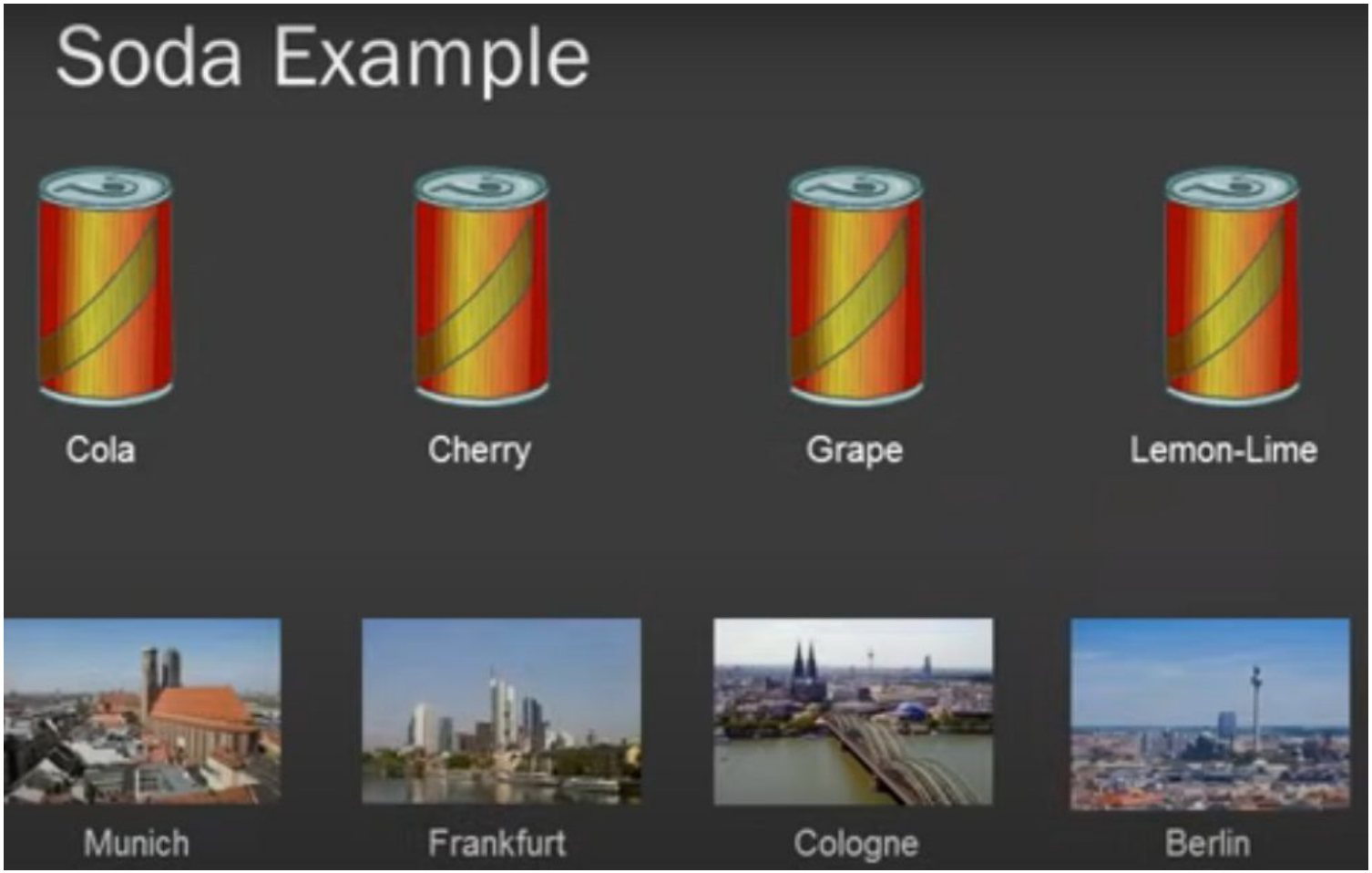
OLPT and OLAP



Time	$ Sales
Q3	$16,000
Q4	$16,000
Total	**$32,000**

Product	$ Sales
Cola	$8,000
Cherry	$8,000
Grape	$8,000
Lemon-Lime	$8,000
Total	**$32,000**

Geography	$ Sales
Munich	$8,000
Frankfurt	$8,000
Cologne	$8,000
Berlin	$8,000
Total	**$32,000**

Soda Example

		Munich	Frankfurt	Cologne	Berlin	Total
Q3	Cola	$ -	$ -	$2,500	$1,500	**$4,000**
	Cherry	$ -	$ -	$2,000	$2,000	**$4,000**
	Grape	$1,000	$3,000	$ -	$ -	**$4,000**
	Lem-Lime	$2,000	$2,000	$ -	$ -	**$4,000**
	Total Q3	**$3,000**	**$5,000**	**$4,500**	**$3,500**	**$16,000**
Q4	Cola	$4,000	$ -	$ -	$ -	**$4,000**
	Cherry	$1,000	$3,000	$ -	$ -	**$4,000**
	Grape	$ -	$ -	$1,500	$2,500	**$4,000**
	Lem-Line	$ -	$ -	$2,000	$2,000	**$4,000**
	Total Q4	**$5,000**	**$3,000**	**$3,500**	**$4,500**	**$16,000**
Total		**$8,000**	**$8,000**	**$8,000**	**$8,000**	**$32,000**

Multidimensional Analysis

- Intuitive way for people with business training to analyze data
  - Natural
  - Easy
  - Effective
- Difficult to get data into a format that supports multidimensional analysis

Operational Databases

- Where did our data come from?
  - Lots of individual shoppers buying a soda
  - Each transaction stored in database designed to store checkout transactions
- **Operational Database**: supports the day-to-day operations of a company
- Data in operational databases can't easily be analyzed

Operational Databases

- Core operational database functionality:
  - Gather data
  - Update data
  - Store data
  - Retrieve data
  - Archive data

Operational Databases

- **OLTP**: Online Transaction Processing

OLTP Example

- Buying toothpaste at Target:
  1. You place toothpaste on conveyor belt
  2. Cashier swipes barcode over POS scanner
  3. POS system looks up price of toothpaste
  4. POS totals cost of transaction + tax
  5. POS prompts for payment
  6. You swipe debit card and enter PIN
  7. POS system xfers cost of toothpaste from your bank account to Target's account
  8. POS generates receipt and cashier bags

Key OLTP Characteristics

- Processes a transaction according to rules
- Performs all elements of a transaction in real time
- Continually processes multiple transactions

OLTP Systems

- OLTP systems can be used to answer transactional questions
- Raw transactional data not really useful for business intelligence
- OLTP systems can't be used to answer most analysis questions
  - Can't search, sort, & summarize large numbers of records
  - Can't handle required calculations
  - Negative impact on OLTP system performance

OLTP Systems

- OLTP systems gather raw data used for multidimensional analysis
- Raw data has to be converted into something suitable for analysis
- Converting raw data to something useful isn't easy