

# APACHE HIVE

## Part 3

by Sumit Mittal



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# Trainer Introduction



**Mr. Summit Mittal**, CEO & founder of **TrendyTech**. He has a Master's degree in Computer Applications from NIT Trichy & have a total of 7+ years of industry experience. He has worked for top MNC's like **Cisco** & **VMware**.



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# Complex Data Types in Hive

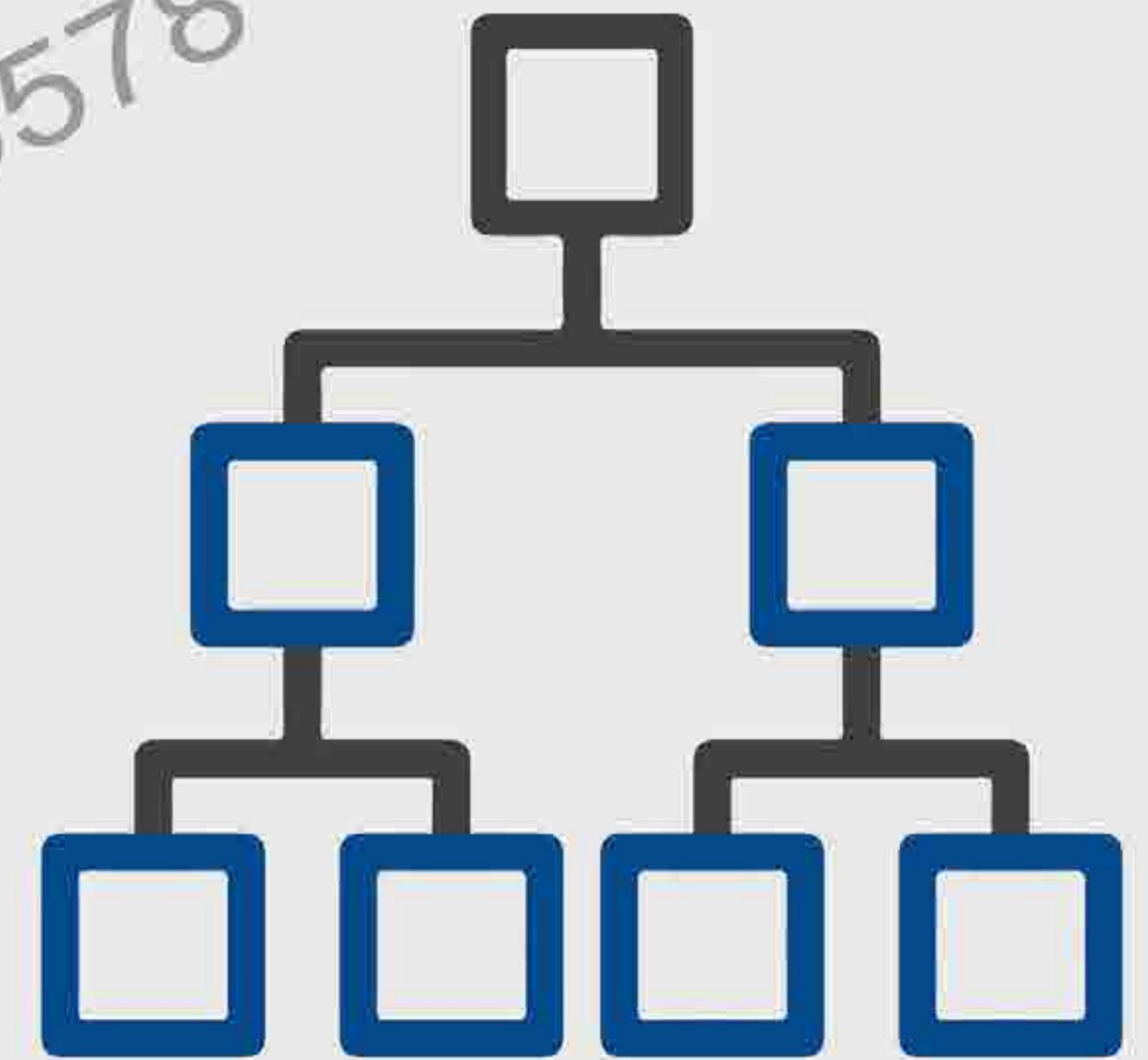
# Complex Data Types



**Array**



**Map**



**Struct**

# Array



**Collection** data type

No **fixed** size

Entities of the **same** type

Only arrays of **primitive** types allowed

# Map



Unordered collection of **pairs**

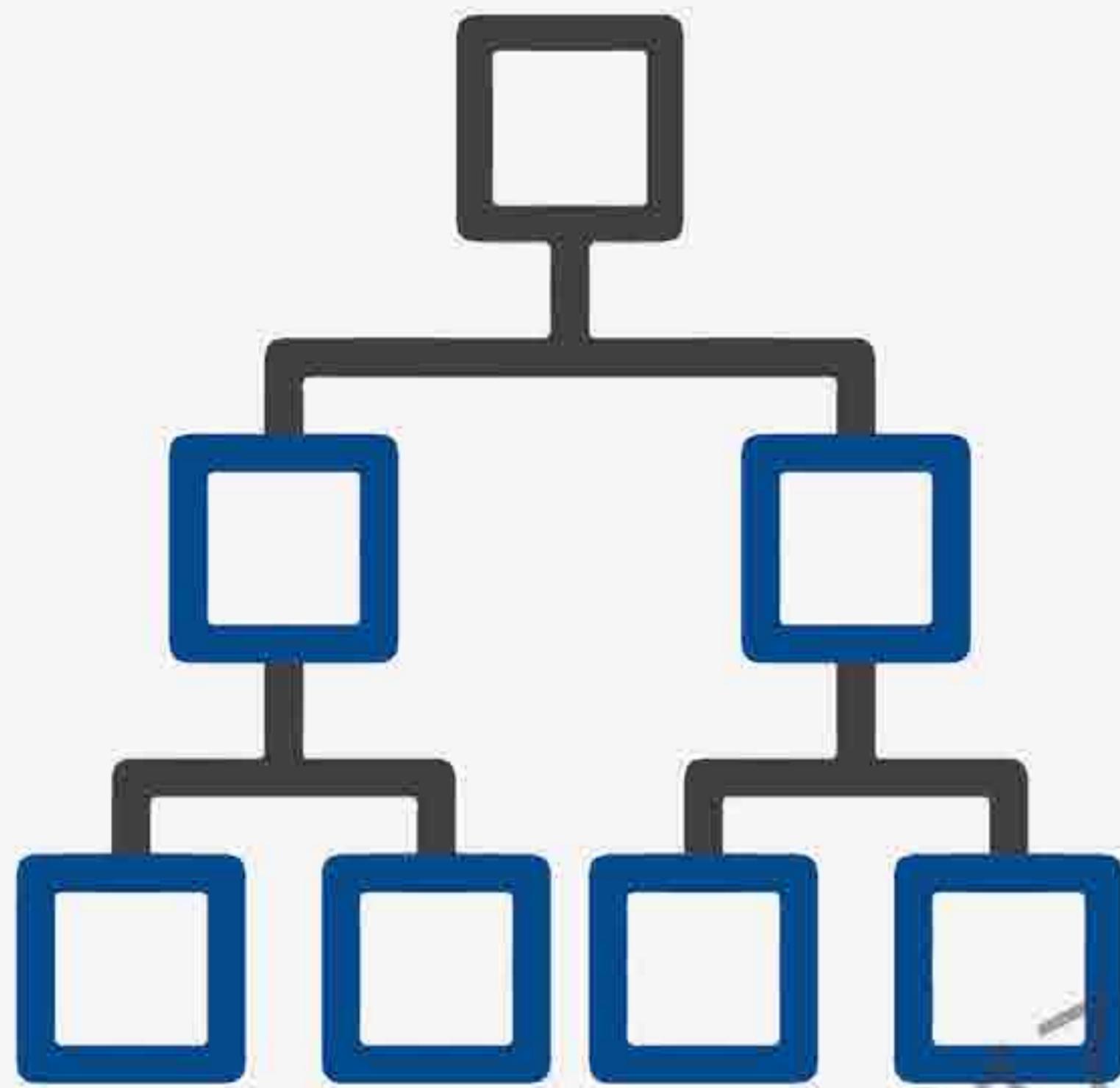
**No fixed size**

Every entity is a **key, value** pair

Value is accessed using a unique key

Keys and values have their own data types

# Struct



Logical grouping of data

Can have **different** data types

Can hold **any** number of values

Each value referenced by a **name**

# Built-in Functions in Hive

# Built-in Functions

**UDF**

User-defined  
Functions

**UDAF**

User-defined  
Aggregate  
Functions

**UDTF**

User-defined  
Tablegenerating  
Functions

# UDF

## User-defined Functions

# UDF

Works on a **single** row

Outputs a **single** row

`trim()`, `concat()`, `length()`

`round()`, `floor()`

# UDAF

User-defined  
Aggregate  
Functions

# UDAF

Works on **multiple** rows

Outputs a **single** row

`count(*)`, `sum()`, `avg()`

# UDTF

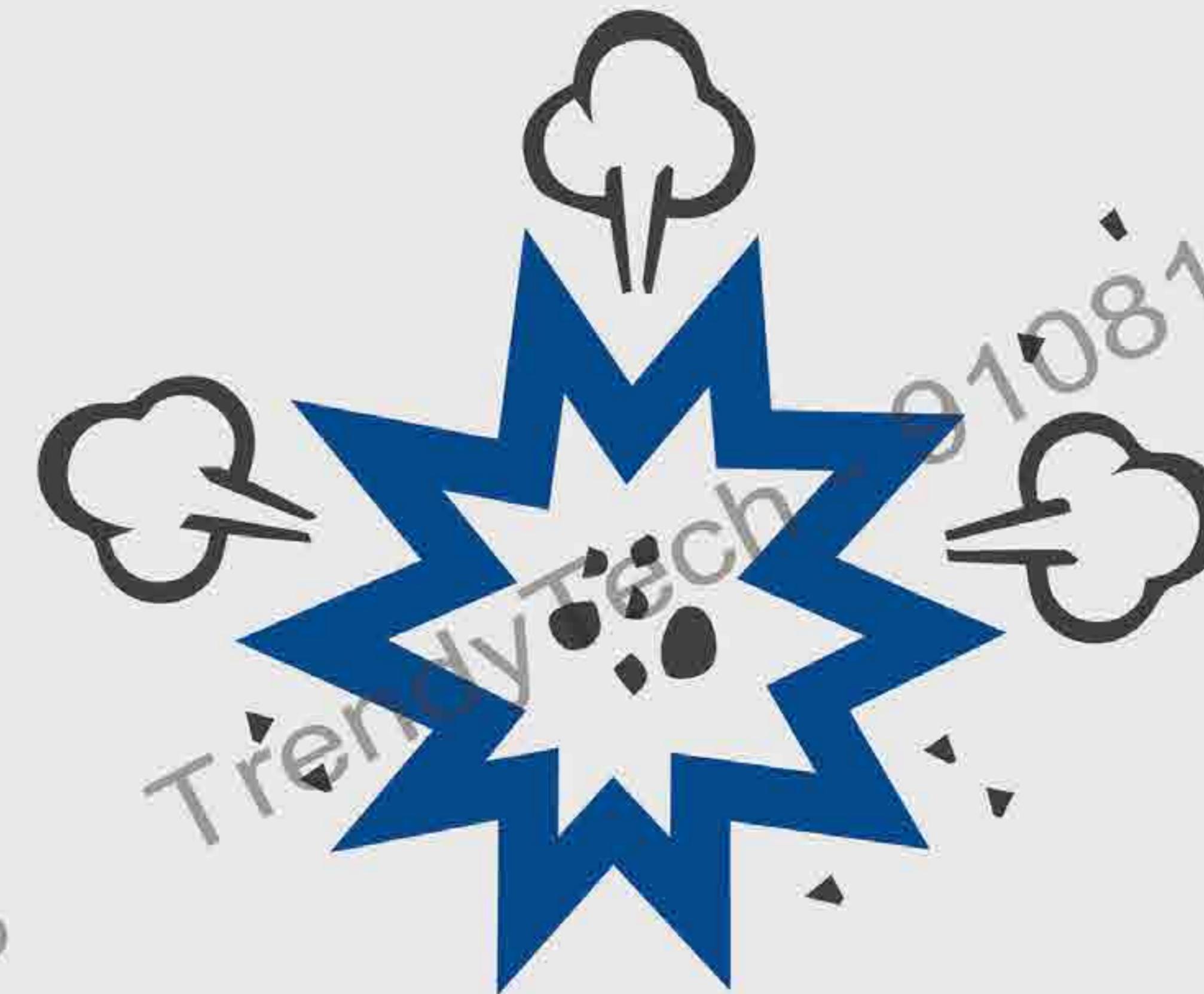
UDTF  
User-defined  
Tablegenerating  
Functions

Works on a **single** row

Outputs **multiple** rows

`explode()`, `posexplode()`

# Table-generating Functions



**explode()**

Flatten the data in arrays and maps

# Table-generating Functions

Manager	SubordinateList
Larry	[Sundar, Eric, Jon]
Sergey	[Ruth, Urs]
Sundar	[Susan, Alan, Lazlo]



Subordinate
Sundar
Eric
John
Ruth
Urs
Susan
Alan
Lazlo

# Table-generating Functions

Employee	Details
Larry	{"office": "271B", "numReports": 8, "salary": 1}
Sergey	{"office": "271B", "numReports": 5, "salary": 1}
Sundar	{ "office": "285", "numReports": 12}



Key	Value
office	271B
numReports	8
salary	1
office	271B
numReports	5
salary	1
office	285
numReports	12

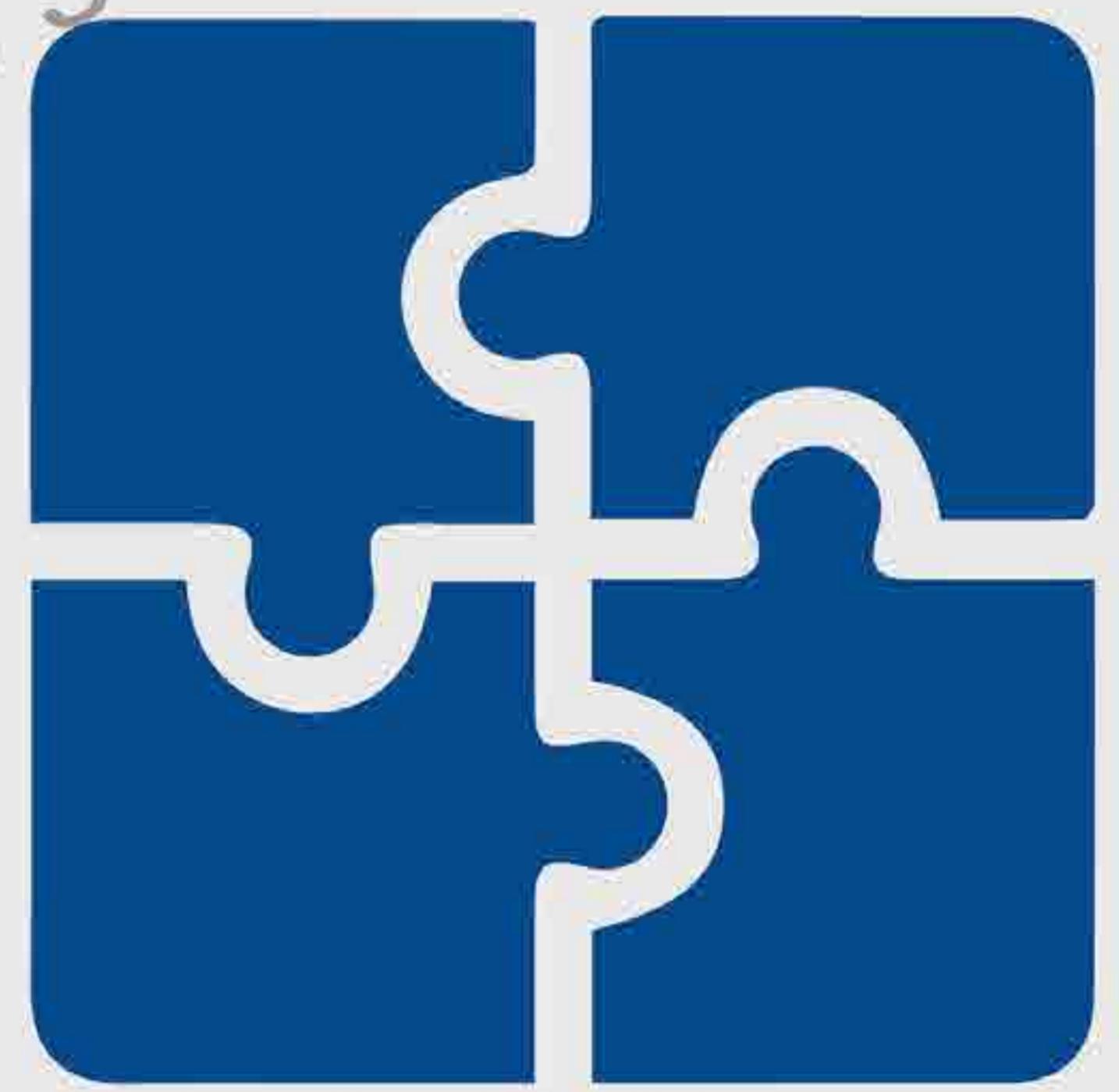
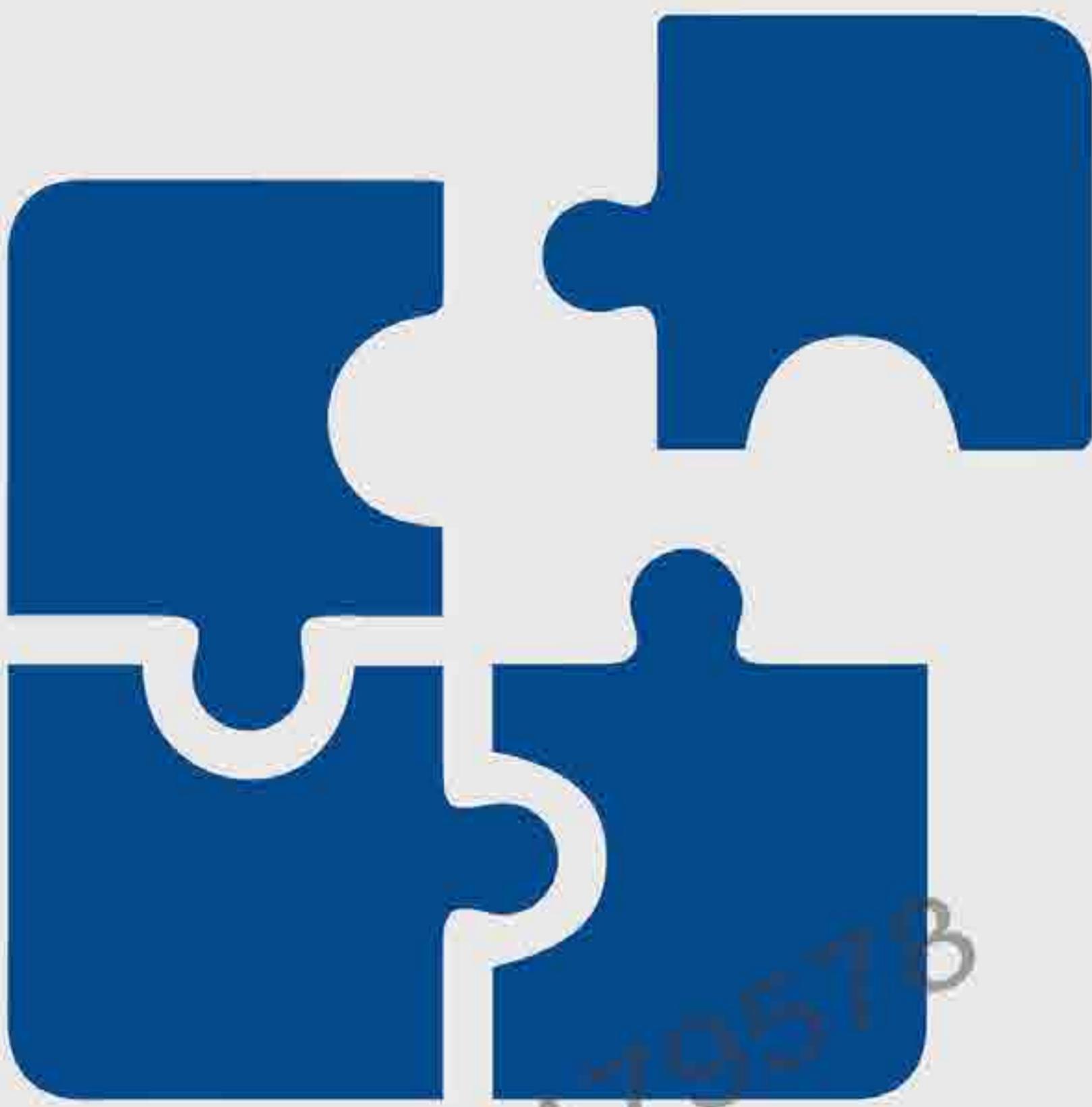
# Lateral Views

# Lateral Views



A **virtual** table formed by the exploded view

# Lateral Views



Which can be **joined** with the **original** table to allow complex queries

# Lateral Views

Manager	SubordinateList
Larry	[Sundar, Eric, Jon]
Sergey	[Ruth, Urs]
Sundar	[Susan, Alan, Lazlo]



Subordinate
Sundar
Eric
John
Ruth
Urs
Susan
Alan
Lazlo

# Lateral Views

This can be  
made a virtual  
table using  
lateral view

Subordinate
Sundar
Eric
John
Ruth
Urs
Susan
Alan
Lazlo

# Lateral Views

Manager	SubordinateList	Subordinate
Larry	[Sundar, Eric, Jon]	Sundar
Larry	[Sundar, Eric, Jon]	Eric
Larry	[Sundar, Eric, Jon]	John
Sergey	[Ruth, Urs]	Ruth
Sergey	[Ruth, Urs]	Urs
Sundar	[Susan, Alan, Lazlo]	Susan
Sundar	[Susan, Alan, Lazlo]	Alan
Sundar	[Susan, Alan, Lazlo]	Lazlo

**And joined  
with the  
original  
table**



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