQL Server Indexes



Data is stored in sorted order by the index key



SQL Server Indexes



Data is stored in sorted order by the index key



Module Summary



Why developers should understand SQL
Server Performance

What tools are required

How to install the sample database

How tables and indexes work in SQL
Server

