IIT Madras

ONLINE DEGREE

Tables

- Each card is a unit of information

Name **Kavya** (10)

Gender **F**

Date of Birth **12 Jan**

Town/City **Chennai**

Mathematics	64
Physics	72
Chemistry	68
TOTAL	204

p

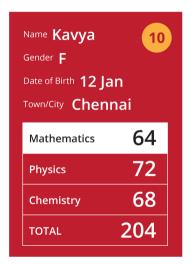# Extracting data from cards

- Each card is a unit of information

- Different attributes or fields
  - Card ID, Name, Gender, ..., Total

Name **Kavya**	**10**
Gender **F**	
Date of Birth **12 Jan**	
Town/City **Chennai**	

Mathematics	**64**
Physics	**72**
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TOTAL	**204**

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- Organize as a table

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10	Kavya	F	12 Jan	Chennai	64	72	68	204

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Id	Name	Gen	DoB	City	Math	Phys	Chem	Total
10	Kavya	F	12 Jan	Chennai	64	72	68	204
24	Siddharth	M	26 Dec	Madurai	44	72	58	174

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- Organize as a table

Name	Arshad	17
Gender	M	
Date of Birth	14 Dec	
Town/City	Chennai	
Mathematics	62	
Physics	81	
Chemistry	67	
TOTAL	210	

Id	Name	Gen	DoB	City	Math	Phys	Chem	Total
10	Kavya	F	12 Jan	Chennai	64	72	68	204
24	Siddharth	M	26 Dec	Madurai	44	72	58	174
17	Arshad	M	14 Dec	Chennai	62	81	67	210

Extracting data from cards

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- Different attributes or fields
    - Card ID, Name, Gender, ..., Total

- Organize as a table

- All the grade cards in a single table

Id	Name	Gen	DoB	City	Math	Phys	Chem	Total
10	Kavya	F	12 Jan	Chennai	64	72	68	204
24	Siddharth	M	26 Dec	Madurai	44	72	58	174
17	Arshad	M	14 Dec	Chennai	62	81	67	210

Word in the paragraph

- Can do the same with words

Saturday	**24**
Noun	Letter count: 8

- Can do the same with words

Id	Word	Type	Length
24	Saturday	Noun	8

- Can do the same with words

Id	Word	Type	Length
24	Saturday	Noun	8
12	considered	Verb	10

considered (12)

Verb	Letter count: 10

Shopping bills

- What are the attributes?
    - Bill ID, Shop Name, Customer Name

Big Bazaar			Akshaya	5
Item	Category	Qty	Price	Cost
Trousers	Women/Apparel	2	870	1740
Shirts	Women/Apparel	1	1350	1350
Detergent	Household	0.5	270	135
Tee shirts	Women/Apparel	4	220	880
Instant Noodles	Canned/Food	3	23	69
				4174

Shopping bills

- What are the attributes?
    - Bill ID, Shop Name, Customer Name
    - Item, Category, Qty, Price, Cost, Total

Big Bazaar				Akshaya 5
Item	Category	Qty	Price	Cost
Trousers	Women/Apparel	2	870	1740
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				4174

Shopping bills

- What are the attributes?
    - Bill ID, Shop Name, Customer Name
    - Item, Category, Qty, Price, Cost, Total
        - Variable number of rows per bill

SV Stores			Srivatsan	1
Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1.5	50	75
Soap	Toiletries	4	32	128
Tomatoes	Vegetables/Food	2	40	80
Bananas	Vegetables/Food	8	8	64
Socks	Footwear/Apparel	3	56	168
Curd	Dairy/Food	0.5	32	16
Milk	Dairy/Food	1.5	24	36
				567

Shopping bills

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    - Bill ID, Shop Name, Customer Name
    - Item, Category, Qty, Price, Cost, Total
        - Variable number of rows per bill

- Variable number of columns?
    - No longer a neat table!

SV Stores				Srivatsan ①
Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1.5	50	75
Soap	Toiletries	4	32	128
Tomatoes	Vegetables/Food	2	40	80
Bananas	Vegetables/Food	8	8	64
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  - Bill ID, Shop Name, Customer Name
  - Item, Category, Qty, Price, Cost, Total
    - Variable number of rows per bill
- Variable number of columns?
  - No longer a neat table!
- Variable number of rows per card?
  - Tag rows for each card

SV Stores			Srivatsan	1
Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1.5	50	75
Soap	Toiletries	4	32	128
Tomatoes	Vegetables/Food	2	40	80
Bananas	Vegetables/Food	8	8	64
Socks	Footwear/Apparel	3	56	168
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Shopping bill as a table

Id	Shop	Customer	Item	Category	Qty	Price	Cost	Total
5	Big Bazaar	Akshaya	Trousers	Women/Apparel	2	870	1740	4174
5	Big Bazaar	Akshaya	Shirts	Women/Apparel	1	1350	1350	4174
5	Big Bazaar	Akshaya	Detergent	Household	0.5	270	135	4174
5	Big Bazaar	Akshaya	Tee Shirts	Women/Apparel	4	220	880	4174
5	Big Bazaar	Akshaya	Instant Noodles	Canned/Food	3	23	69	4174

Big Bazaar		Akshaya		5
Item	Category	Qty	Price	Cost
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5	Big Bazaar	Akshaya	Tee Shirts	Women/Apparel	4	220	880	4174
5	Big Bazaar	Akshaya	Instant Noodles	Canned/Food	3	23	69	4174

- Id, Shop, Customer and Total are duplicated in each row of the table

Big Bazaar				Akshaya ⑤
Item	Category	Qty	Price	Cost
Trousers	Women/Apparel	2	870	1740
Shirts	Women/Apparel	1	1350	1350
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Shopping bill as a table

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5	Big Bazaar	Akshaya	Instant Noodles	Canned/Food	3	23	69	4174

- Id, Shop, Customer and Total are duplicated in each row of the table

- Problem is aggravated as number of entries in the bill increase

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Item	Category	Qty	Price	Cost
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Multiple tables

Id	Shop	Customer	Total
5	Big Bazaar	Akshaya	4174

Id	Item	Category	Qty	Price	Cost
5	Trousers	Women/Apparel	2	870	1740
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Big Bazaar				Akshaya 5
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- One table has columns that are fixed for the bill

Big Bazaar				Akshaya 5
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Multiple tables

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- One table has columns that are fixed for the bill

- Second table has variable entries as multiple rows

Big Bazaar		Akshaya 5			
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Multiple tables

Id	Shop	Customer	Total
1	SV Stores	Srivatsan	567

Id	Item	Category	Qty	Price	Cost
1	Carrots	Vegetables/Food	1.5	50	75
1	Soap	Toiletries	4	32	128
1	Tomatoes	Vegetables/Food	2	40	80
		$\vdots$			
1	Milk	Dairy/Food	1.5	24	36

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- Difficulty if the cards has a variable number of attributes

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  - Items in shopping bill

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  - Items in shopping bill
  - Multiple rows — duplication of data

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- Data on cards can be naturally represented using tables

- Each attribute is a column in the table

- Each card is a row in the table

- Difficulty if the cards has a variable number of attributes
    - Items in shopping bill
    - Multiple rows — duplication of data
    - Split as separate tables — need to link via unique attribute