

# Reviewing Group By and Pivot

# Manipulating Granularity: Group By

Key Data

|   |   |
|---|---|
| A | 3 |
|---|---|

|   |   |
|---|---|
| B | 1 |
|---|---|

|   |   |
|---|---|
| C | 4 |
|---|---|

|   |   |
|---|---|
| A | 1 |
|---|---|

|   |   |
|---|---|
| B | 5 |
|---|---|

|   |   |
|---|---|
| C | 9 |
|---|---|

|   |   |
|---|---|
| A | 2 |
|---|---|

|   |   |
|---|---|
| B | 6 |
|---|---|

|   |   |
|---|---|
| C | 5 |
|---|---|

# Manipulating Granularity: Group By

Key Data

|   |   |
|---|---|
| A | 3 |
|---|---|

|   |   |
|---|---|
| B | 1 |
|---|---|

|   |   |
|---|---|
| C | 4 |
|---|---|

|   |   |
|---|---|
| A | 1 |
|---|---|

|   |   |
|---|---|
| B | 5 |
|---|---|

|   |   |
|---|---|
| C | 9 |
|---|---|

|   |   |
|---|---|
| A | 2 |
|---|---|

|   |   |
|---|---|
| B | 6 |
|---|---|

|   |   |
|---|---|
| C | 5 |
|---|---|

|   |   |
|---|---|
| A | 3 |
|---|---|

|   |   |
|---|---|
| A | 1 |
|---|---|

|   |   |
|---|---|
| A | 2 |
|---|---|

# Manipulating Granularity: Group By

Key Data

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| A | 3 |
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|---|---|
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|---|---|

|   |   |
|---|---|
| C | 4 |
|---|---|

|   |   |
|---|---|
| A | 1 |
|---|---|

|   |   |
|---|---|
| B | 5 |
|---|---|

|   |   |
|---|---|
| C | 9 |
|---|---|

|   |   |
|---|---|
| A | 2 |
|---|---|

|   |   |
|---|---|
| B | 6 |
|---|---|

|   |   |
|---|---|
| C | 5 |
|---|---|

Split into  
Groups →

|   |   |
|---|---|
| A | 3 |
|---|---|

|   |   |
|---|---|
| A | 1 |
|---|---|

|   |   |
|---|---|
| A | 2 |
|---|---|

|   |   |
|---|---|
| B | 1 |
|---|---|

|   |   |
|---|---|
| B | 5 |
|---|---|

|   |   |
|---|---|
| B | 6 |
|---|---|

|   |   |
|---|---|
| C | 4 |
|---|---|

|   |   |
|---|---|
| C | 9 |
|---|---|

|   |   |
|---|---|
| C | 5 |
|---|---|

# Manipulating Granularity: Group By

Key Data

A 3

B 1

C 4

A 1

B 5

C 9

A 2

B 6

C 5

Split into  
Groups

A 3

A 1

A 2

B 1

B 5

B 6

C 4

C 9

C 5

Aggregate  
Function

A 6

Aggregate  
Function

B 12

Aggregate  
Function

C 18

# Manipulating Granularity: Group By

Key Data

|   |   |
|---|---|
| A | 3 |
| B | 1 |
| C | 4 |
| A | 1 |
| B | 5 |
| C | 9 |
| A | 2 |
| B | 6 |
| C | 5 |

Split into Groups

|   |   |
|---|---|
| A | 3 |
| A | 1 |
| A | 2 |
| B | 1 |
| B | 5 |
| B | 6 |
| C | 4 |
| C | 9 |
| C | 5 |

Aggregate Function

|   |   |
|---|---|
| A | 6 |
|---|---|

Aggregate Function

|   |    |
|---|----|
| B | 12 |
|---|----|

Aggregate Function

|   |    |
|---|----|
| C | 18 |
|---|----|

Merge Results

|   |    |
|---|----|
| A | 6  |
| B | 12 |
| C | 18 |

# Manipulating Granularity: Pivot

Key Key  
R C Data

|   |   |   |
|---|---|---|
| A | U | 3 |
|---|---|---|

|   |   |   |
|---|---|---|
| B | V | 1 |
|---|---|---|

|   |   |   |
|---|---|---|
| C | U | 4 |
|---|---|---|

|   |   |   |
|---|---|---|
| A | V | 1 |
|---|---|---|

|   |   |   |
|---|---|---|
| B | U | 5 |
|---|---|---|

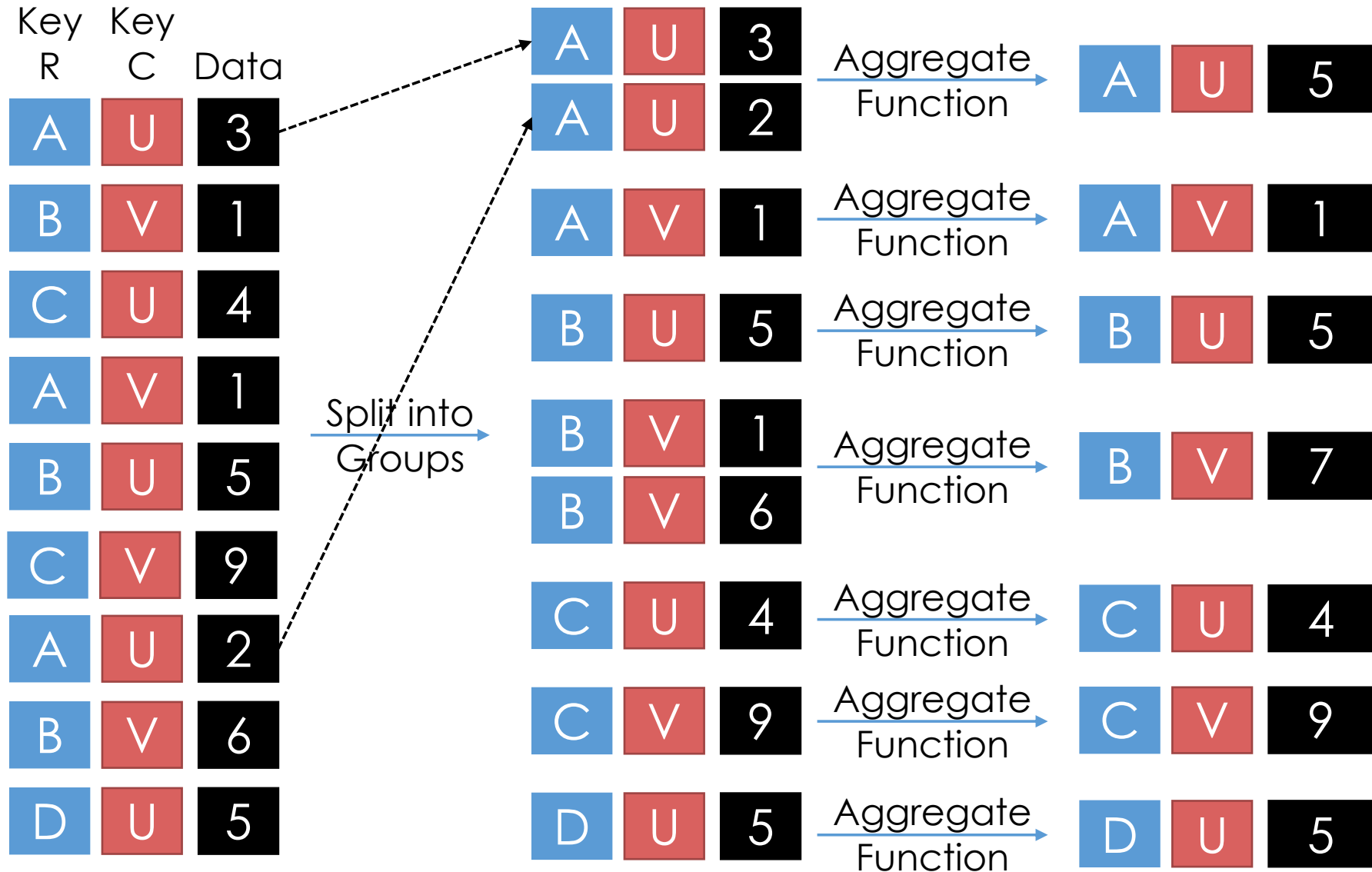
|   |   |   |
|---|---|---|
| C | V | 9 |
|---|---|---|

|   |   |   |
|---|---|---|
| A | U | 2 |
|---|---|---|

|   |   |   |
|---|---|---|
| B | V | 6 |
|---|---|---|

|   |   |   |
|---|---|---|
| D | U | 5 |
|---|---|---|

# Manipulating Granularity: Pivot





# Manipulating Granularity: Pivot

ate  
on → A U 5

ate  
on → A V 1

ate  
on → B U 5

ate  
on → B V 7

ate  
on → C U 4

ate  
on → C V 9

ate  
on → D U 5

# Manipulating Granularity: Pivot

Update  
on →

|   |   |   |
|---|---|---|
| A | U | 5 |
|---|---|---|

Update  
on →

|   |   |   |
|---|---|---|
| A | V | 1 |
|---|---|---|

Update  
on →

|   |   |   |
|---|---|---|
| B | U | 5 |
|---|---|---|

Update  
on →

|   |   |   |
|---|---|---|
| B | V | 7 |
|---|---|---|

Update  
on →

|   |   |   |
|---|---|---|
| C | U | 4 |
|---|---|---|

Update  
on →

|   |   |   |
|---|---|---|
| C | V | 9 |
|---|---|---|

Update  
on →

|   |   |   |
|---|---|---|
| D | U | 5 |
|---|---|---|

|   | U | V |
|---|---|---|
| A | 5 | 1 |
| B | 5 | 7 |
| C | 4 | 9 |
| D | 5 |   |

Need to address missing values