Executing CRUD Operations Using the HBase Shell

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Overview

Understand how data is stored in HBase

Create, Read, Update and Delete tables using the HBase shell

How Is Data Laid out in HBase?

Notification Data in a Traditional Database

Id	To	Type	Content
1	mike	offer	Offer on mobiles
2	john	sale	Redmi sale
3	jill	order	Order delivered
4	megan	sale	Clothes sale

This is a 2-dimensional data model

Notification Data in a Traditional Database

Id	To	Type	Content
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unique row id   **column name**

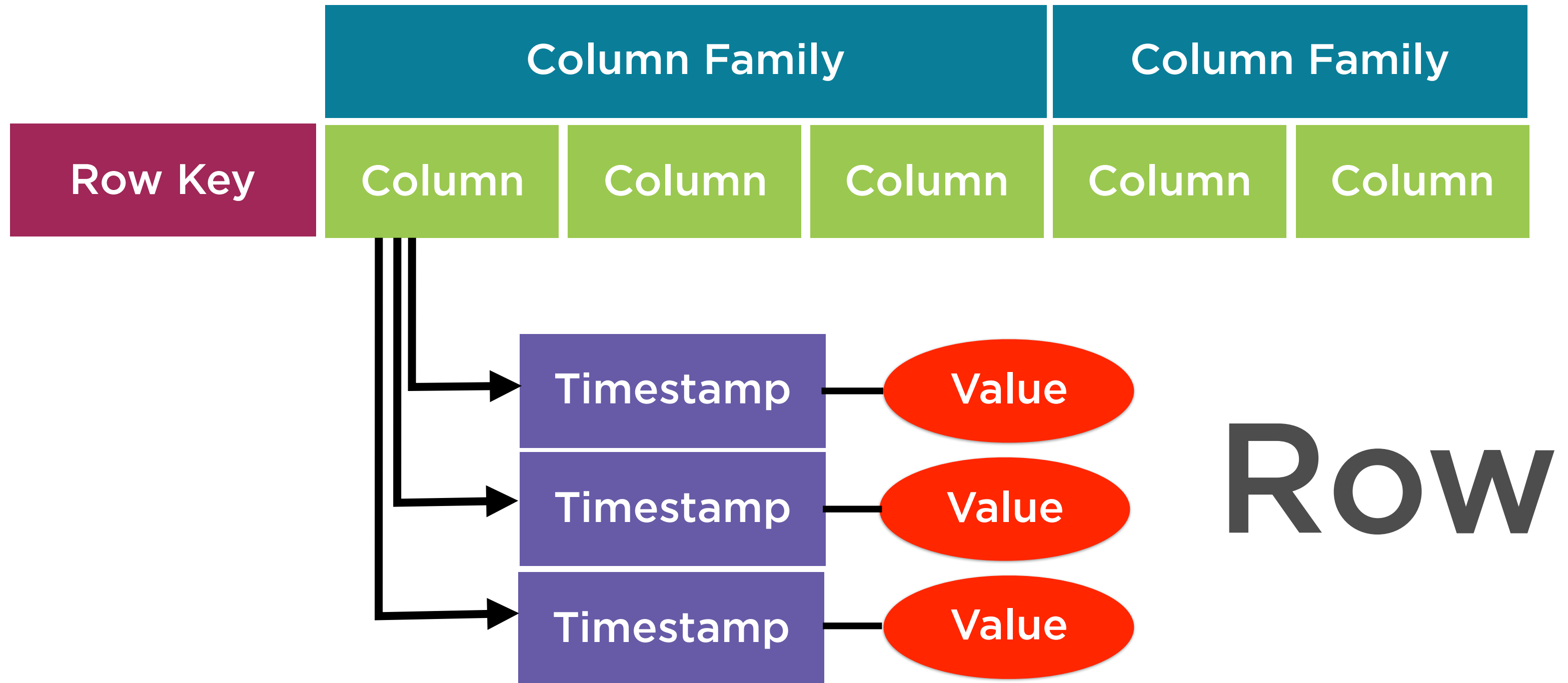HBase has a **4-dimensional** data model

4-dimensional Data Model

Row Key	**Column Family**
Column	**Timestamp**

4-dimensional Data Model

Row Key	Column Family			Column Family	
	Column	Column	Column	Column	Column

Timestamp — **Value**

Timestamp — **Value**

Timestamp — **Value**

Row

A Table for Employee Data

EmpId	Work			Personal	
	Dept	Grade	Title	Name	SSN

A record for
a single
employee

234569878 — AVP

244909823 — VP

Notification Data

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Id	Column	Value
1	To	mike
1	Type	offer
1	Content	Offer on mobiles
2	To	john
2	Type	sale
2	Content	Redmi sale
3	To	jill
3	Type	order
3	Content	Order delivered
4	To	megan
4	Type	sale
4	Content	Clothes sale

Notification Data

Id	To	Type	Content
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3	Type	order
3	Content	Order delivered
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4	Type	sale
4	Content	Clothes sale

Row Key

Notification Data

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Column Family

Notification Data

Id	To	Type	Content
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Columns

Notification Data

Id	To	Type	Content
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Id	Column	Value
1	To	mike
1	Type	offer
1	Content	Offer on mobiles
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Value + Timestamp

Data Layout in HBase
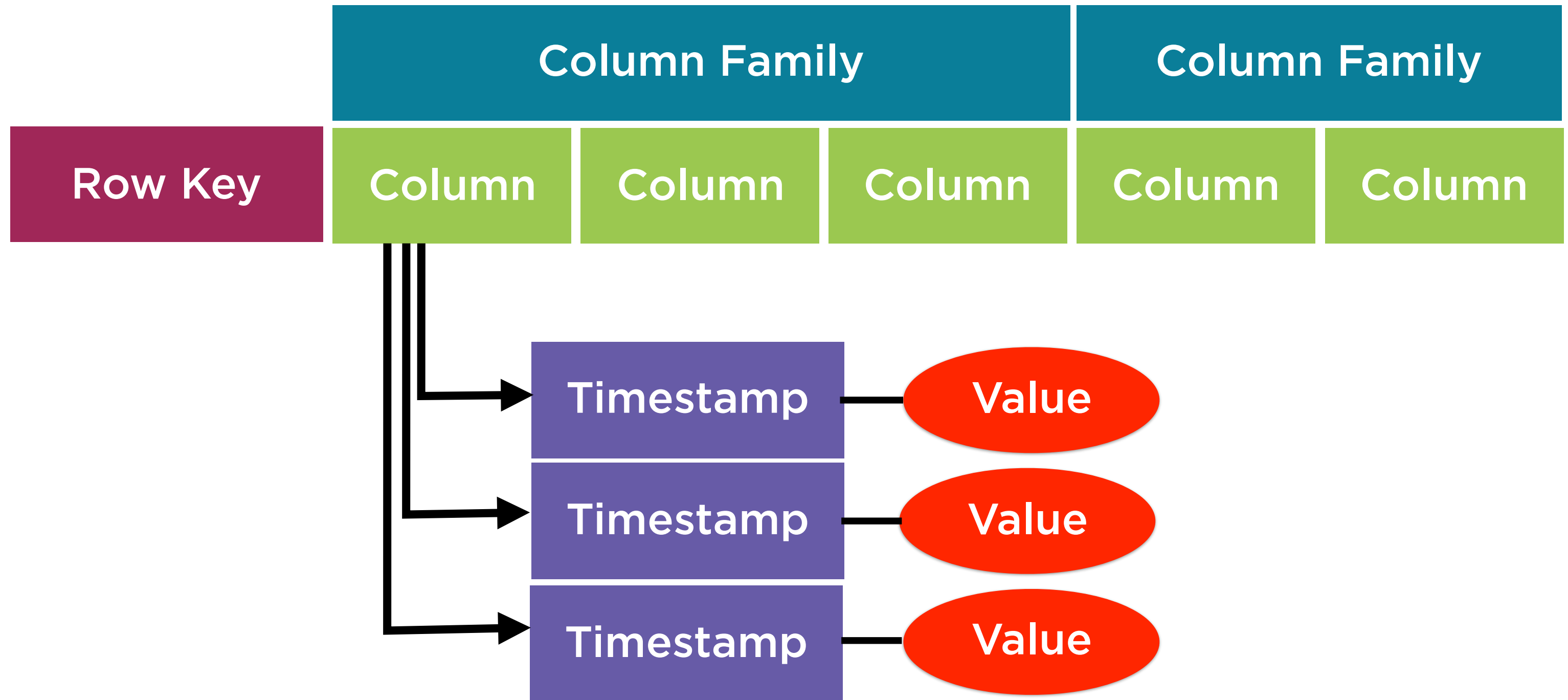
Row Key

Uniquely identifies a row

Can be primitives, structures, arrays

Represented internally as a byte array

Sorted in ascending order

Column Family

All rows have the same set of column families

Each column family is stored in a separate data file

Set up at schema definition time

Can have different columns for each row

Column

Columns are units within a column family

New columns can be added on the fly

ColumnFamily: ColumnName = Work:Department

Timestamp

Used as the version number for the values stored in a column

The value for any version can be accessed

Census Data Layout in HBase

Some ID	Personal			Professional	
	name	gender	marital_status	employed	field

Demo

Get started with simple commands on the HBase shell

- Create a table to store census data

- List and describe tables

Demo

Insert and update data using the HBase shell

- Add rows, each row represents data specific to one person

- Edit cells in a row

Demo

Access notification data using the HBase shell

- Get data in individual cells in a row

- Get data across multiple rows

Demo

Delete data using the HBase shell

- Delete data in individual cells

Demo

Delete tables using the HBase shell

- Disable tables

- Delete tables

Summary

Understood how HBase stores data internally

Used the CRUD operations on the HBase shell