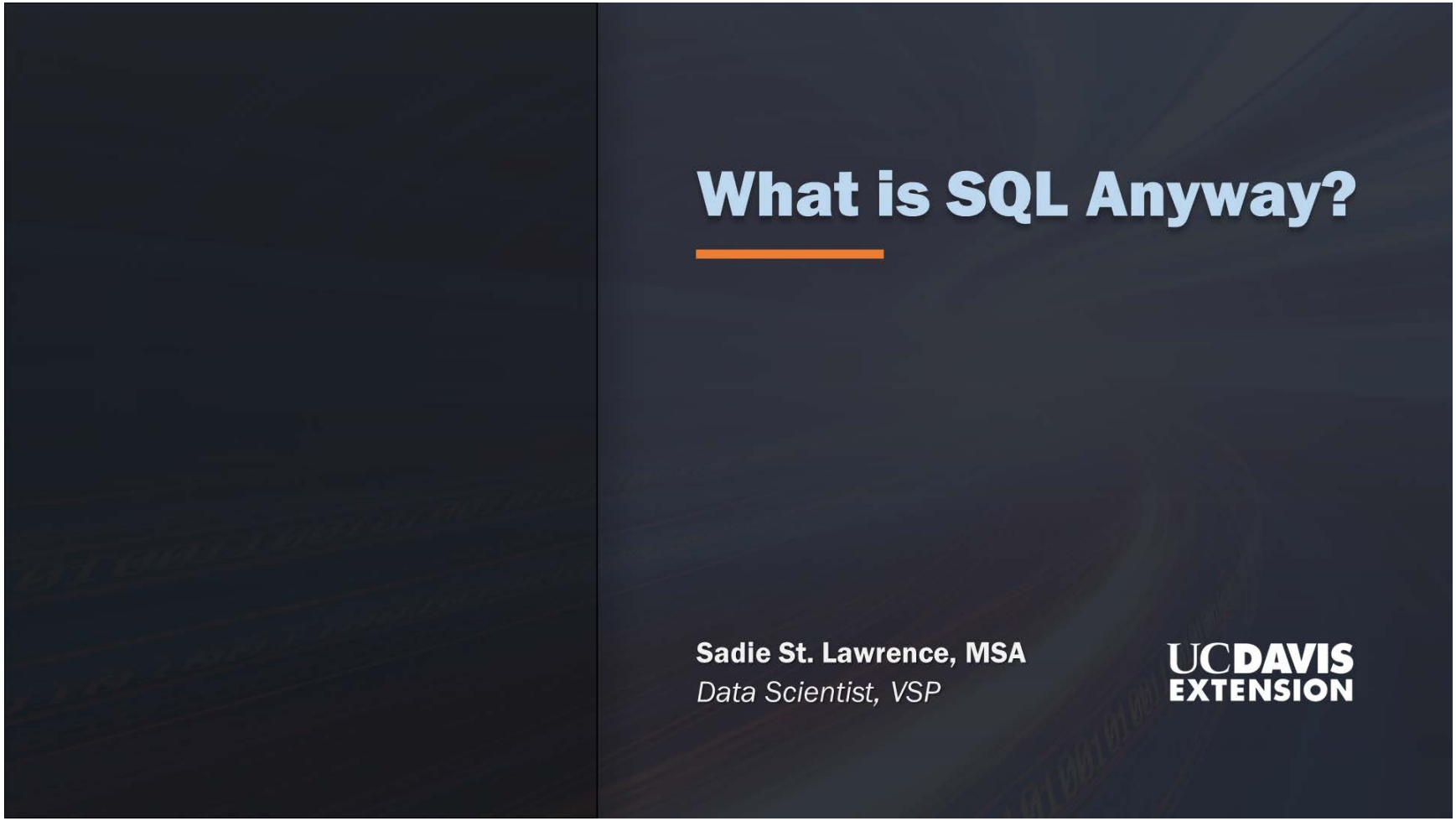
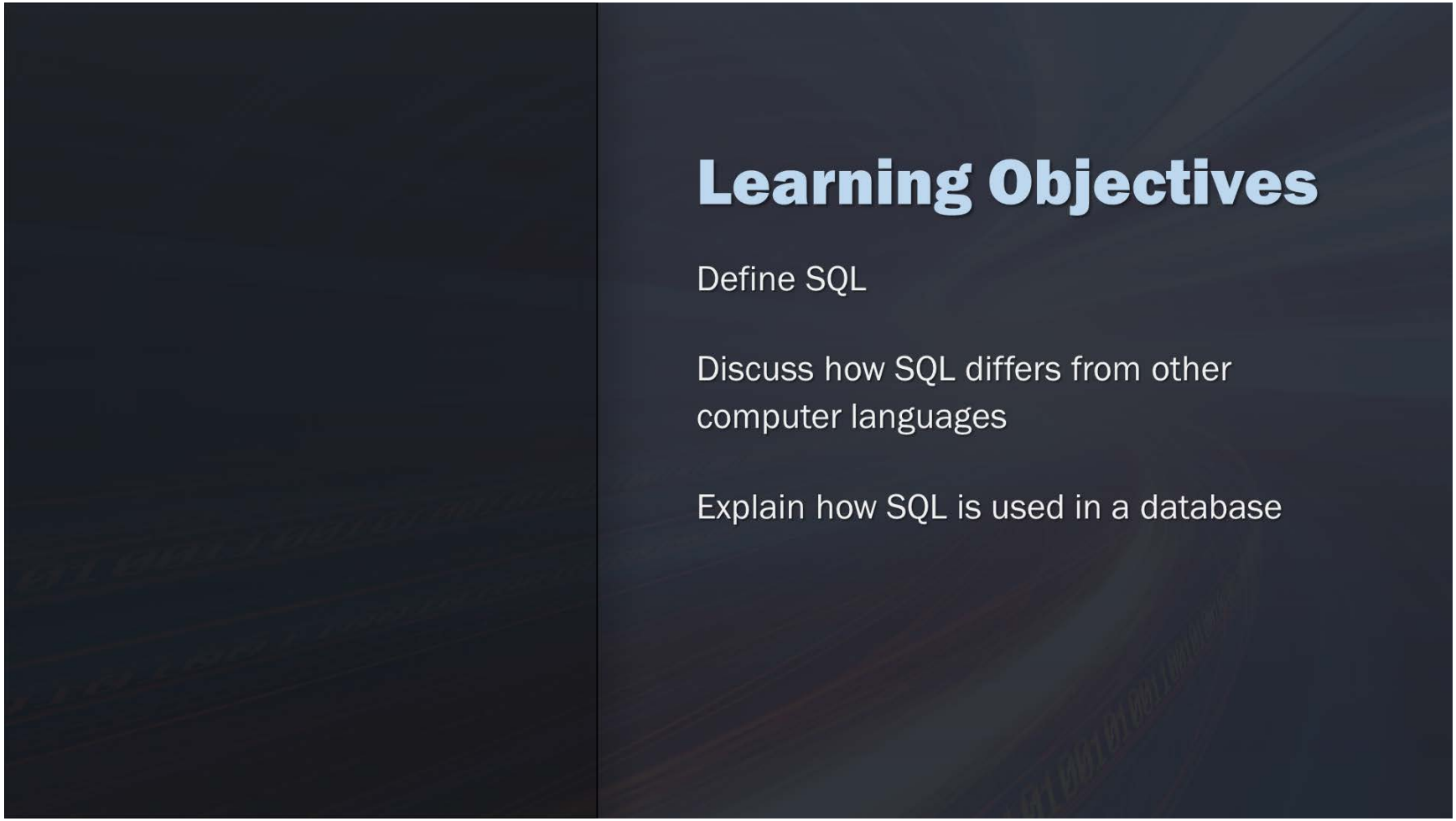
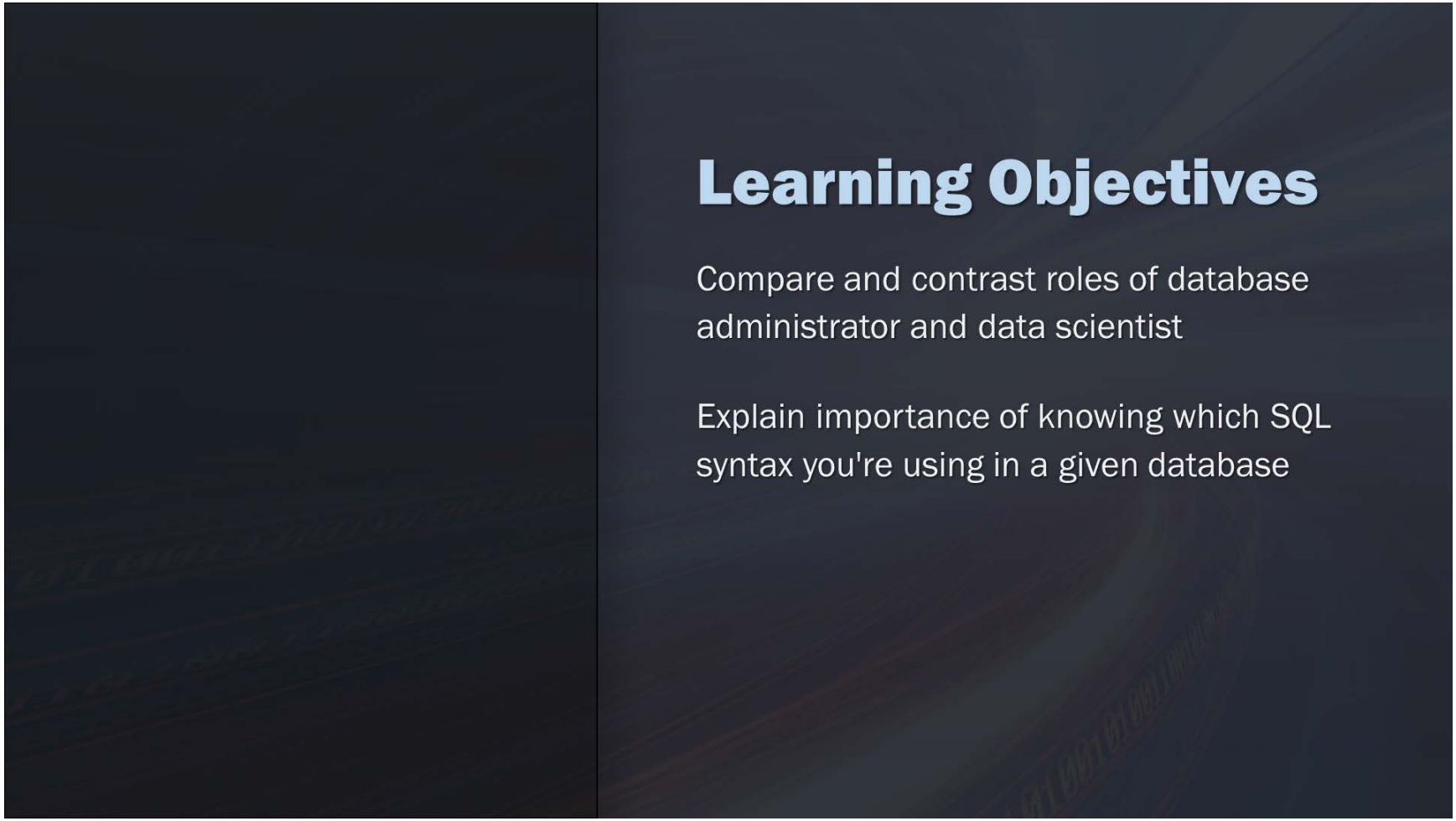
Slide 1: What Is SQL Anyway?



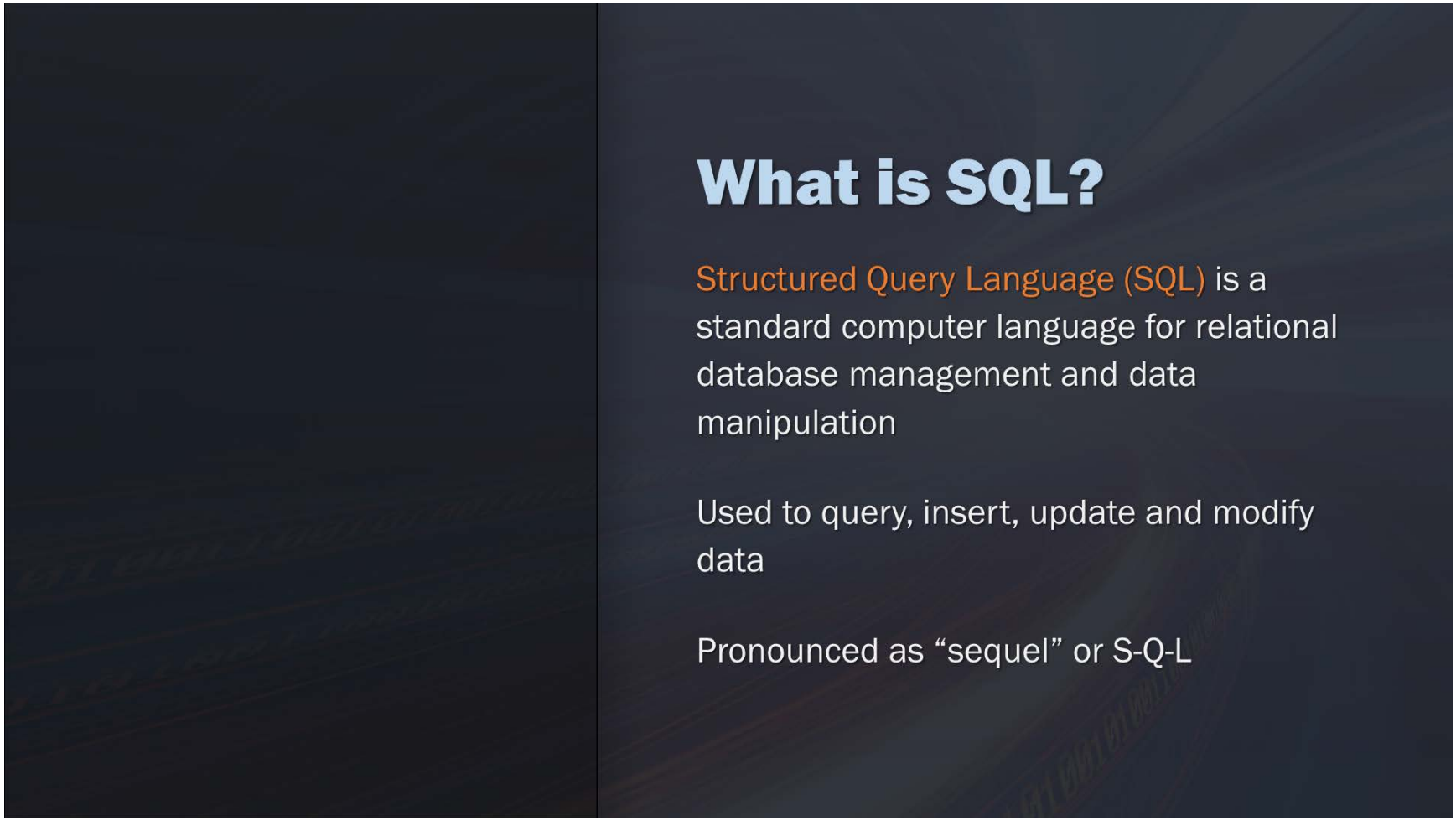
Slide 2: Learning Objectives



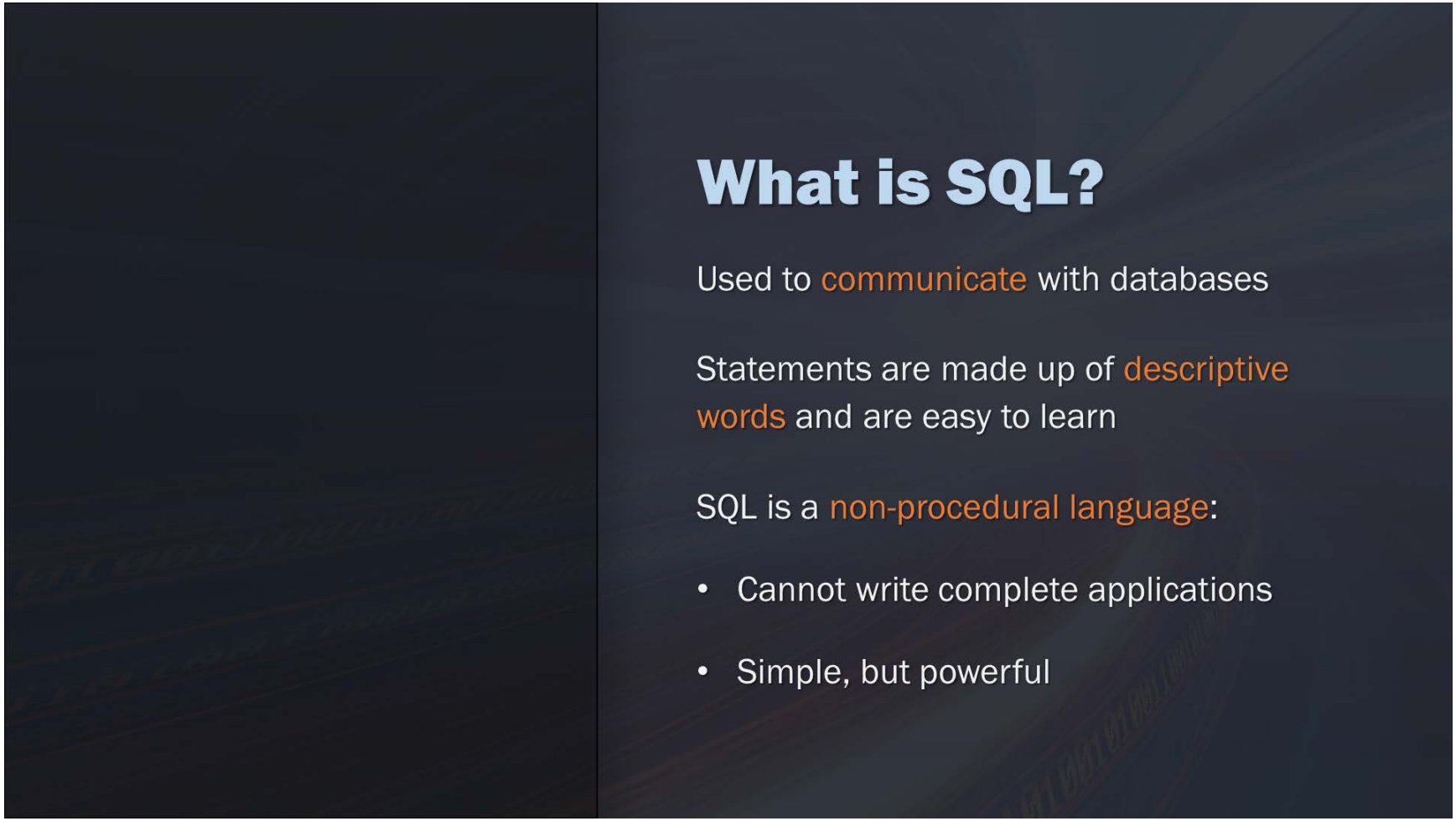
Slide 3: Learning Objectives



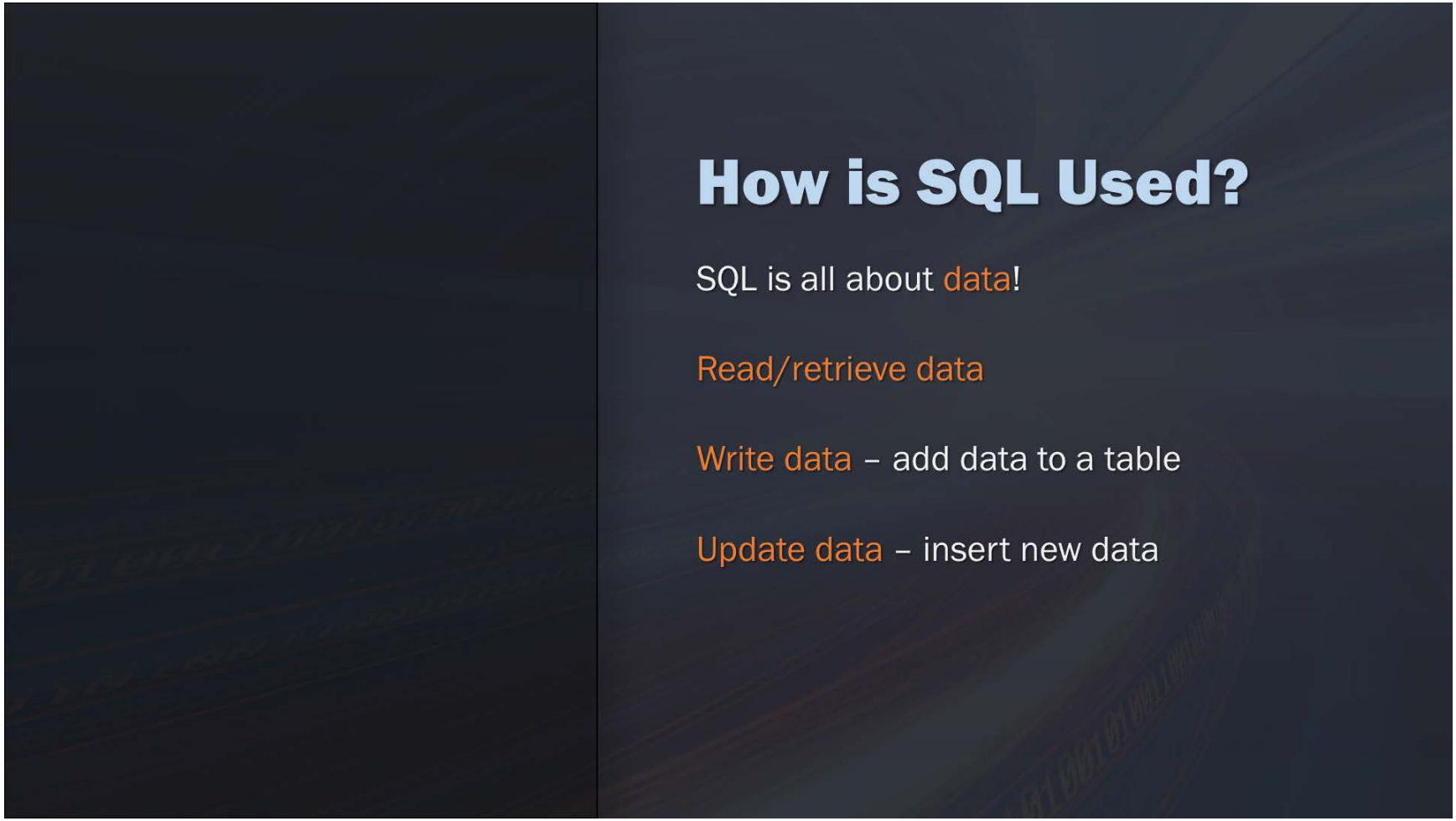
Slide 4: What Is SQL?



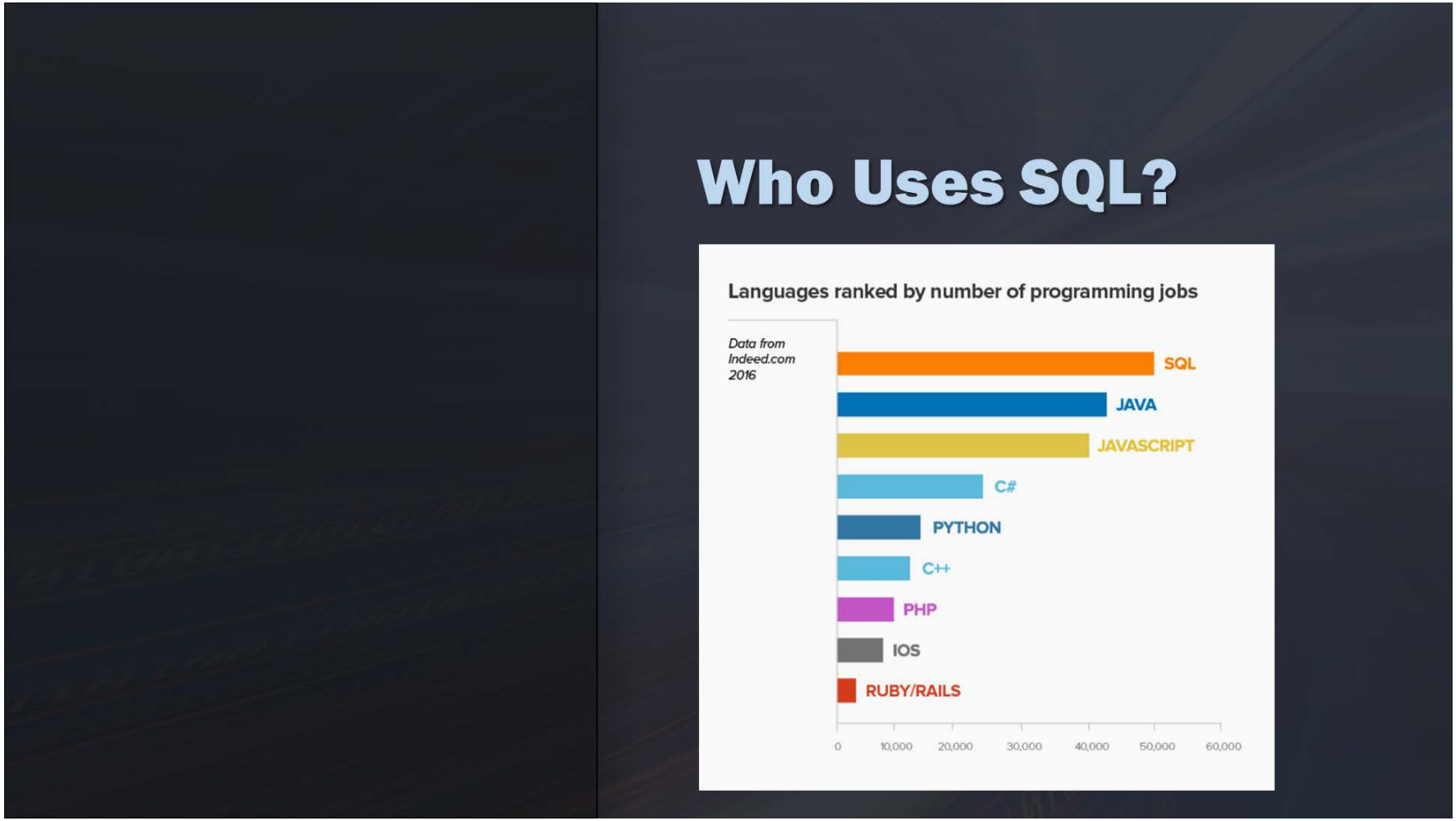
Slide 5: What Is SQL?



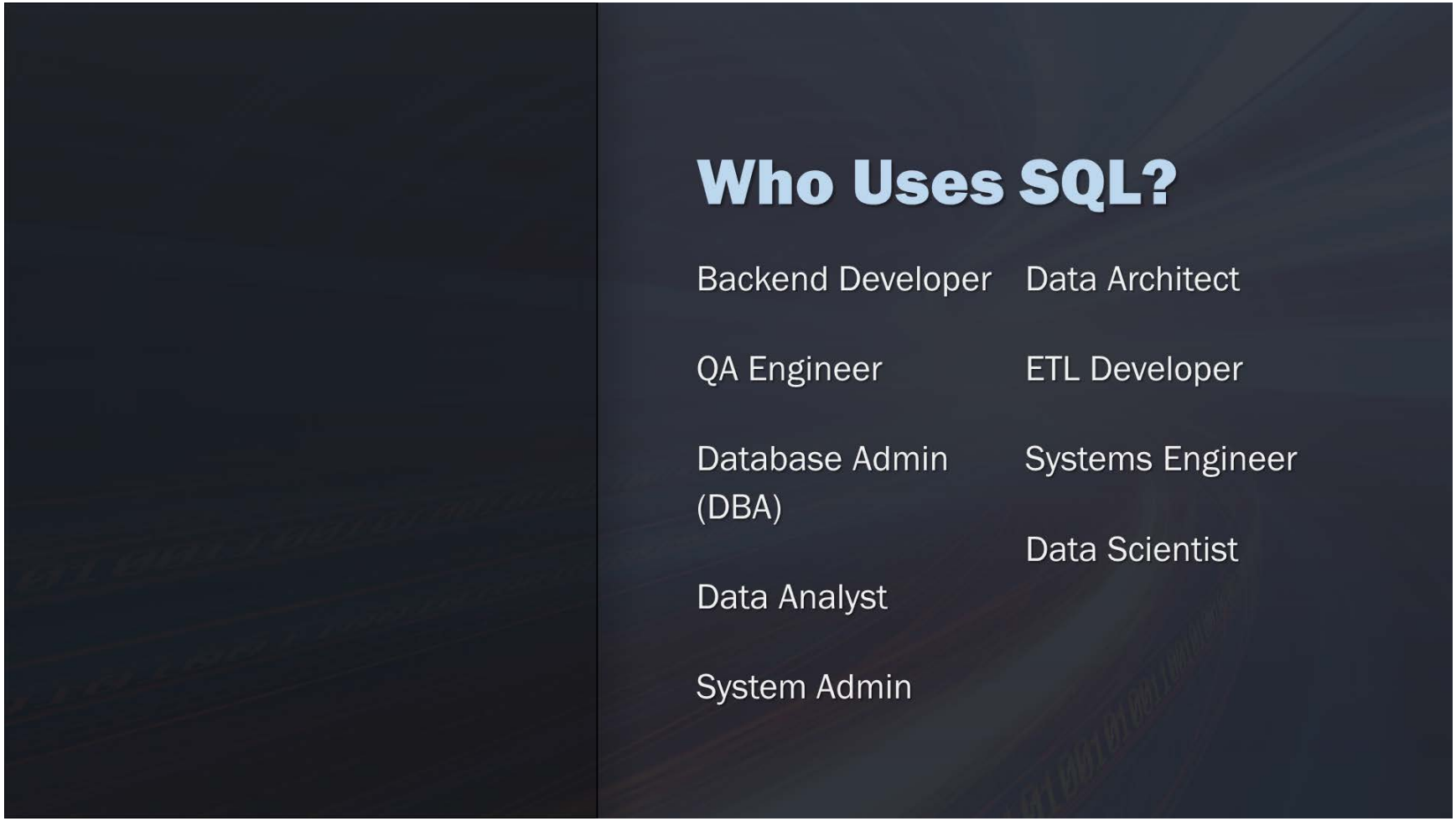
Slide 6: How is SQL Used?



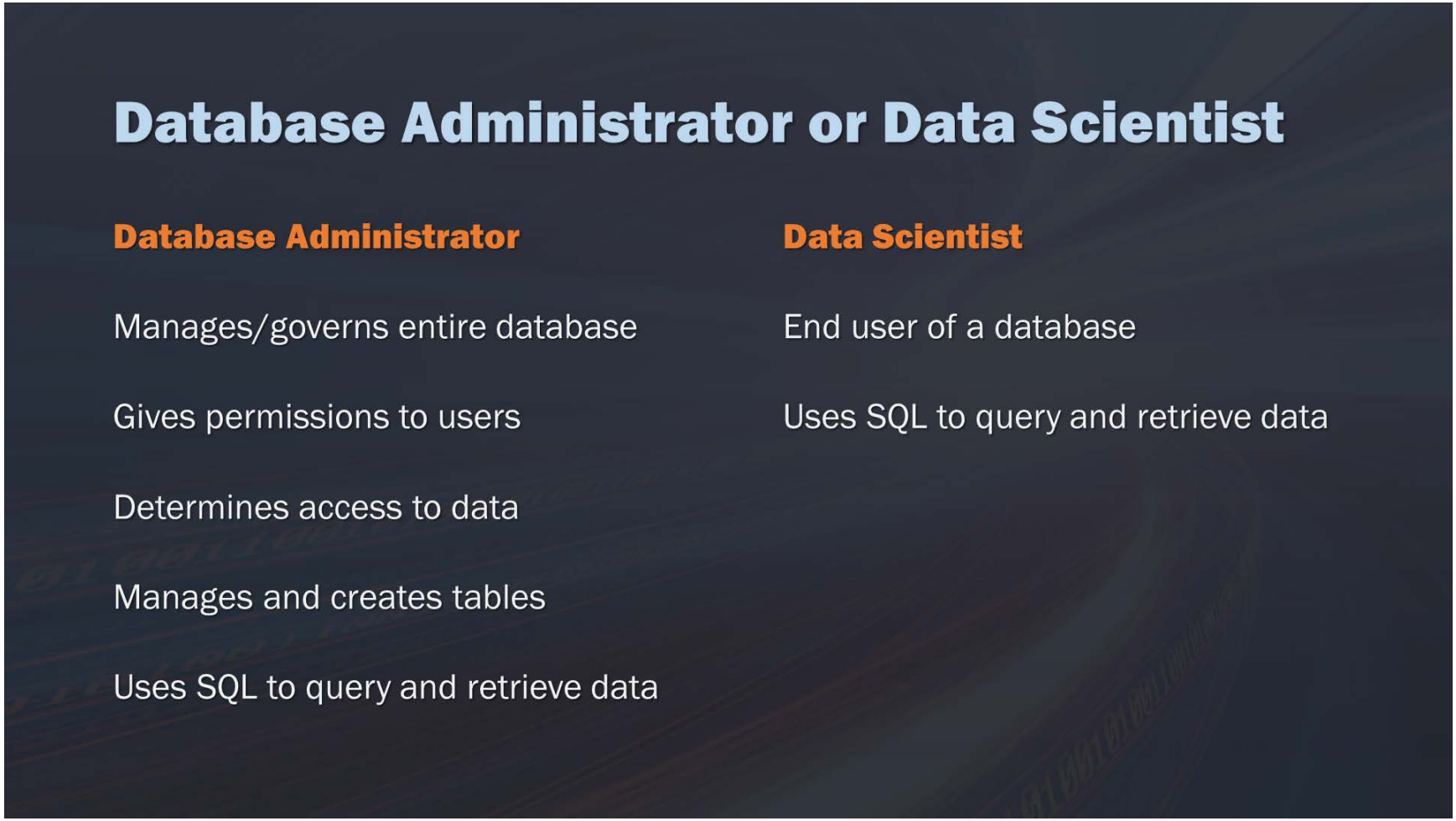
Slide 7: Who Uses SQL?



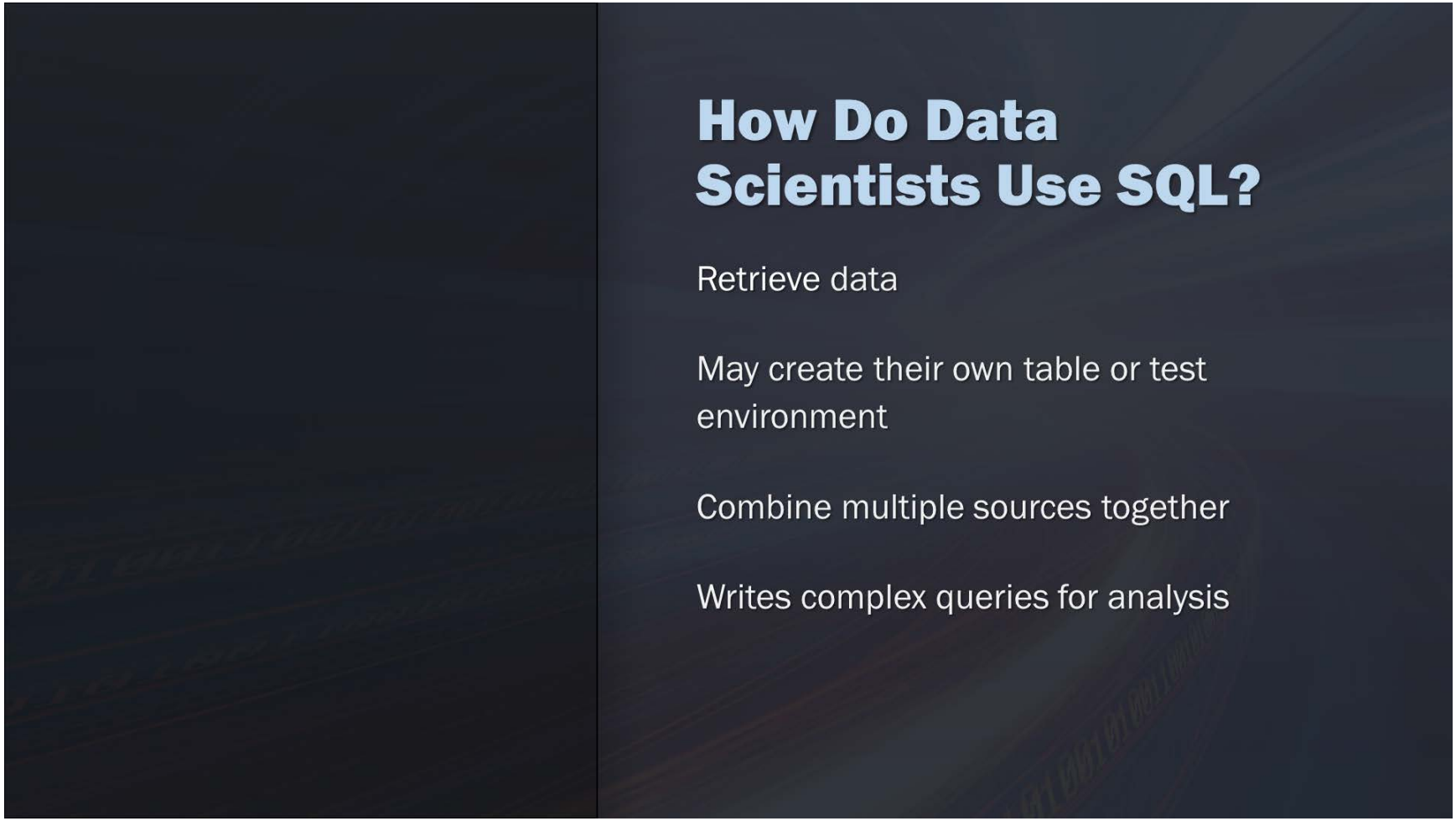
Slide 8: Who Uses SQL?



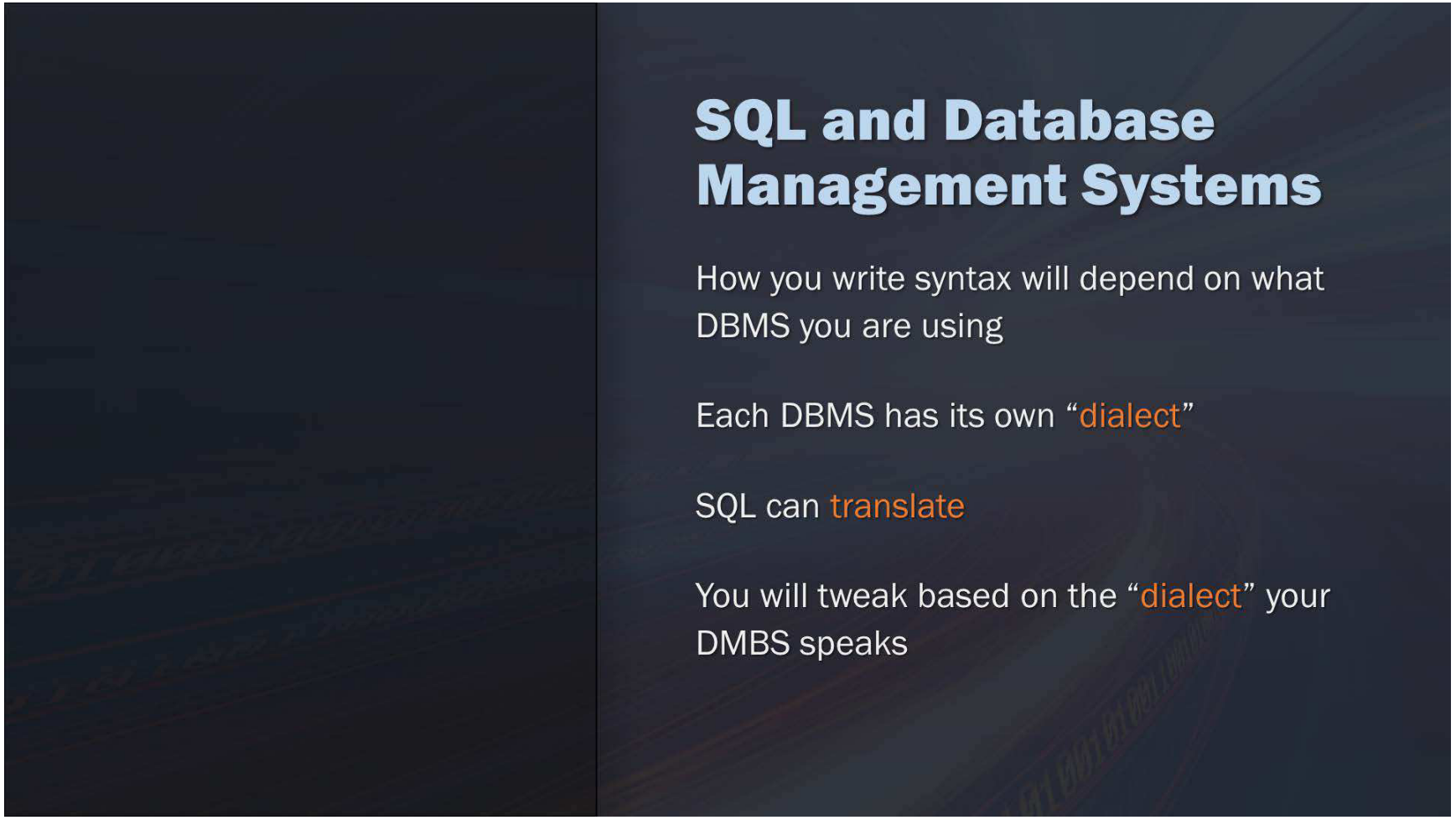
Slide 9: Database Administrator or Data Scientist



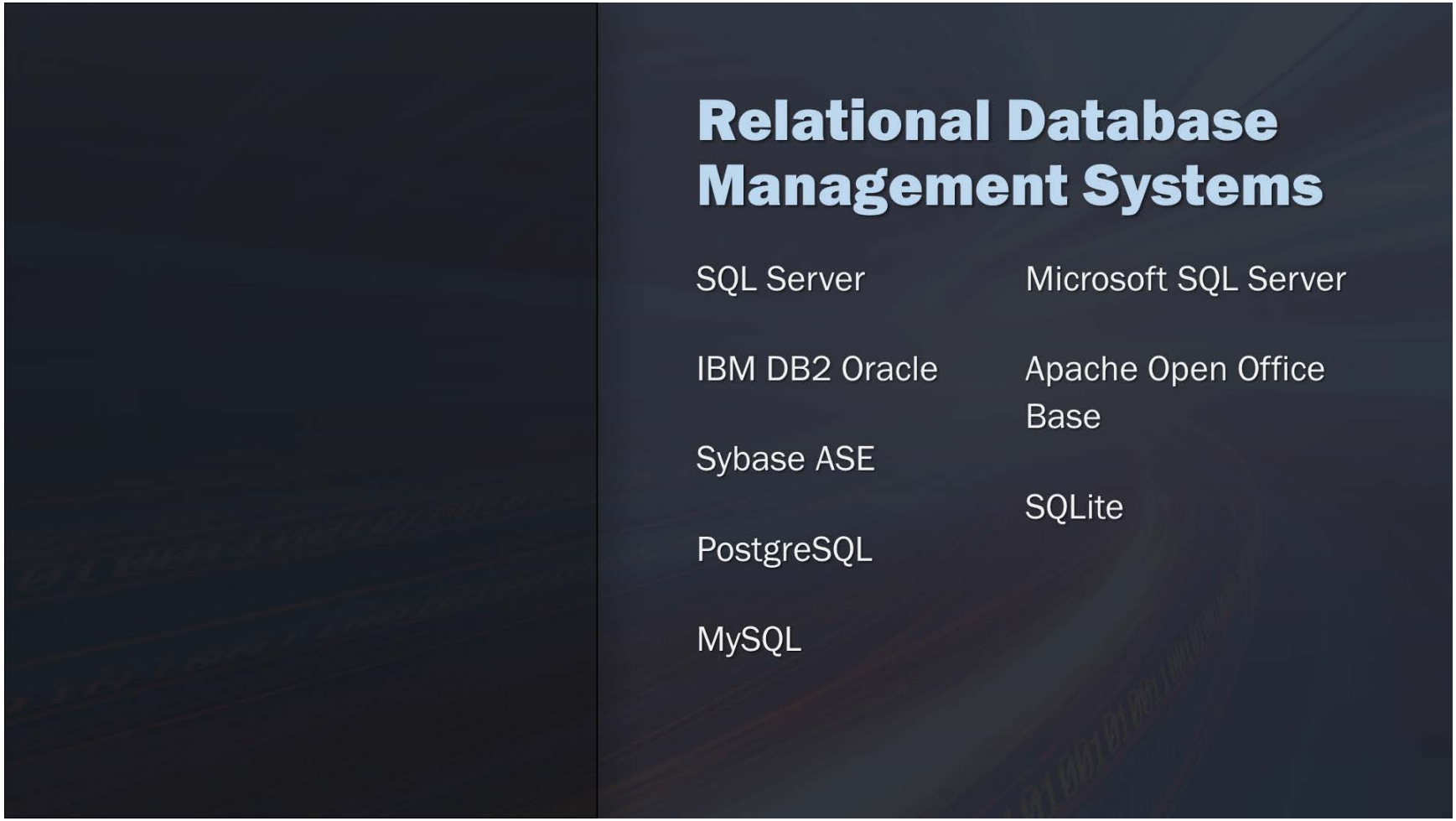
Slide 10: How Do Data Scientists Use SQL?



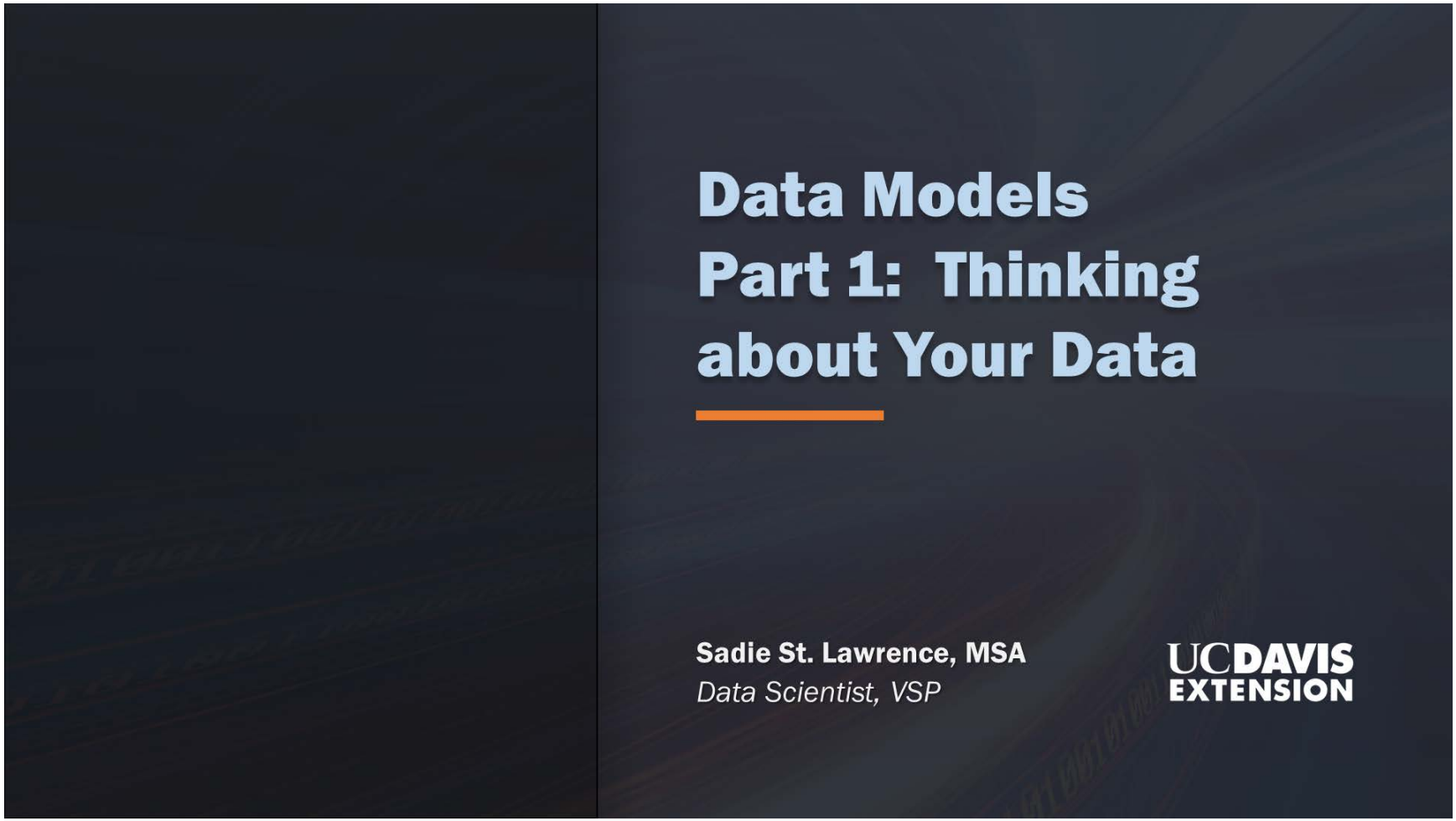
Slide 11: SQL and Database Management Systems



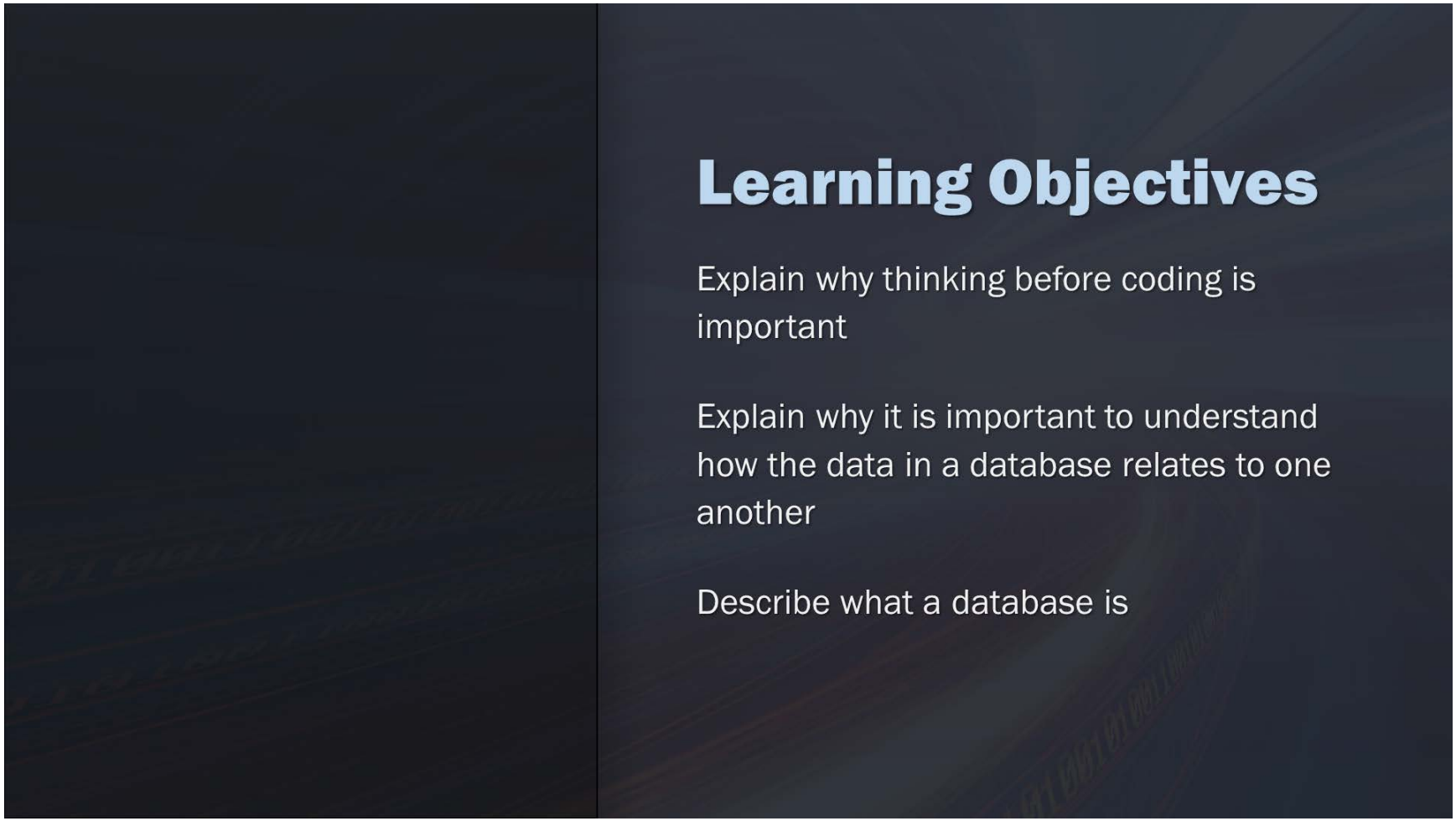
Slide 12: Relational Database Management Systems



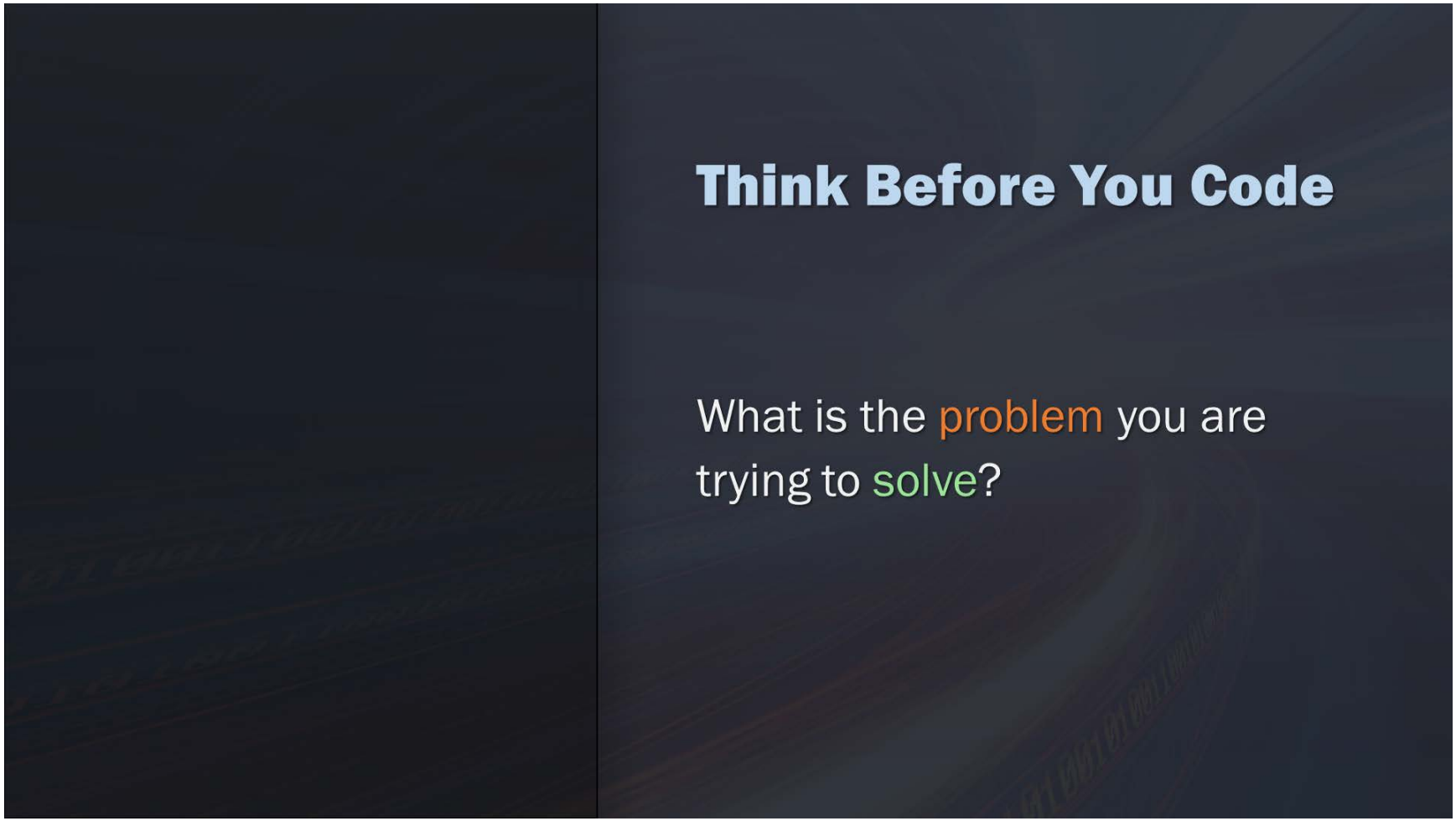
Slide 1: Data Models Part 1: Thinking about Your Data



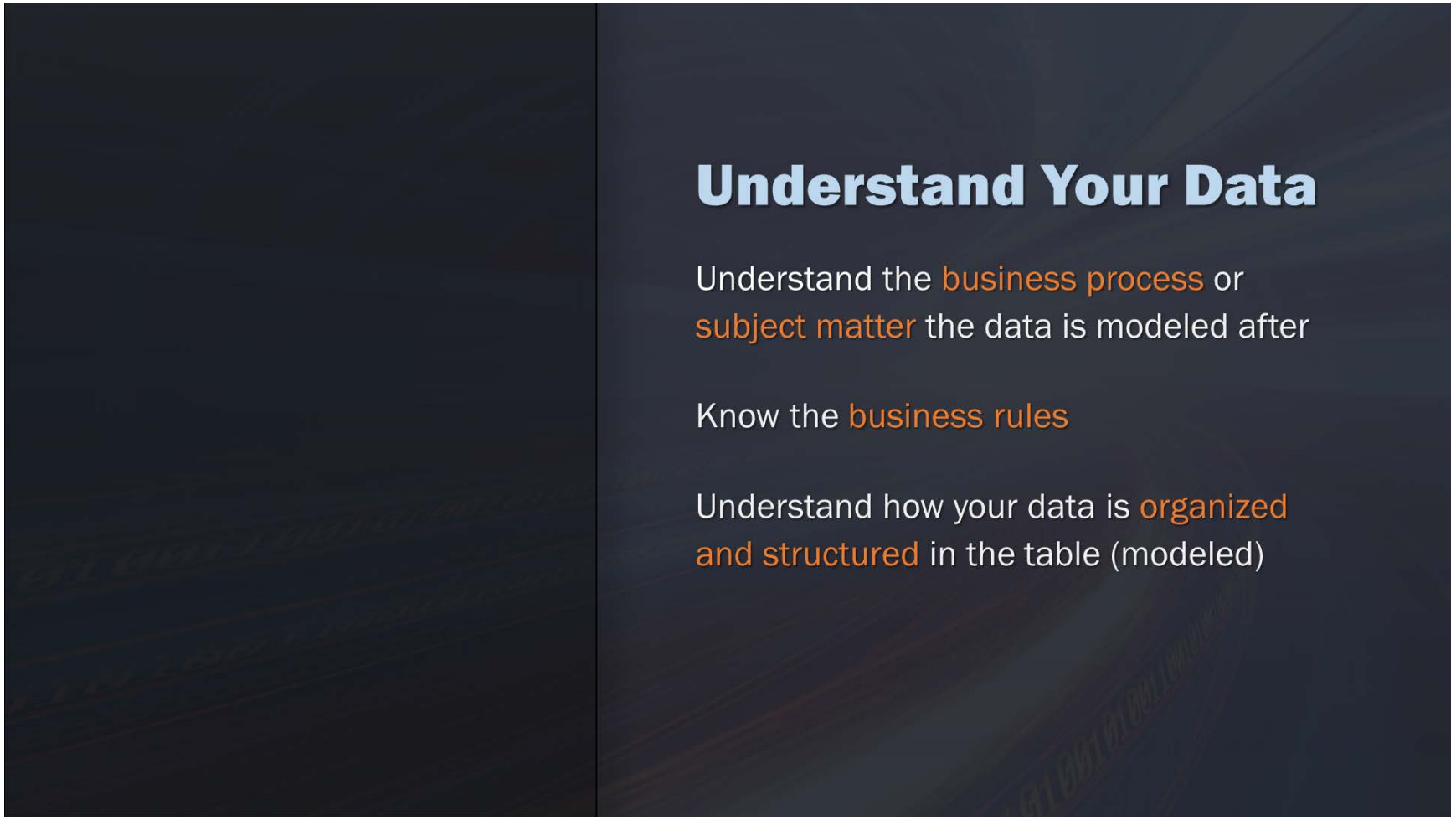
Slide 2: Learning Objectives



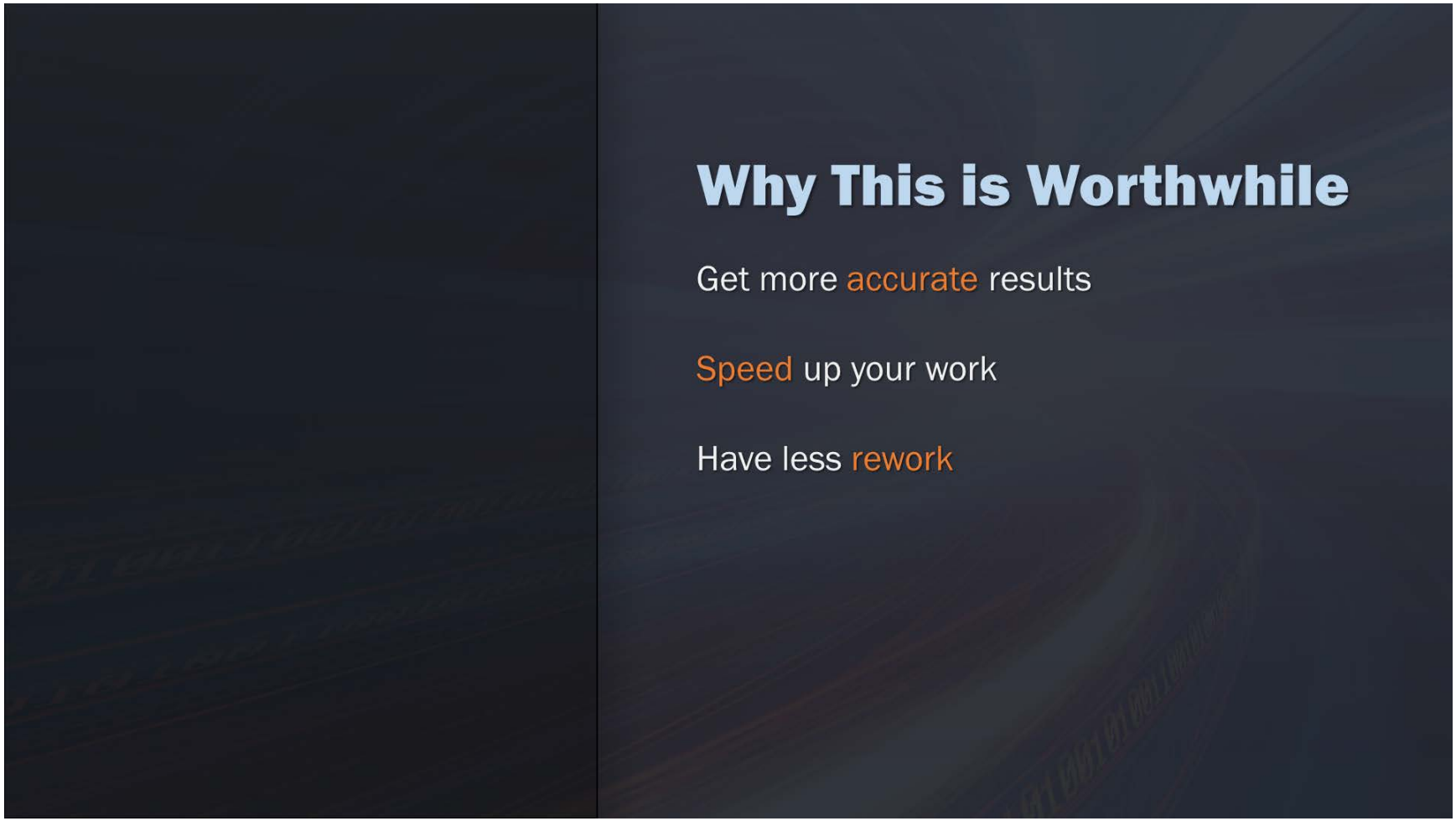
Slide 3: Think Before You Code



Slide 4: Understand Your Data



Slide 5: Why This is Worthwhile



Slide 6: Databases and Tables

Databases and Tables

Database: A container (usually a file or set of files) to store organized data; a set of related information

Tables: A structured list of data or a specific type

Slide 7: Columns and Rows

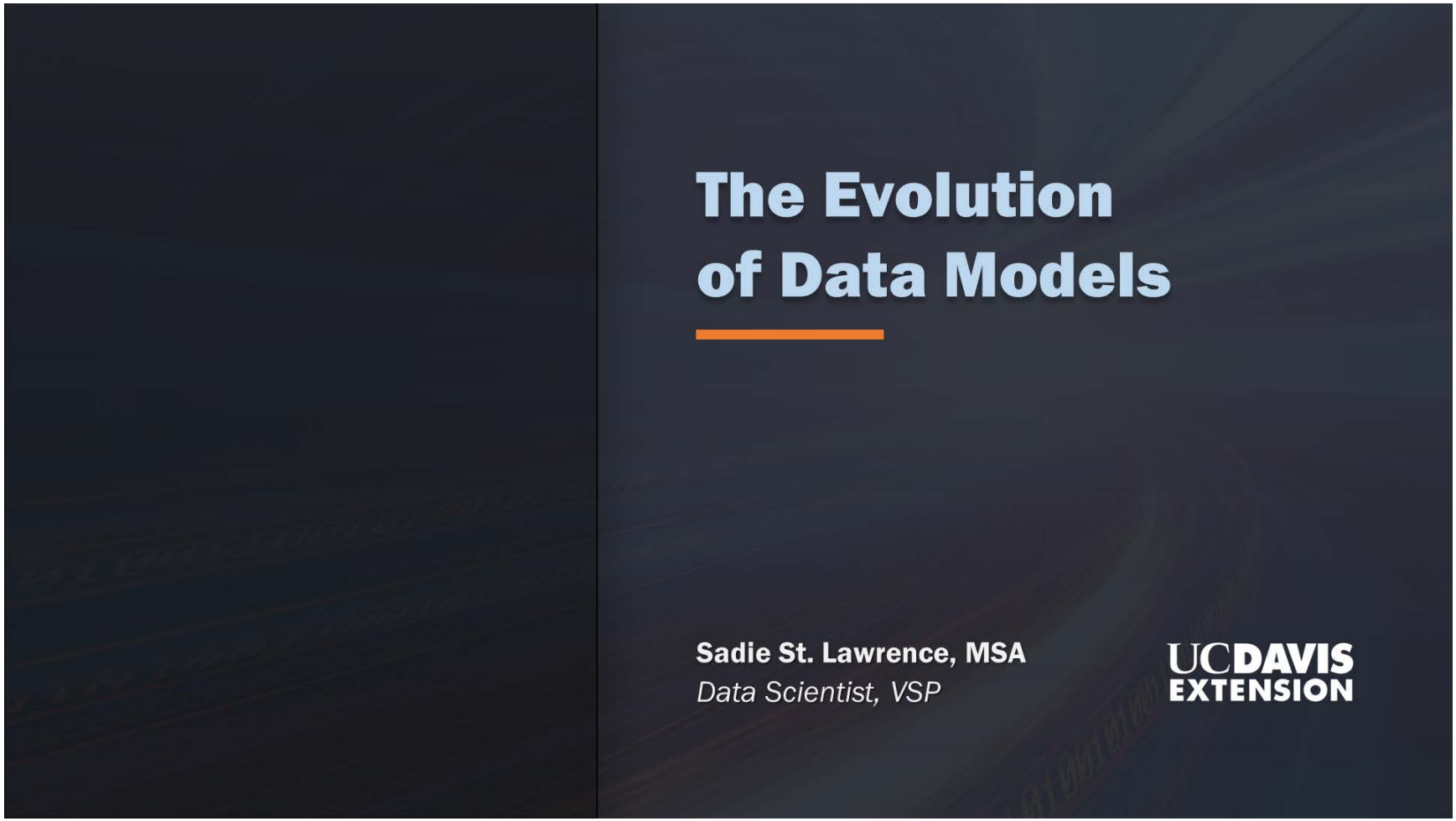
Columns and Rows

Column: A single field in a table - all tables are made up of one or more columns

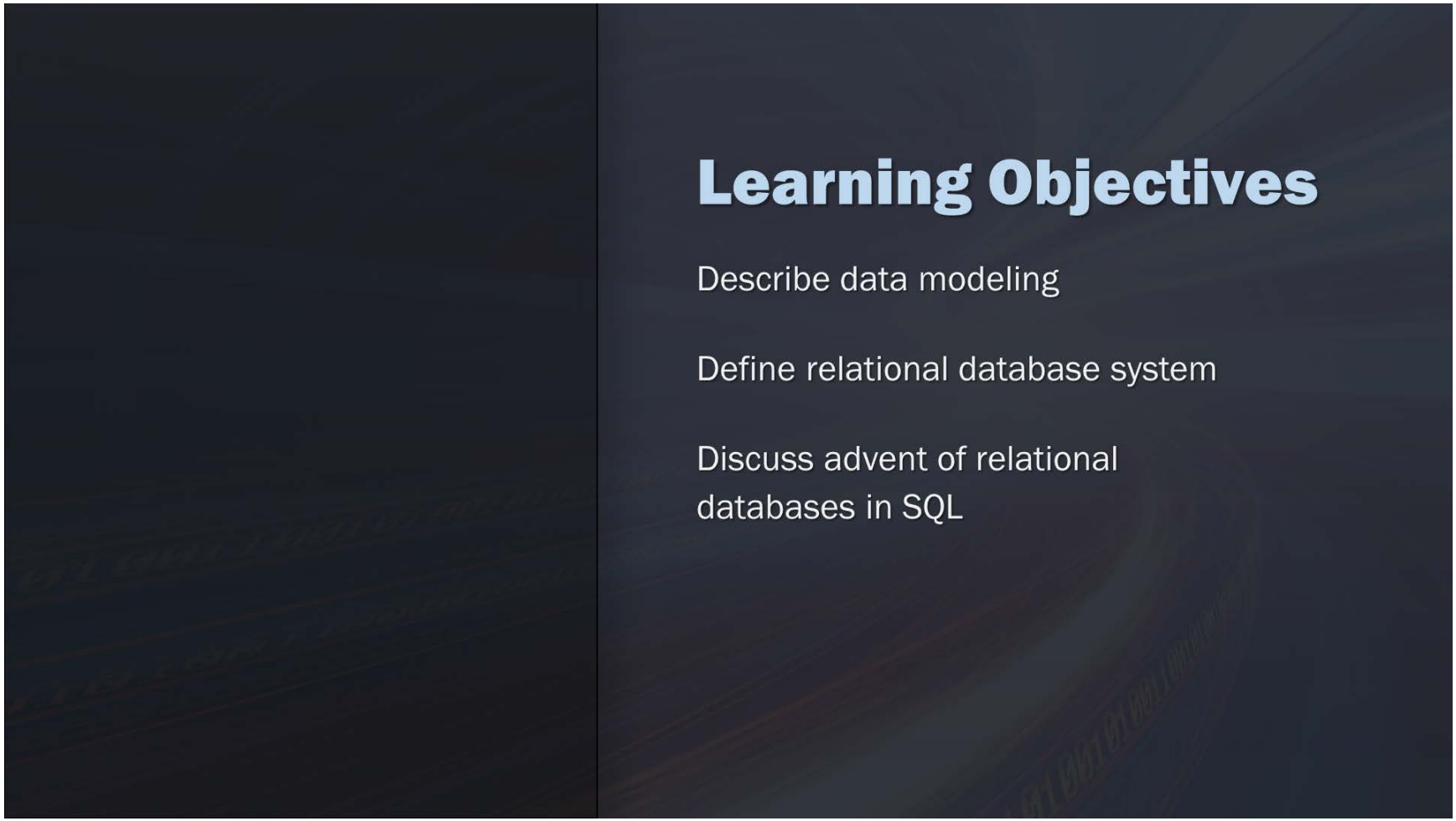
Row: A record in a table

	A	B	C	D	E	F	G	H	I	J	K
1	sku	name	brand	Price	item_height	item_length	item_width	item_unit_o	item_weight	item_unit_of_weight	
2	PFI-F0314BPY	Pfister F-031-4	Pfister	129.99	3.8	20.6	12.7	inches	6.5	pounds	
3	PFI-F042HAK0	Pfister Amher	Pfister	79.99	7.69	4.81	6.56	inches	3.42	pounds	
4	PFI-FWK1340S	Pfister F-WK1-	Pfister	119.99	2.5	18.5	10	inches	5.12	pounds	
5	PFI-GT343TCC	Pfister GT34-3	Pfister	149.99	2.5	18.5	10	inches	6.2	pounds	
6	PFI-MP8LNKK	Pfister Langst	Pfister	99.99	7.67	14.22	7.67	inches	3.2	pounds	
7	B00B4QEP0U	Pfister GT529-	Pfister	109.99	2.5	18.5	10	inches	3.17	pounds	
8	PFI-GT529DCC	Pfister GT529-	Pfister	179.99	2.5	24.5	10.5	inches	3.17	pounds	
9	PFI-GT529DSS	Pfister GT529-	Pfister	114.99	2.5	24.5	10.5	inches	3.17	pounds	
10	B007LEP02Q	Pfister F-031-4	Pfister	249.99	4.1	20.6	12.8	inches	6.5	pounds	
11	PFI-F0314BPS	Pfister F-031-4	Pfister	144.99	4.1	20.6	12.8	inches	6.5	pounds	
12											

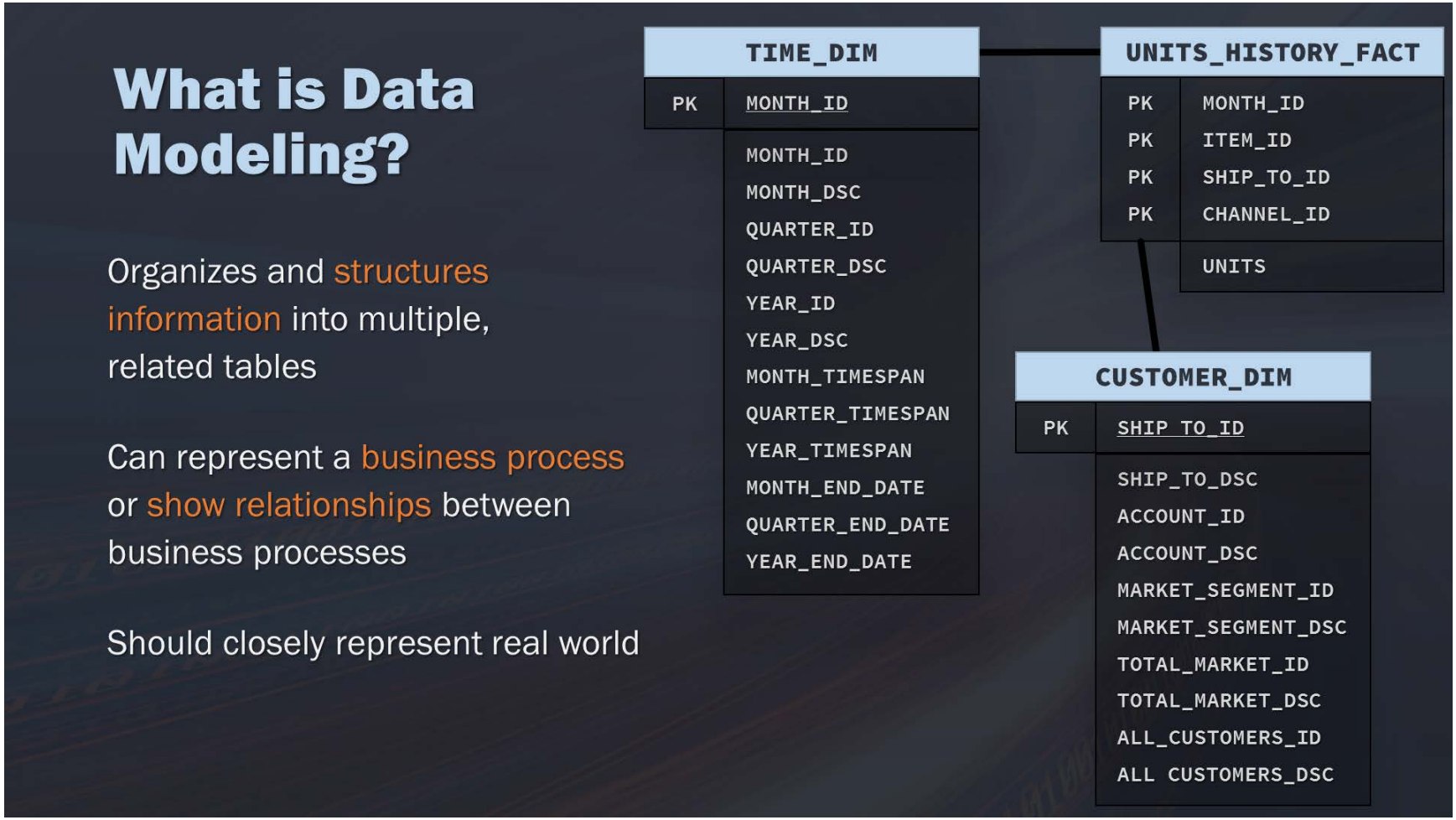
Slide 1: The Evolution of Data Models



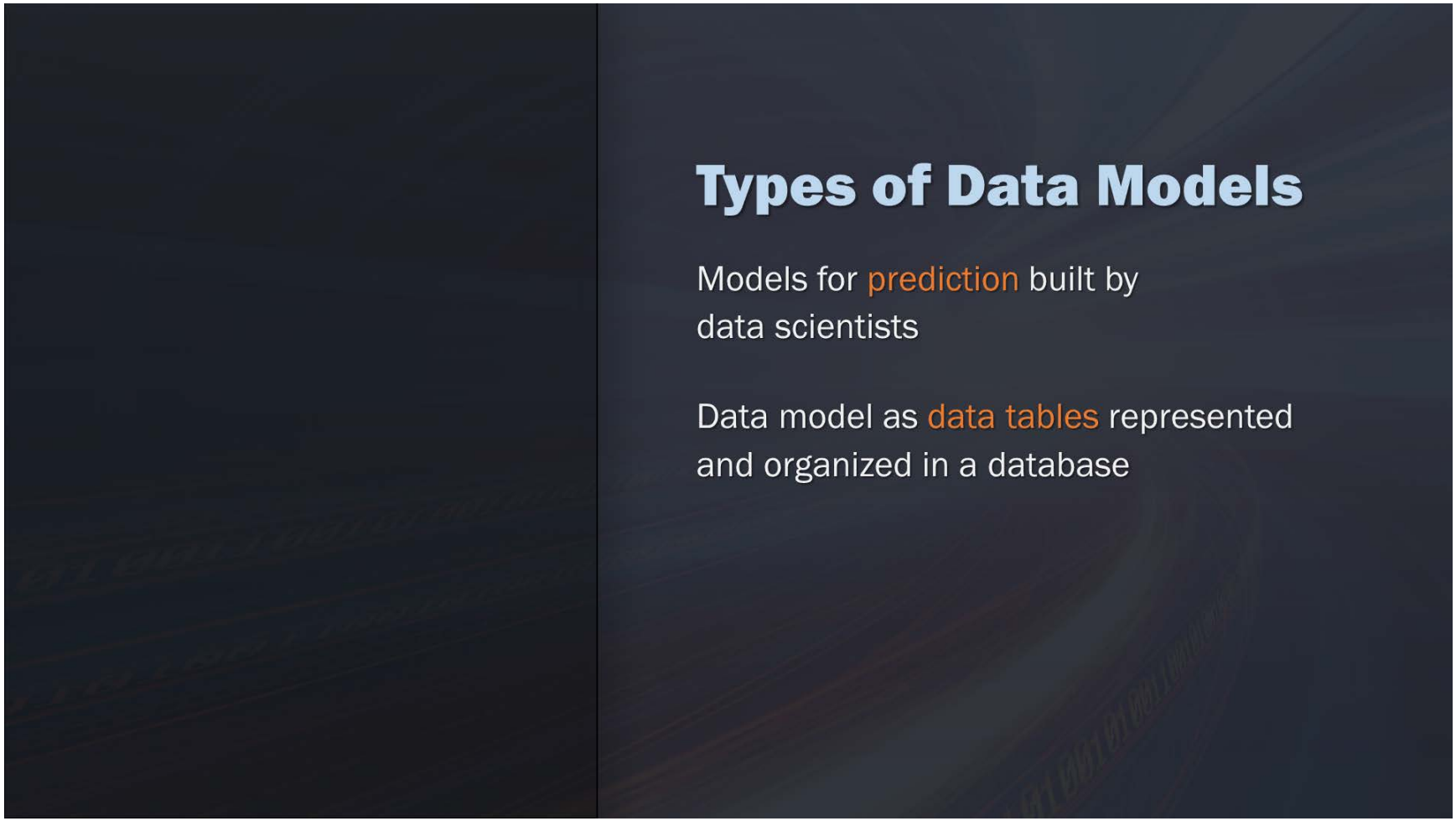
Slide 2: Learning Objectives



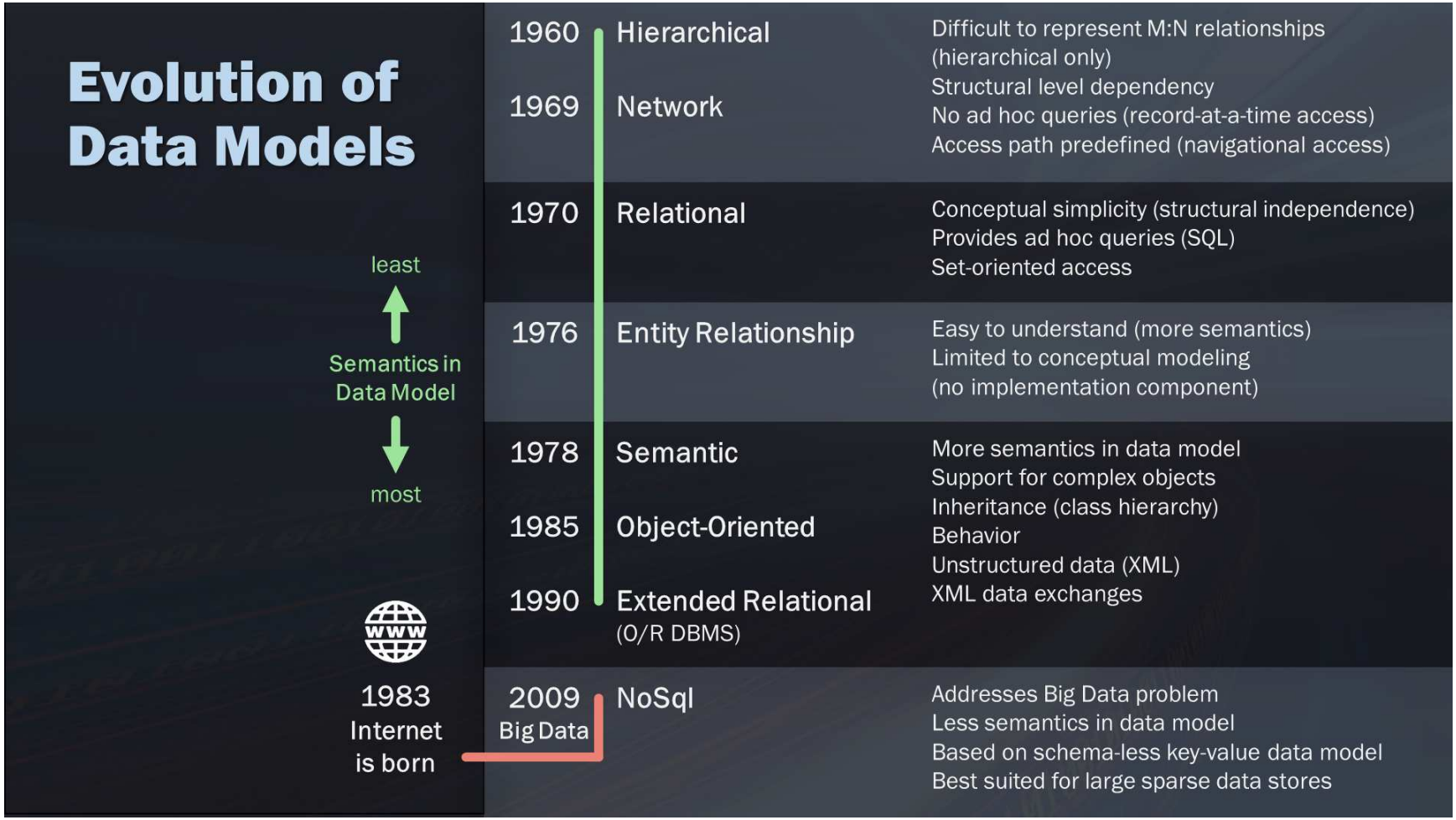
Slide 3: What Is Data Modeling



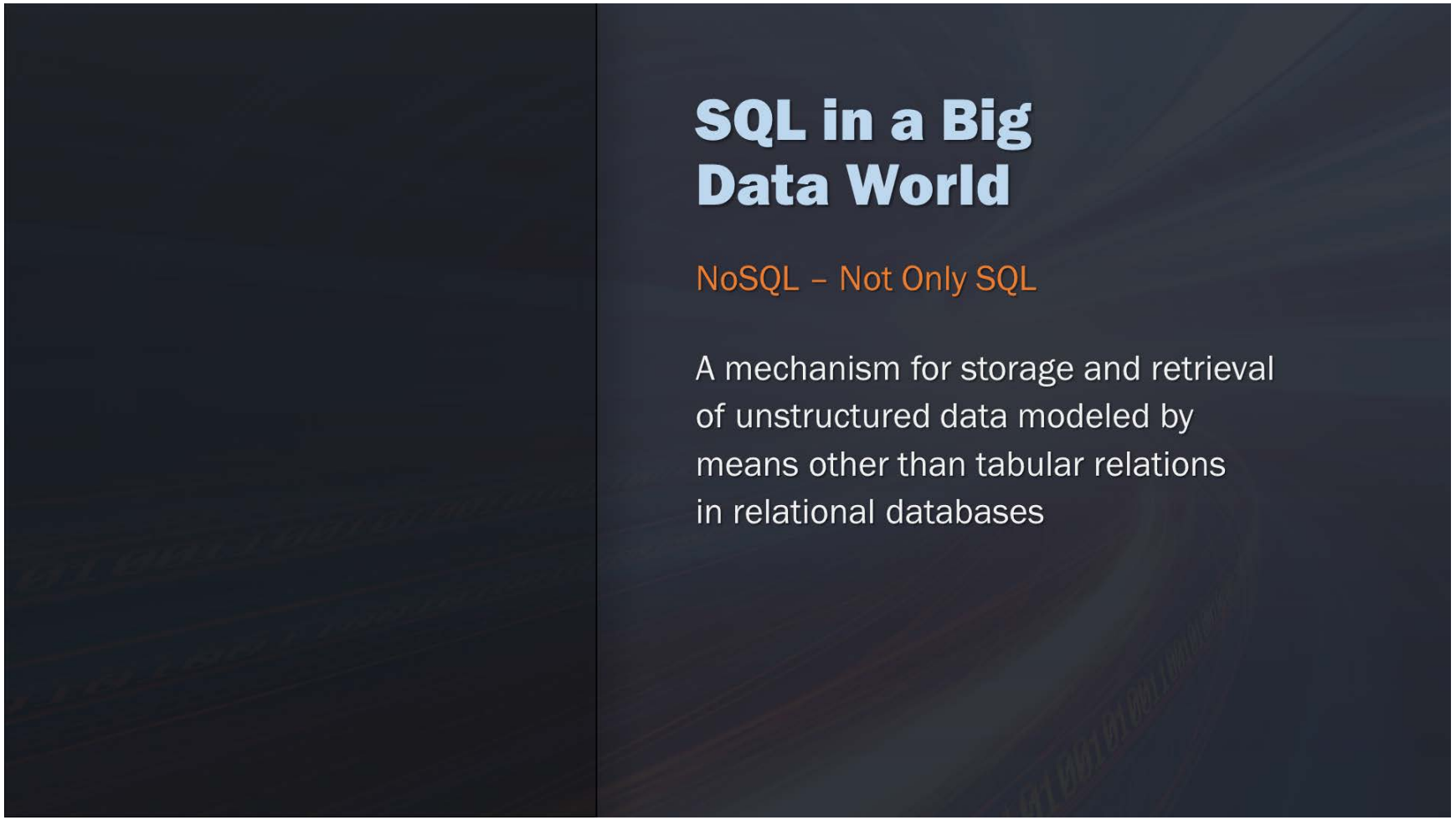
Slide 4: Types of Data Models



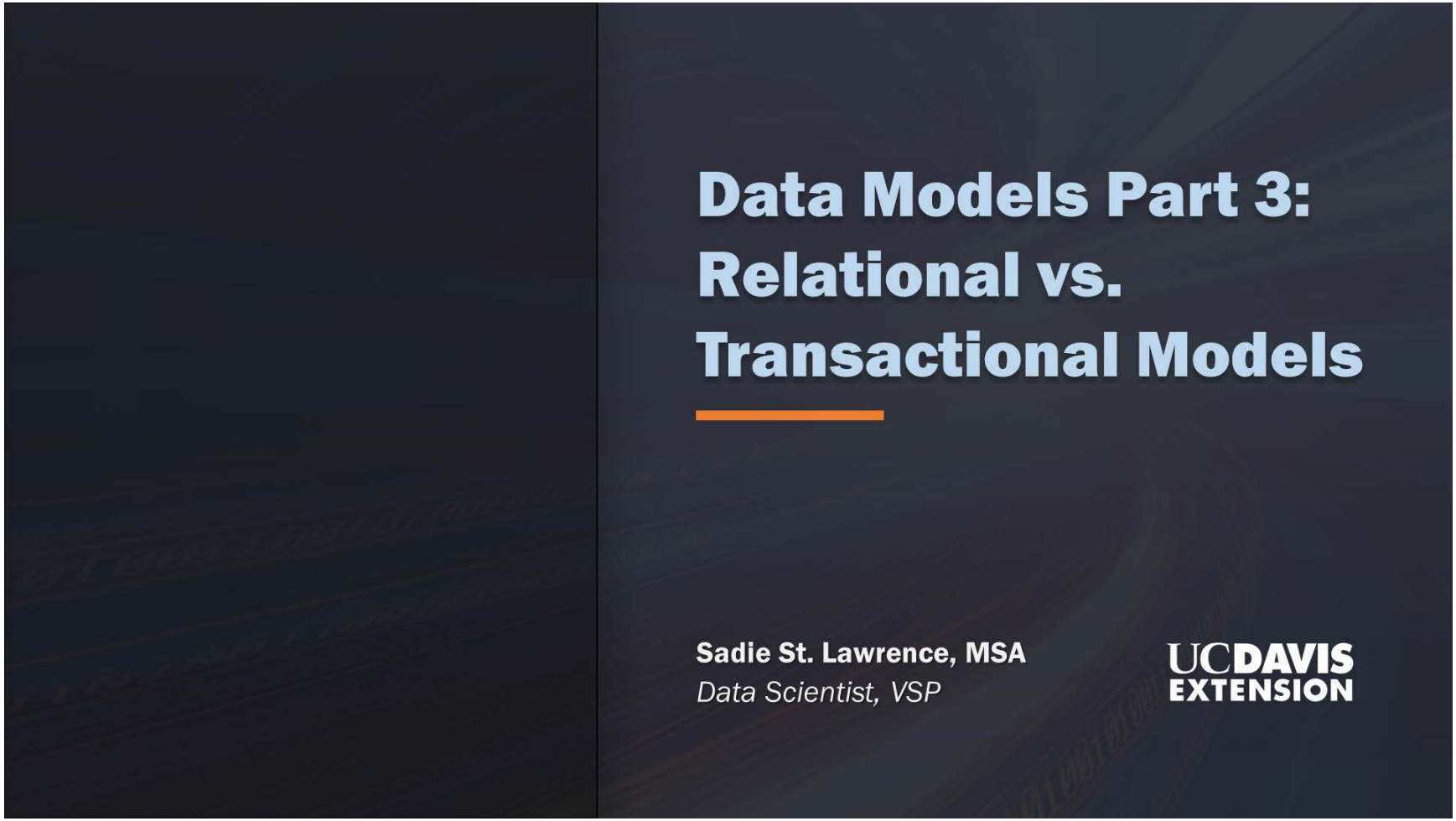
Slide 5: Evolution of Data Models



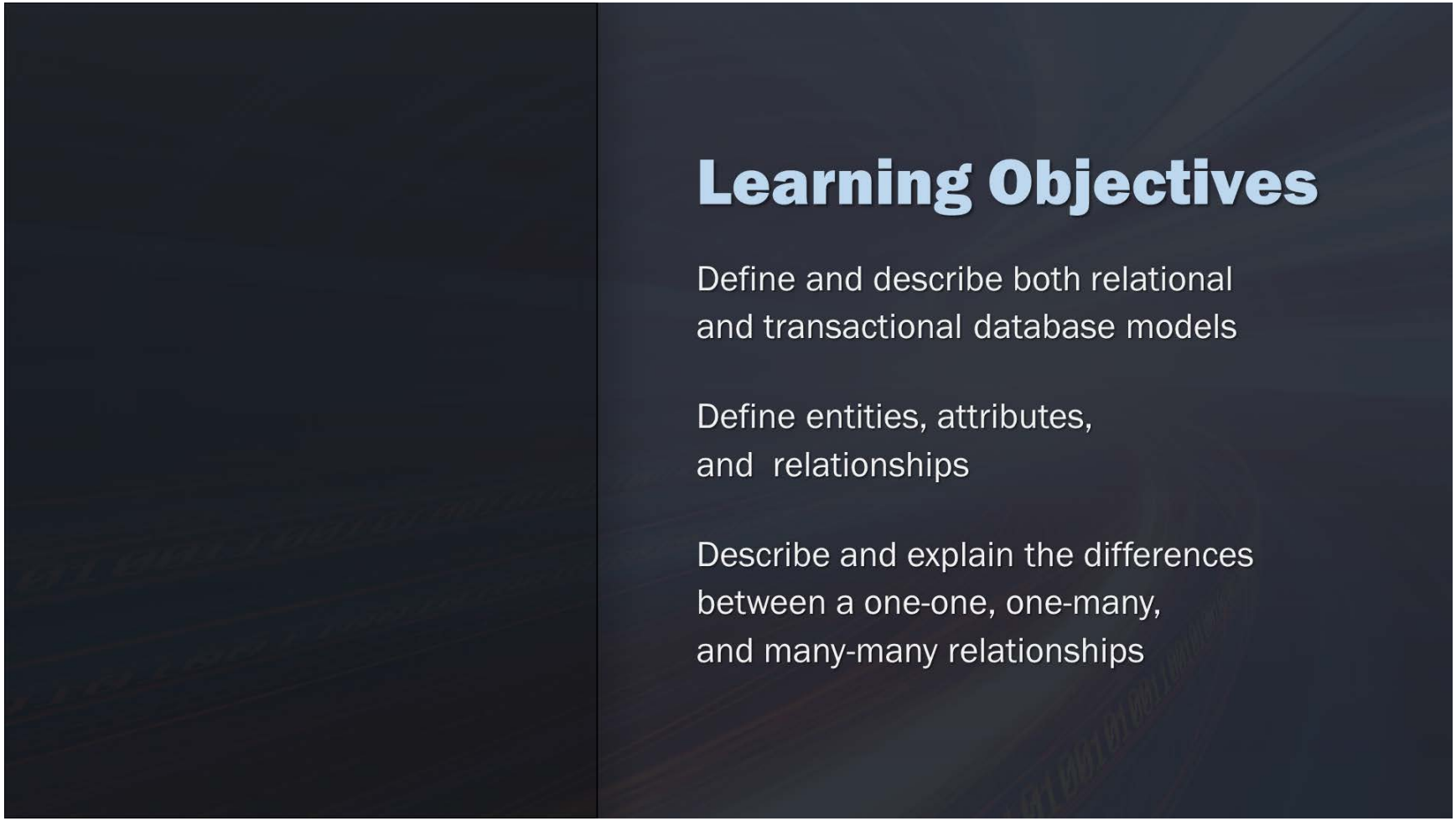
Slide 6: SQL in a Big Data World



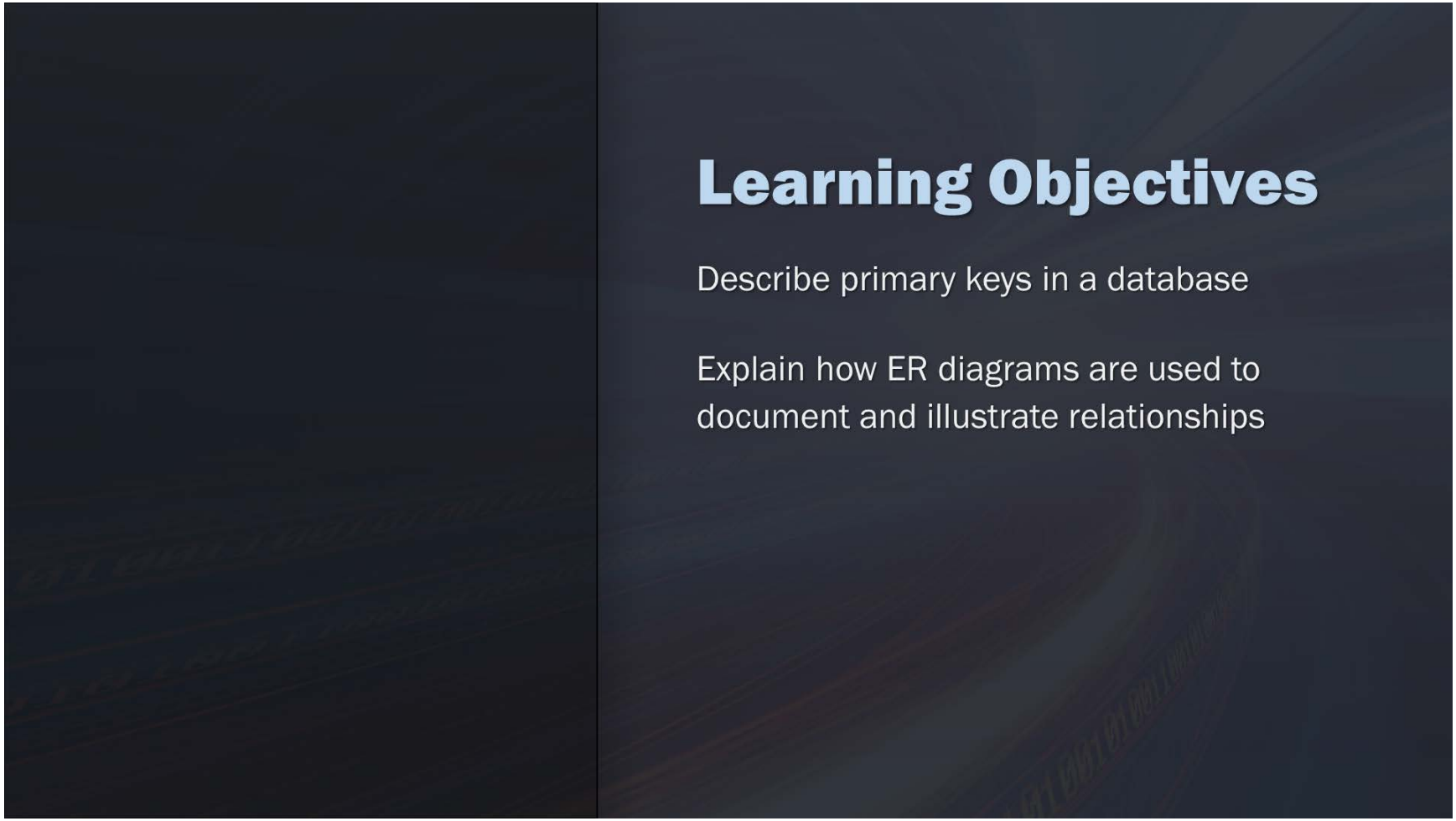
Slide 1: Data Models Part 3: Relational vs. Transactional Models



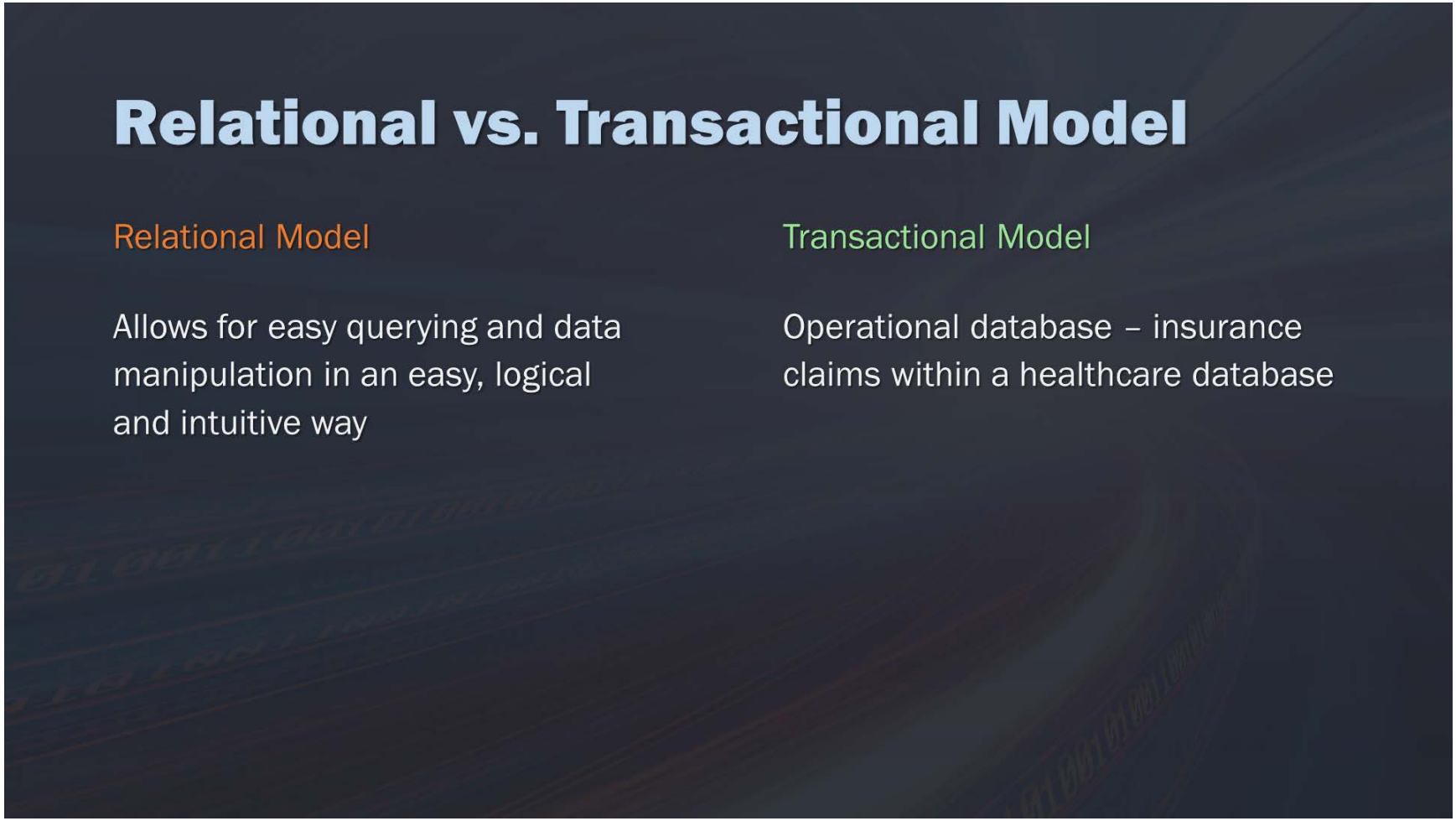
Slide 2: Learning Objectives



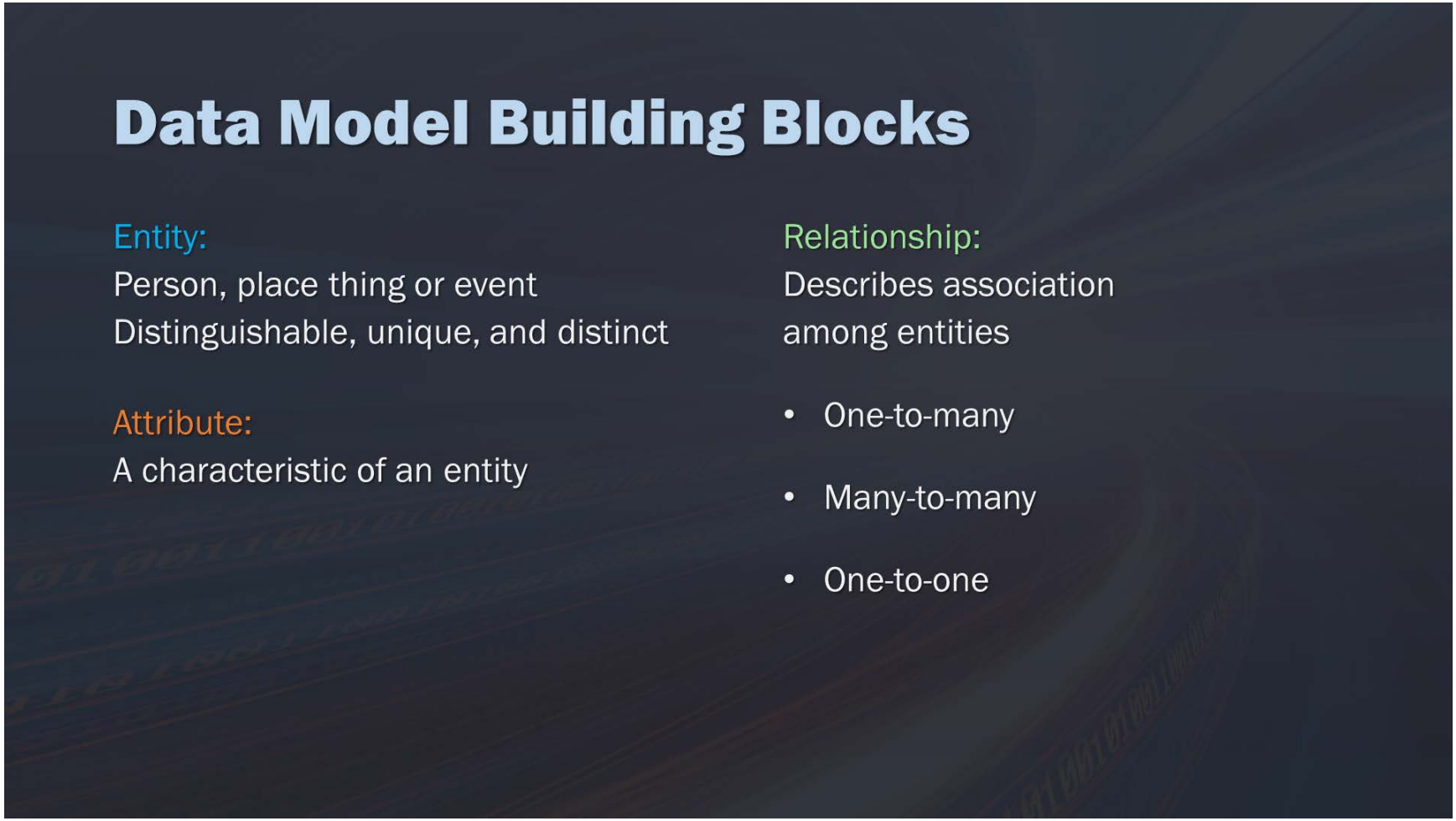
Slide 3: Learning Objectives



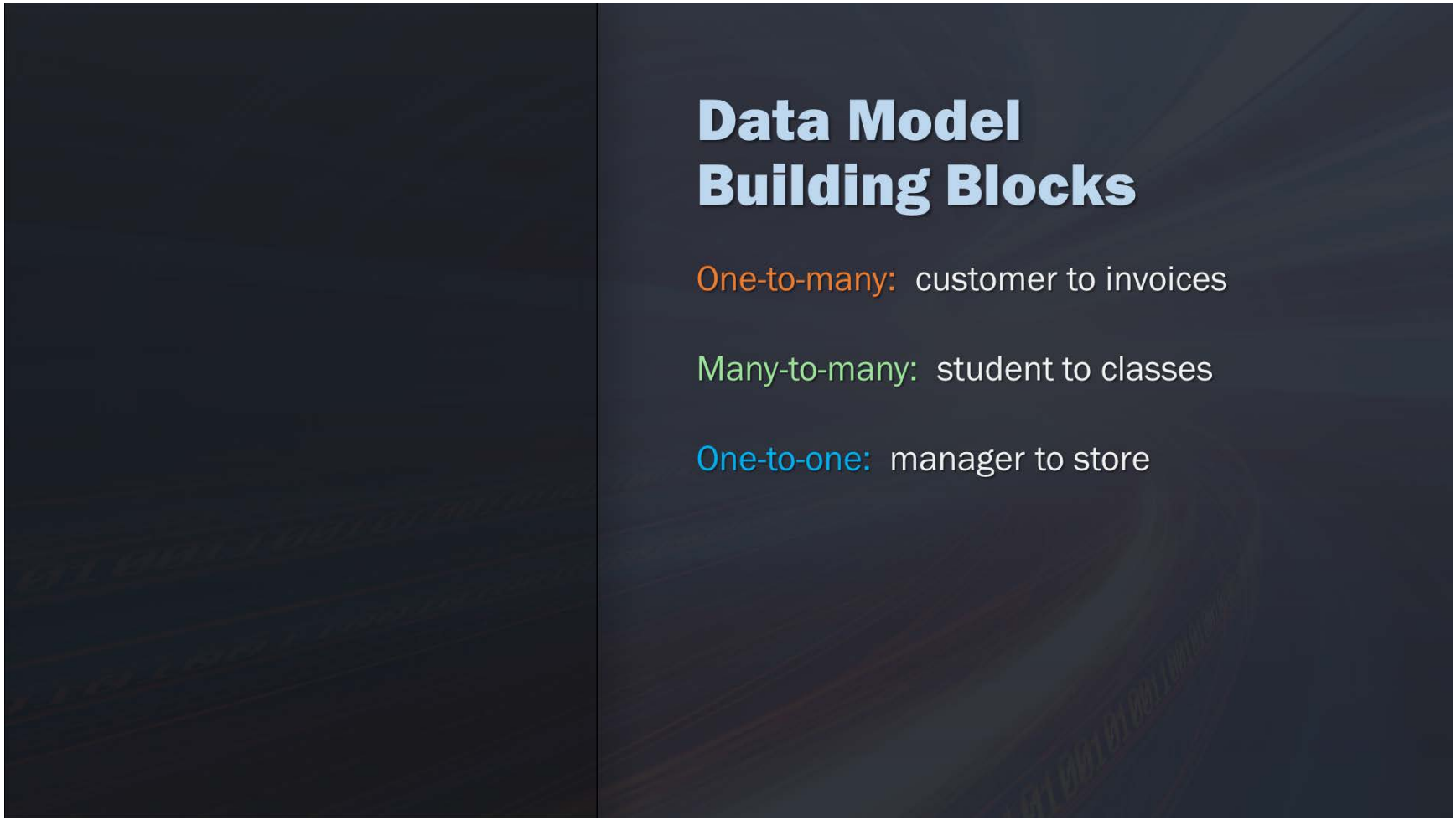
Slide 4: Relational vs. Transactional Model



Slide 5: Data Model Building Blocks



Slide 6: Data Model Building Blocks

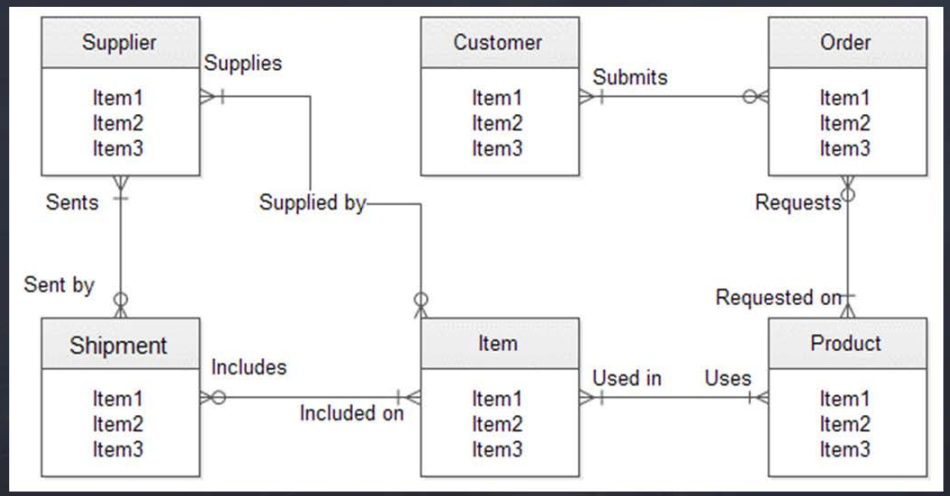


Slide 7: ER Diagrams

ER Diagrams

ER model

Is composed of entity types and specifies relationships that can exist between instances of those entity types



Slide 8: ER Diagrams

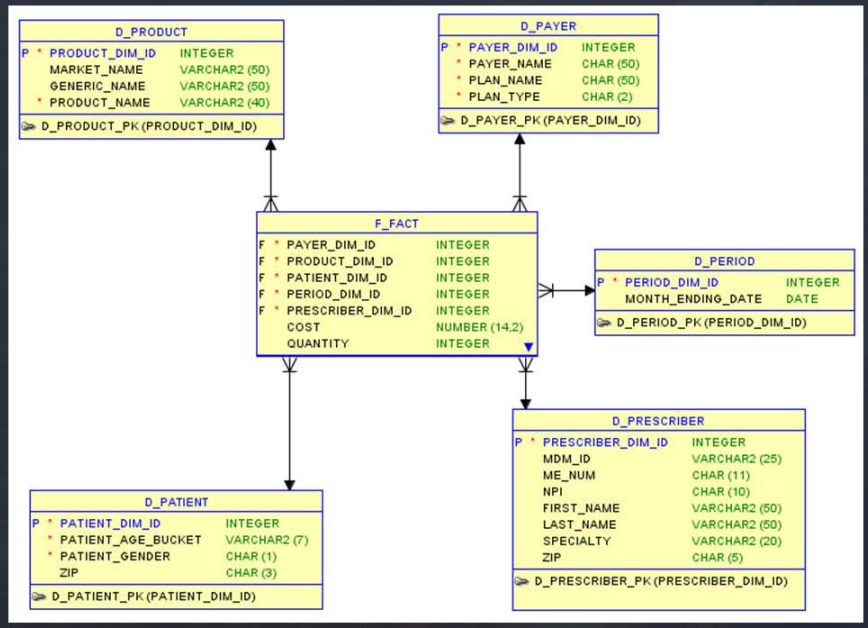
ER Diagrams

Show relationships

Business process

Represented visually

Show links (primary keys)



Slide 9: Primary Keys and Foreign Keys

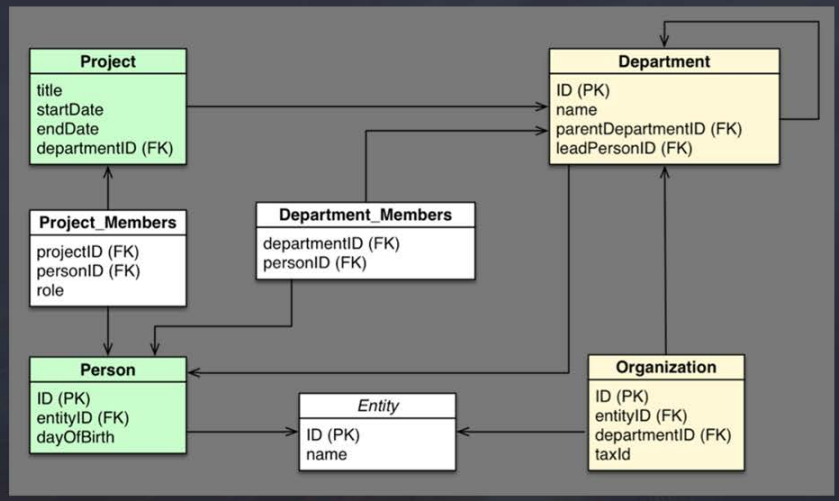
Primary Keys and Foreign Keys

Primary Key

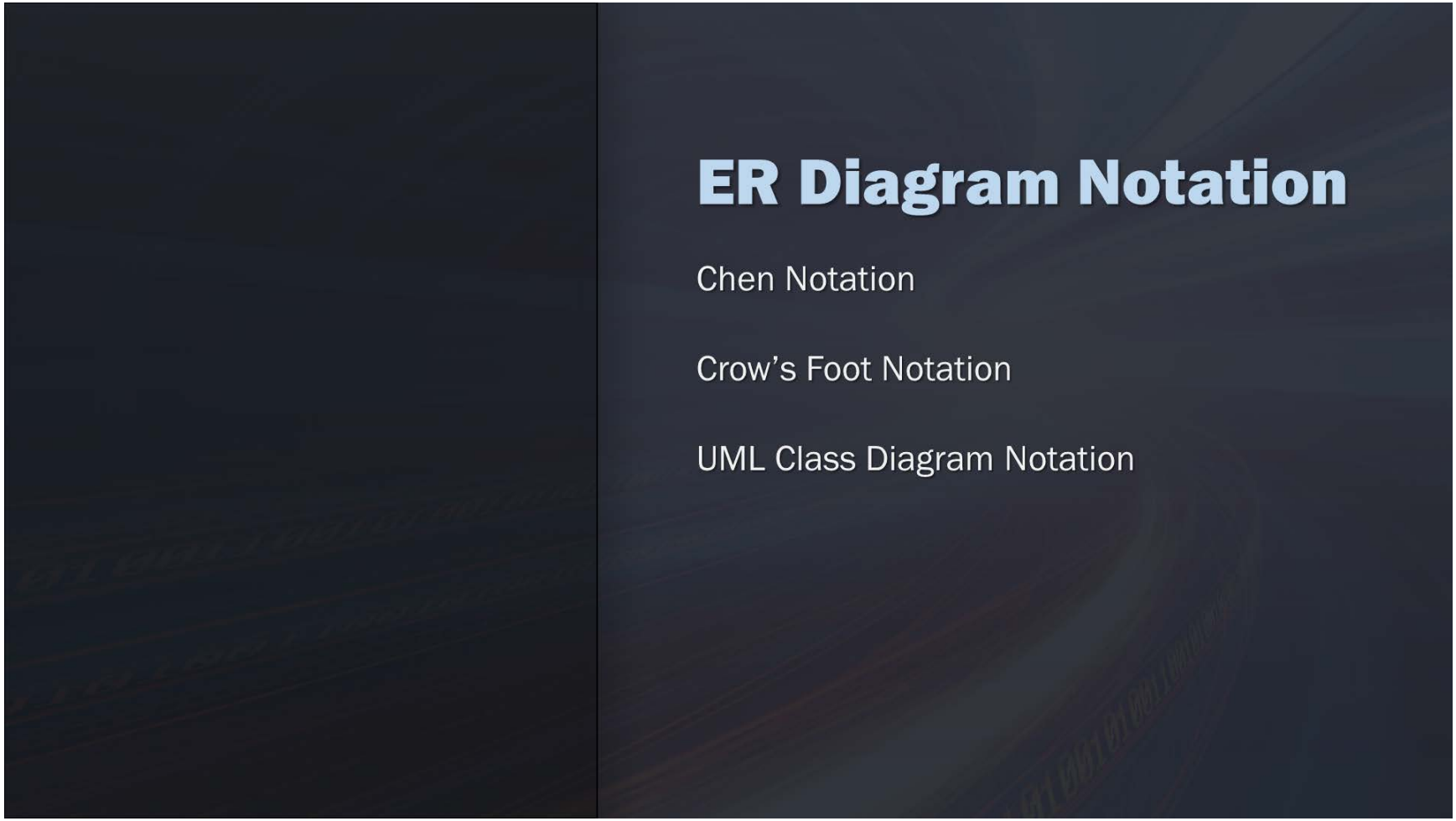
A column (or set of columns) whose values uniquely identify every row in a table

Foreign Key

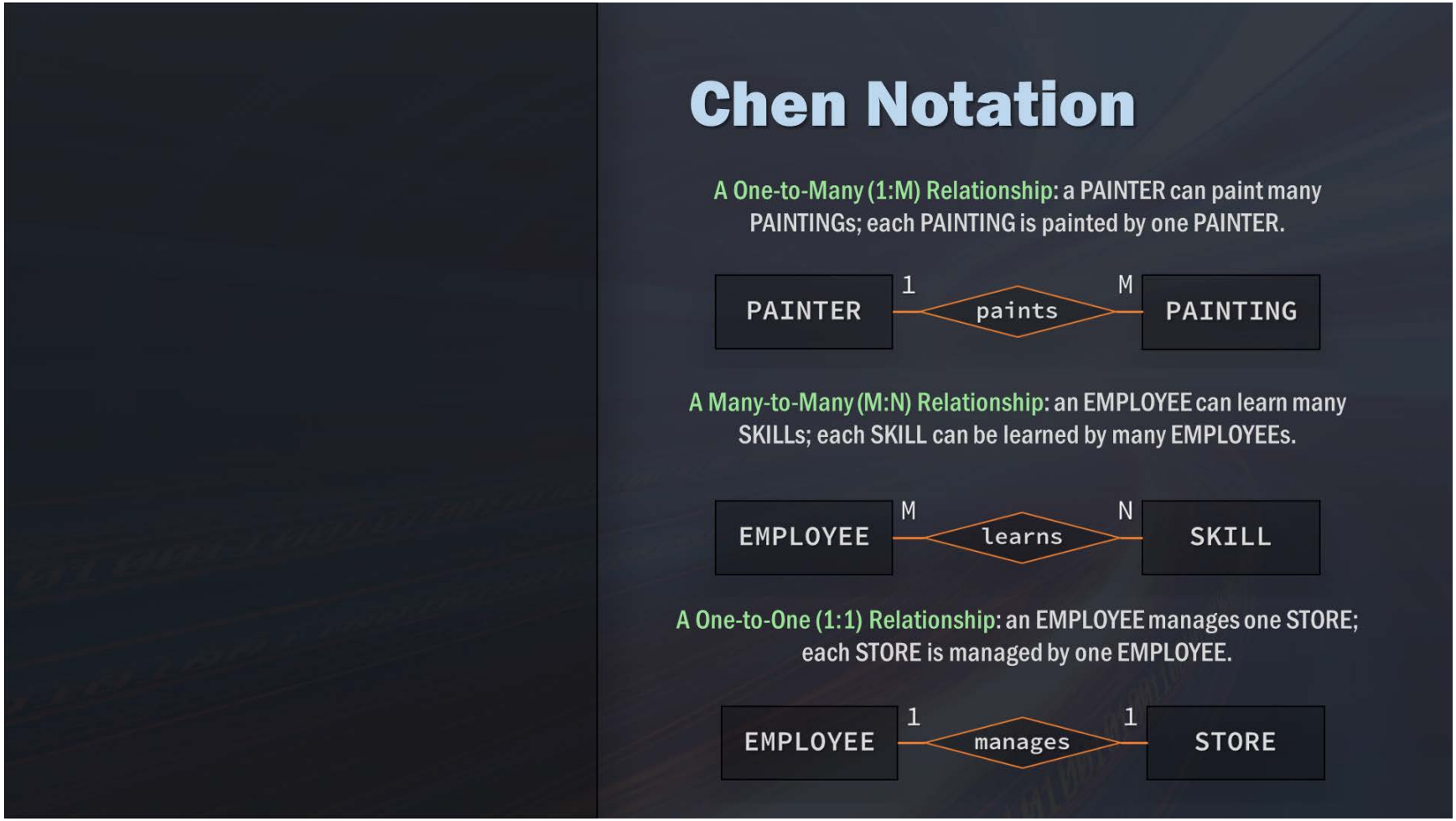
One or more columns that can be used together to identify a single row in another table



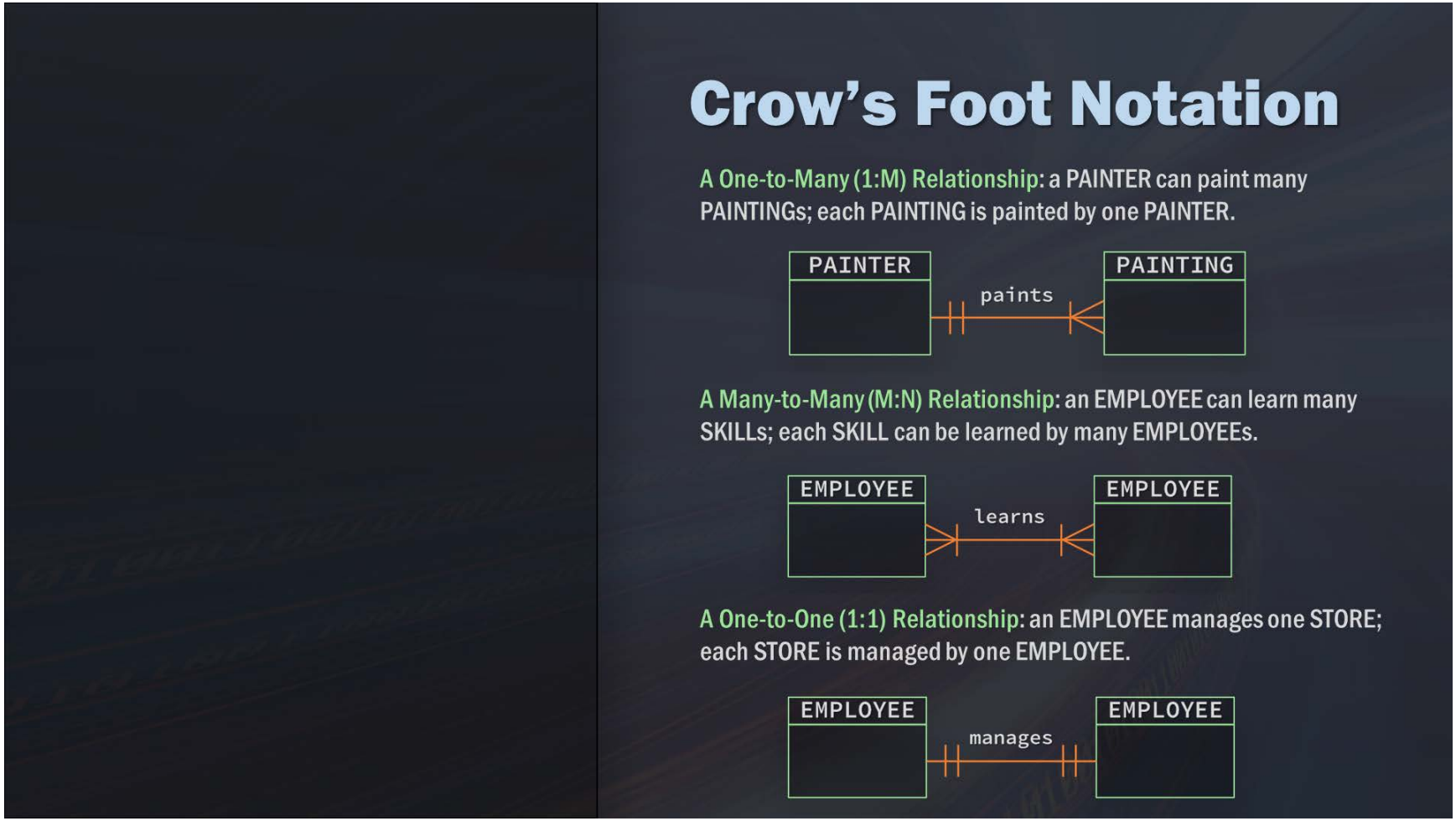
Slide 10: ER Diagram Notation



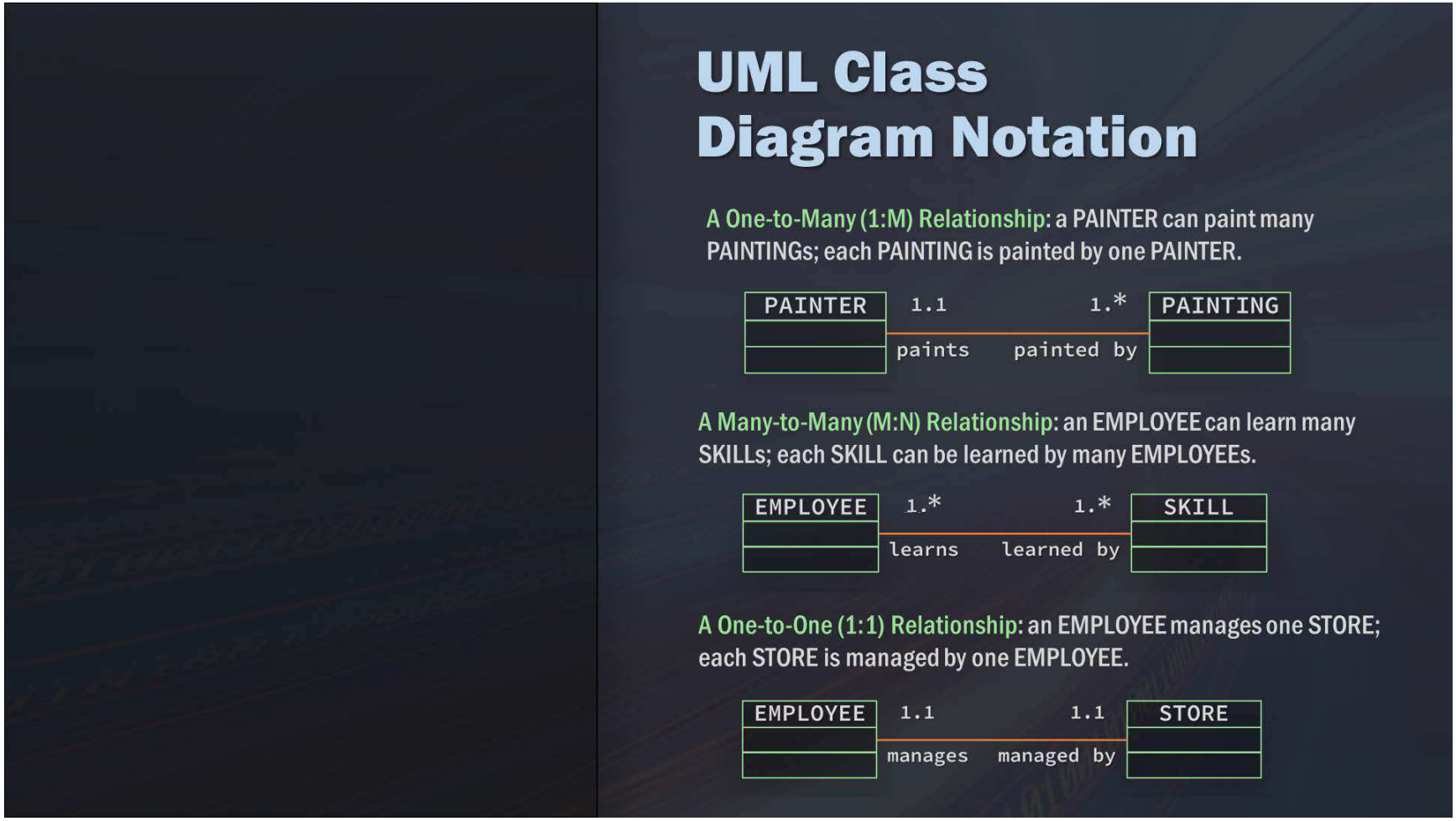
Slide 11: Chen Notation



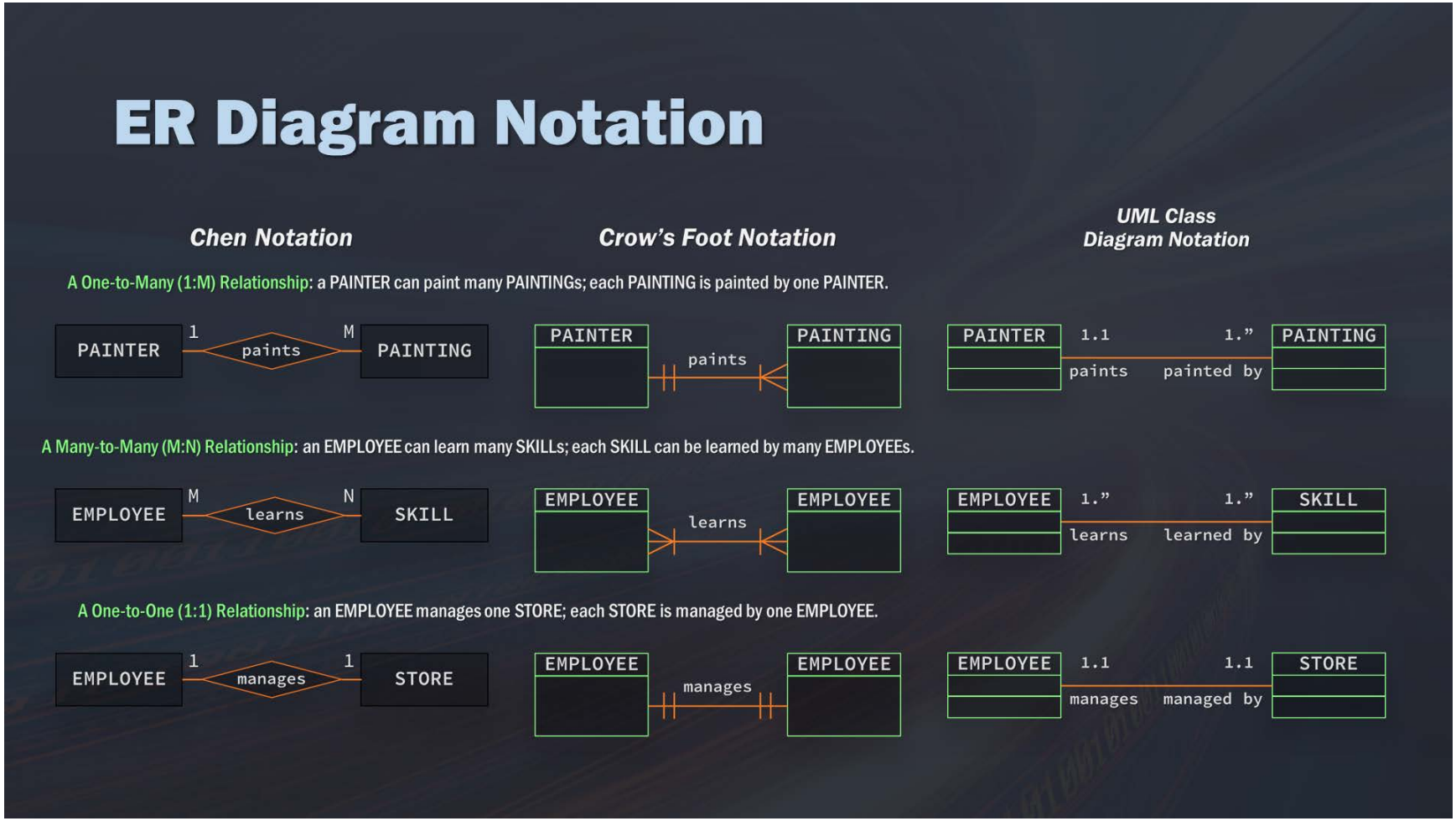
Slide 12: Crow's Good Notation



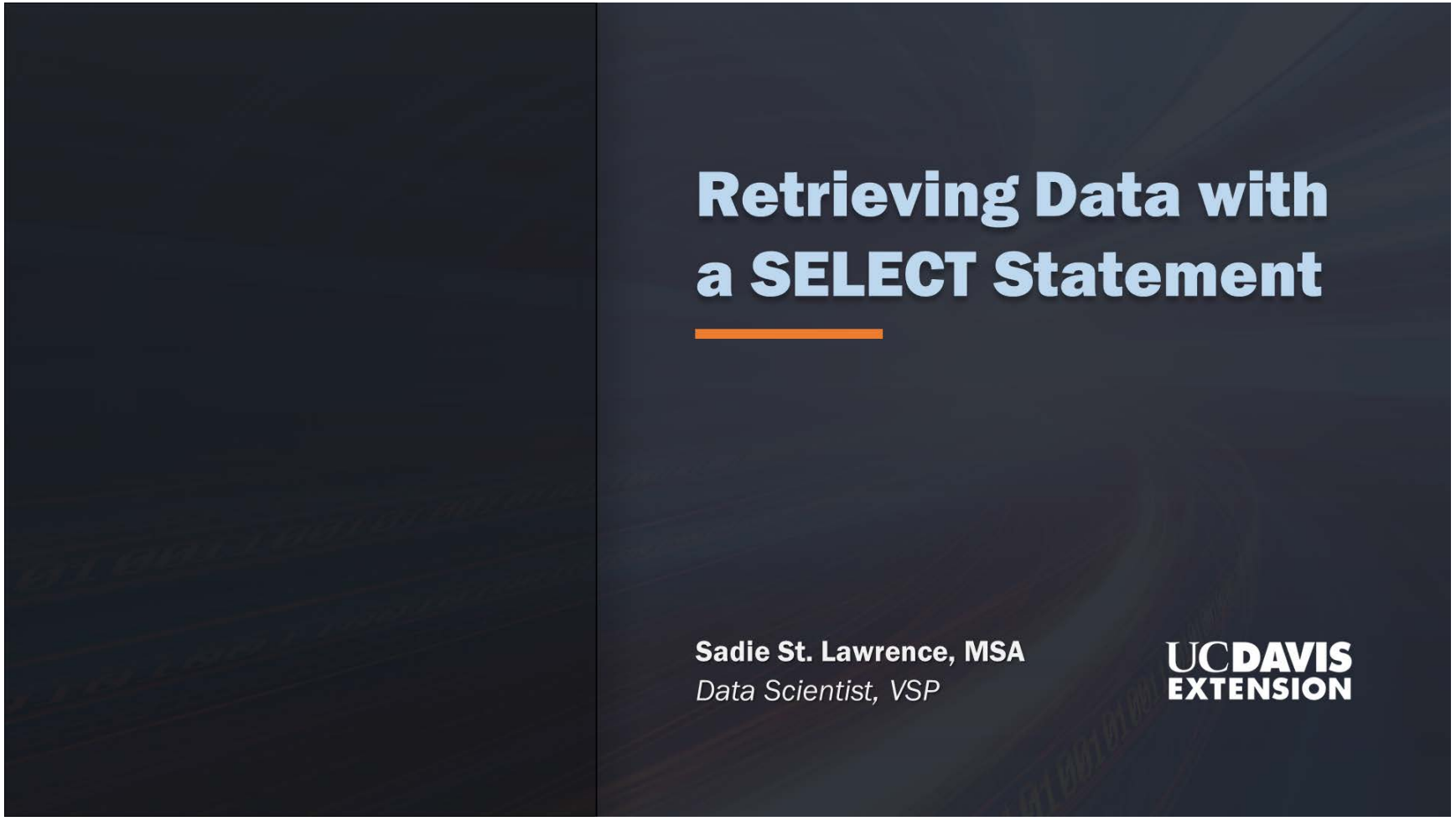
Slide 13: UML Class Diagram Notation



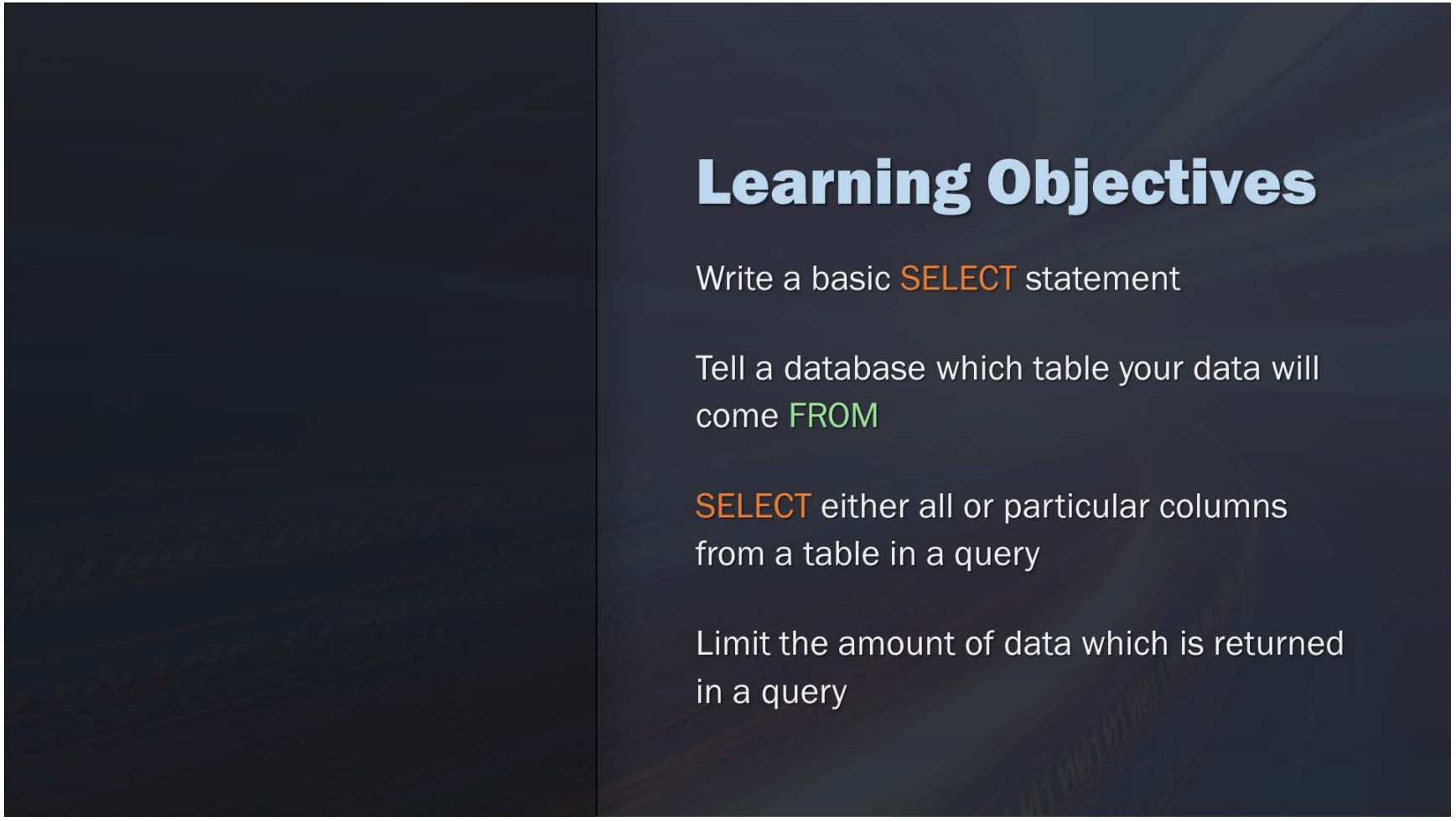
Slide 14: ER Diagram Notation



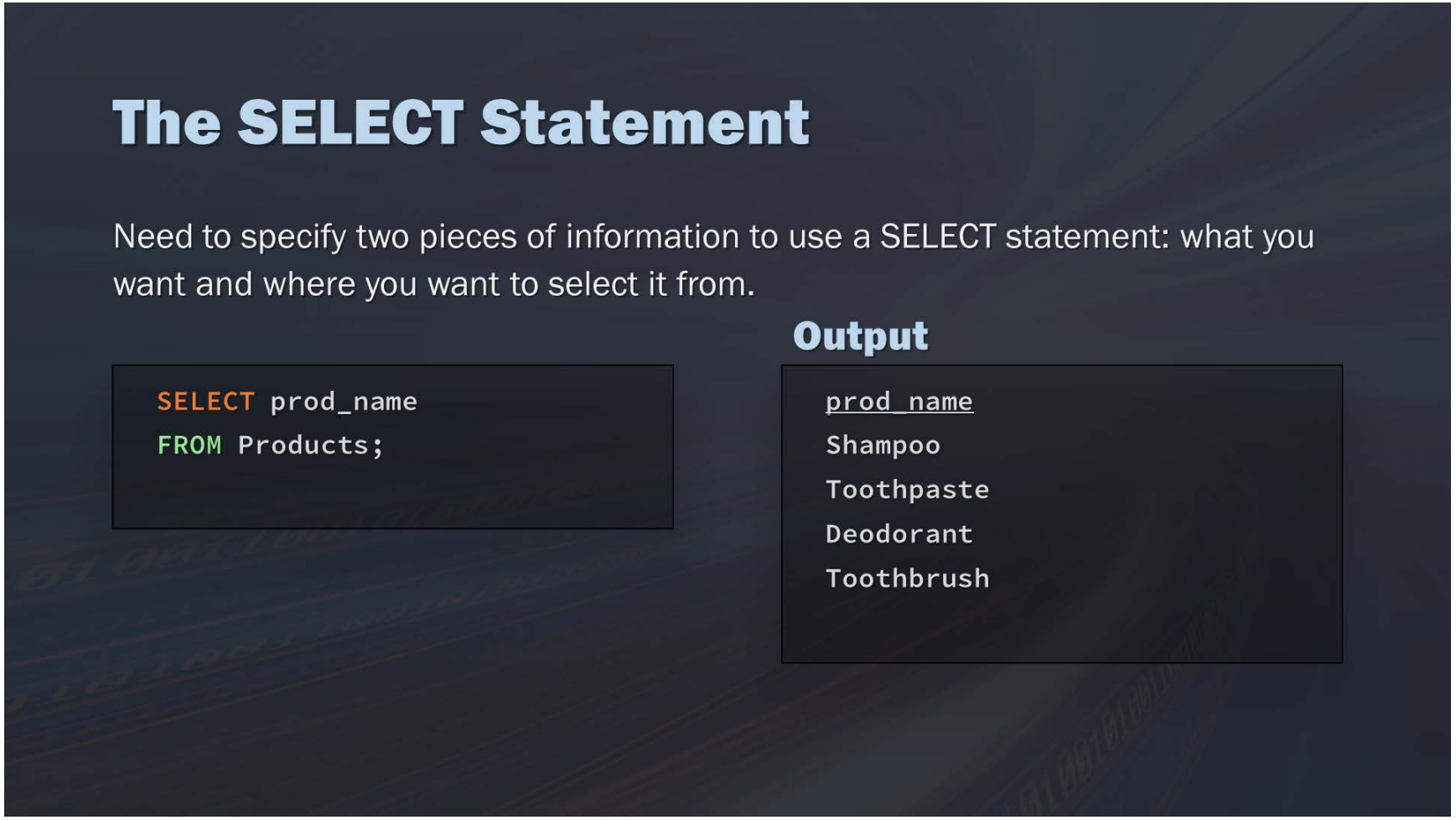
Slide 1: Retrieving Data with a SELECT Statement



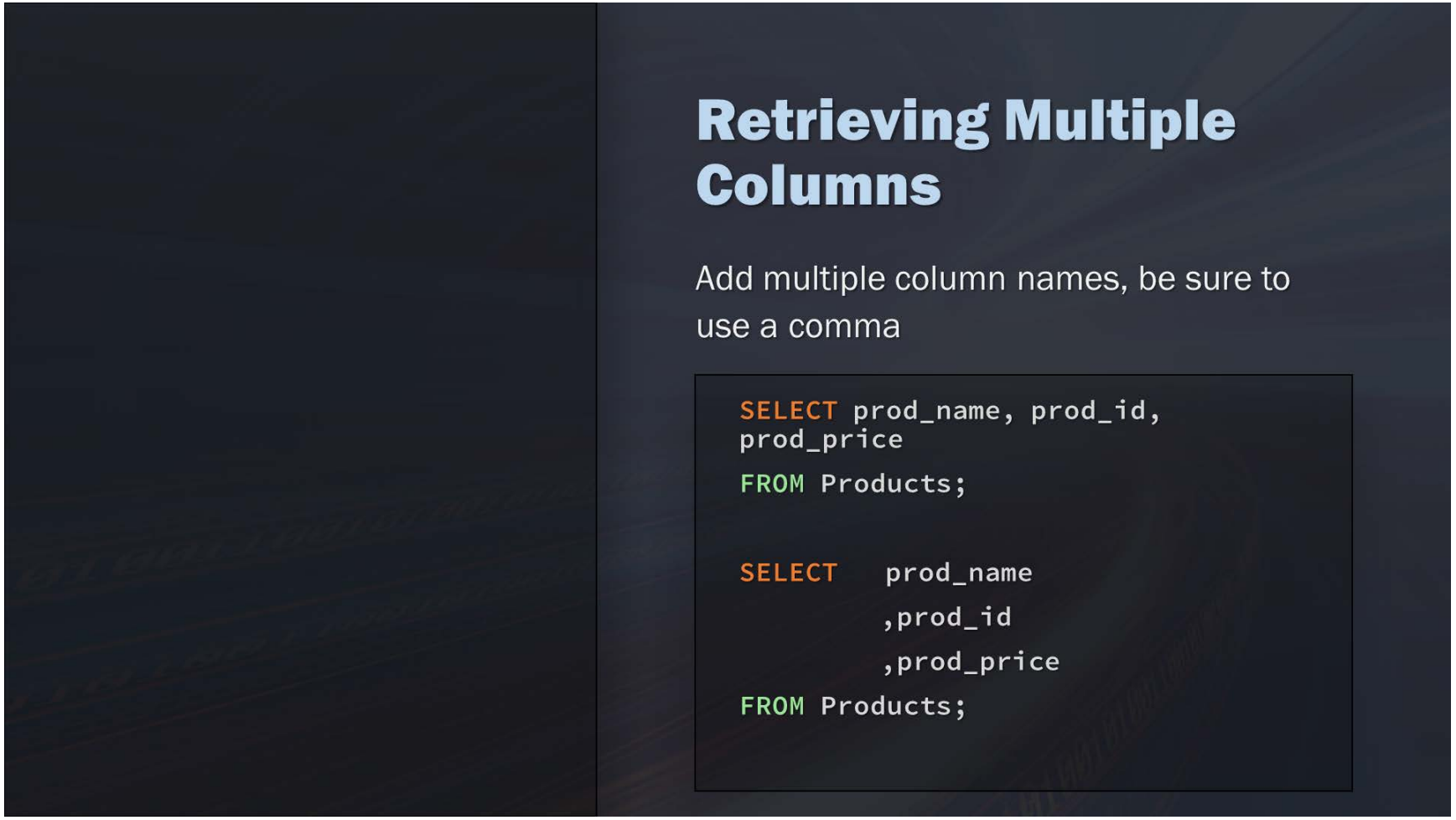
Slide 2: Learning Objectives



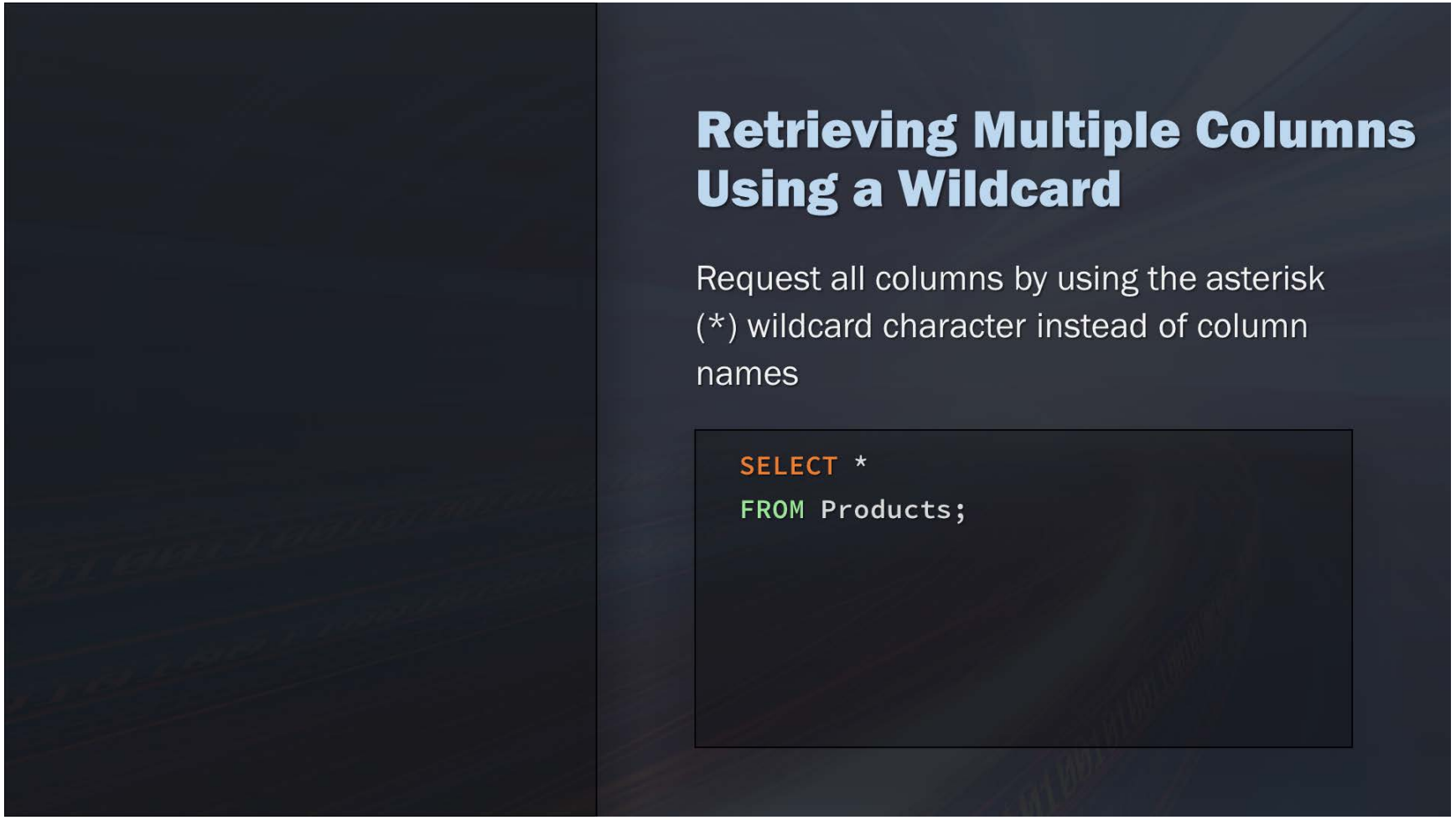
Slide 3: The SELECT Statement



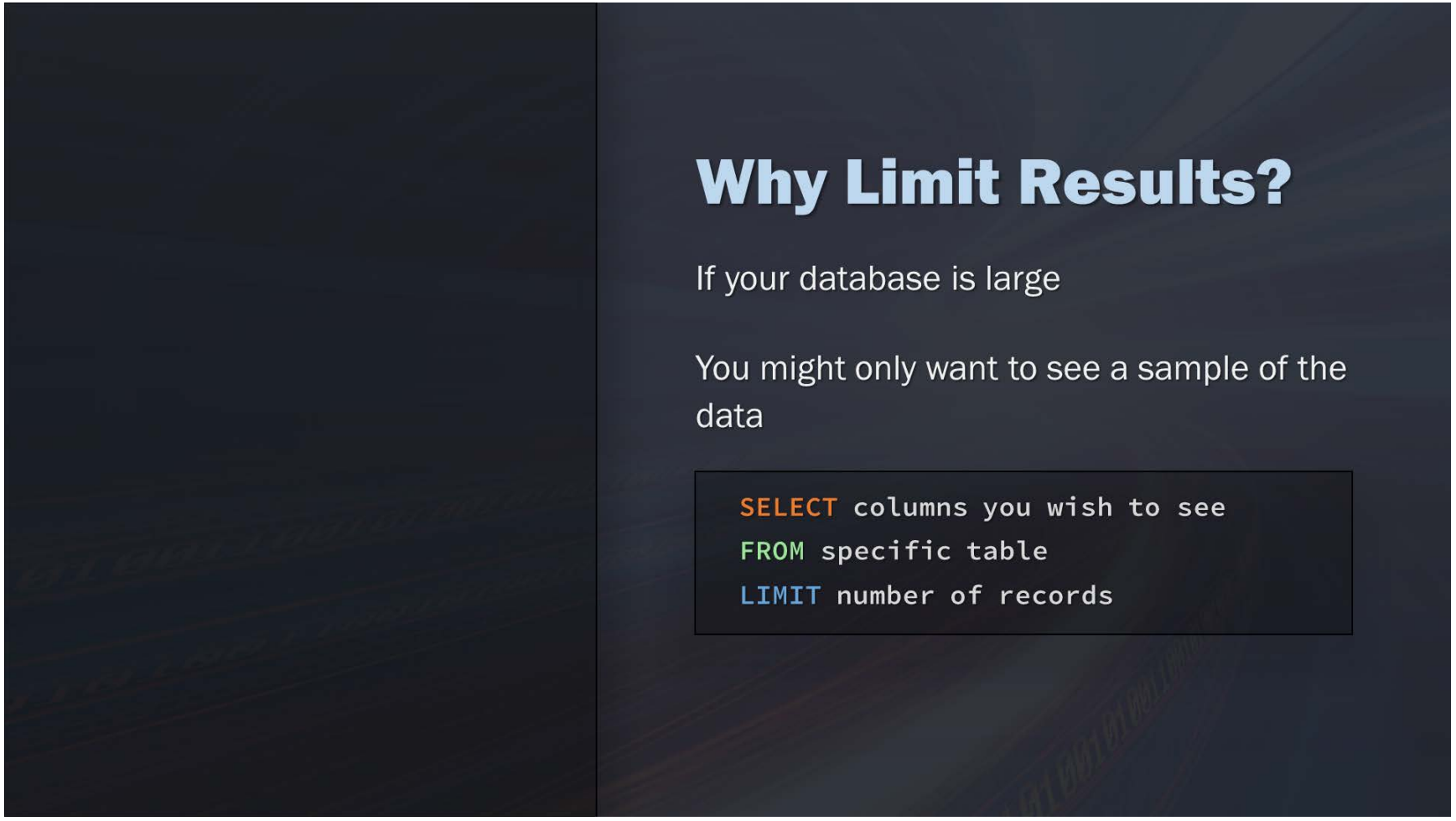
Slide 4: Retrieving Multiple Columns



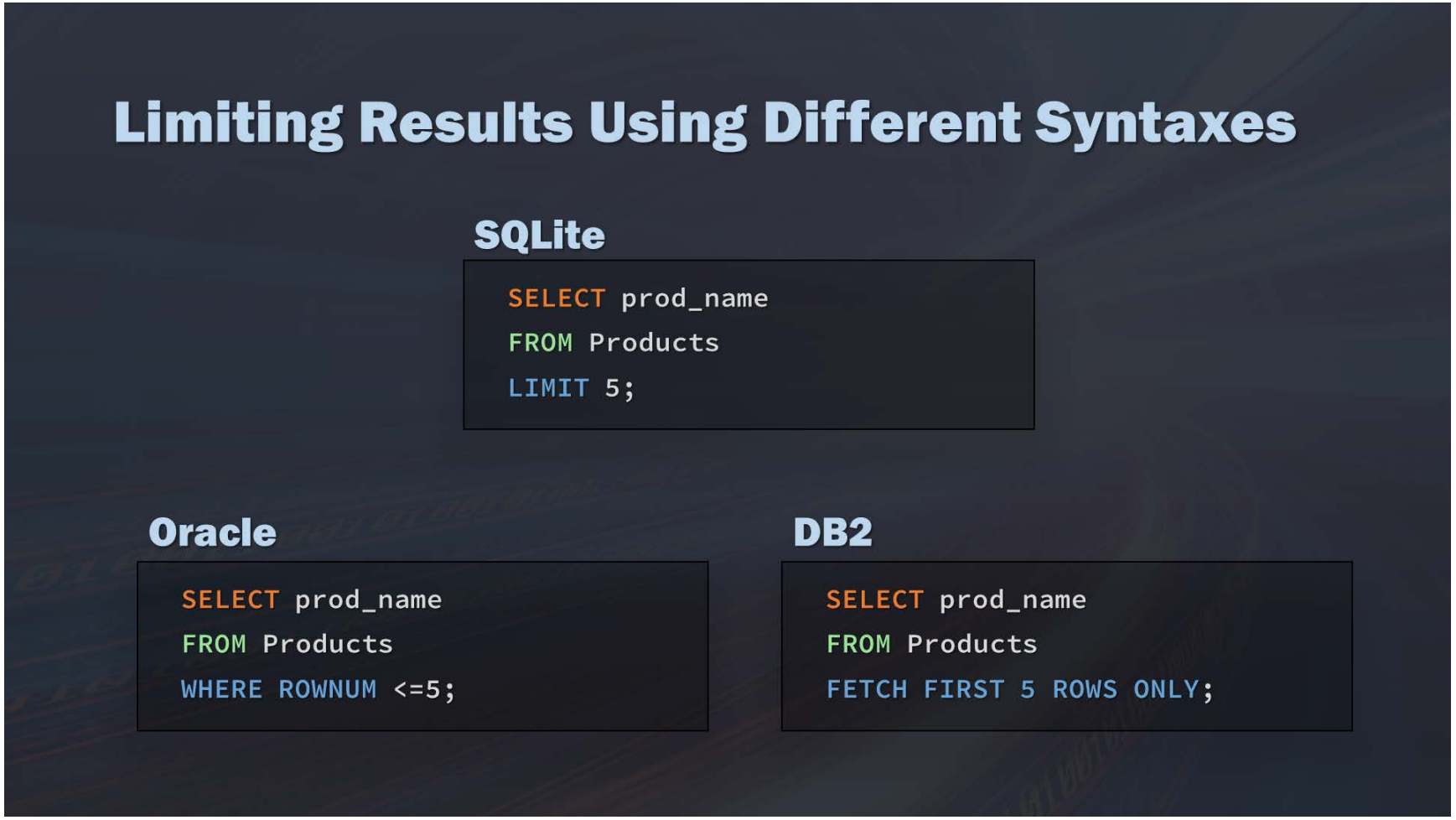
Slide 5: Retrieving Multiple Columns Using a Wildcard



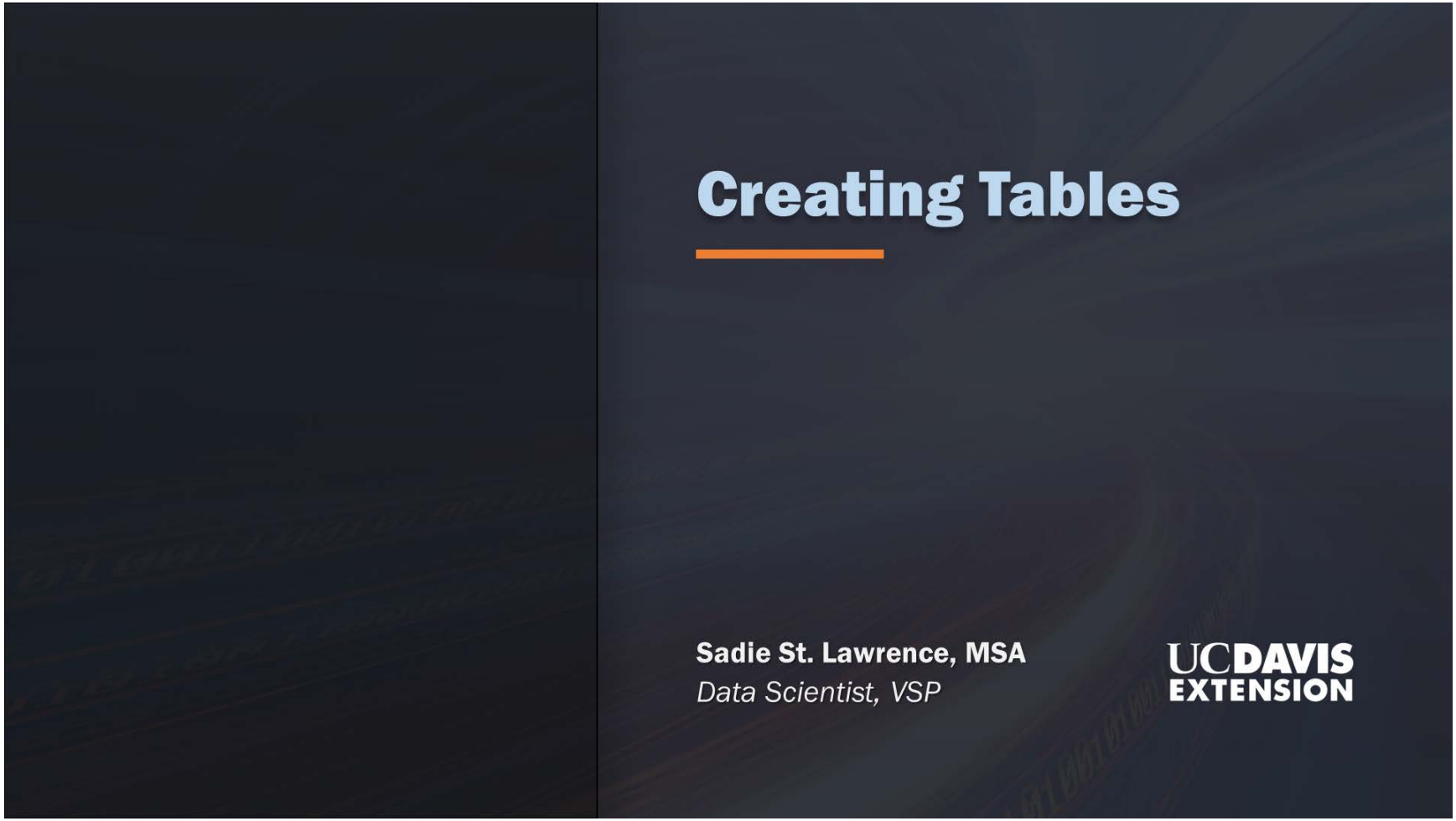
Slide 6: Why Limit Results?



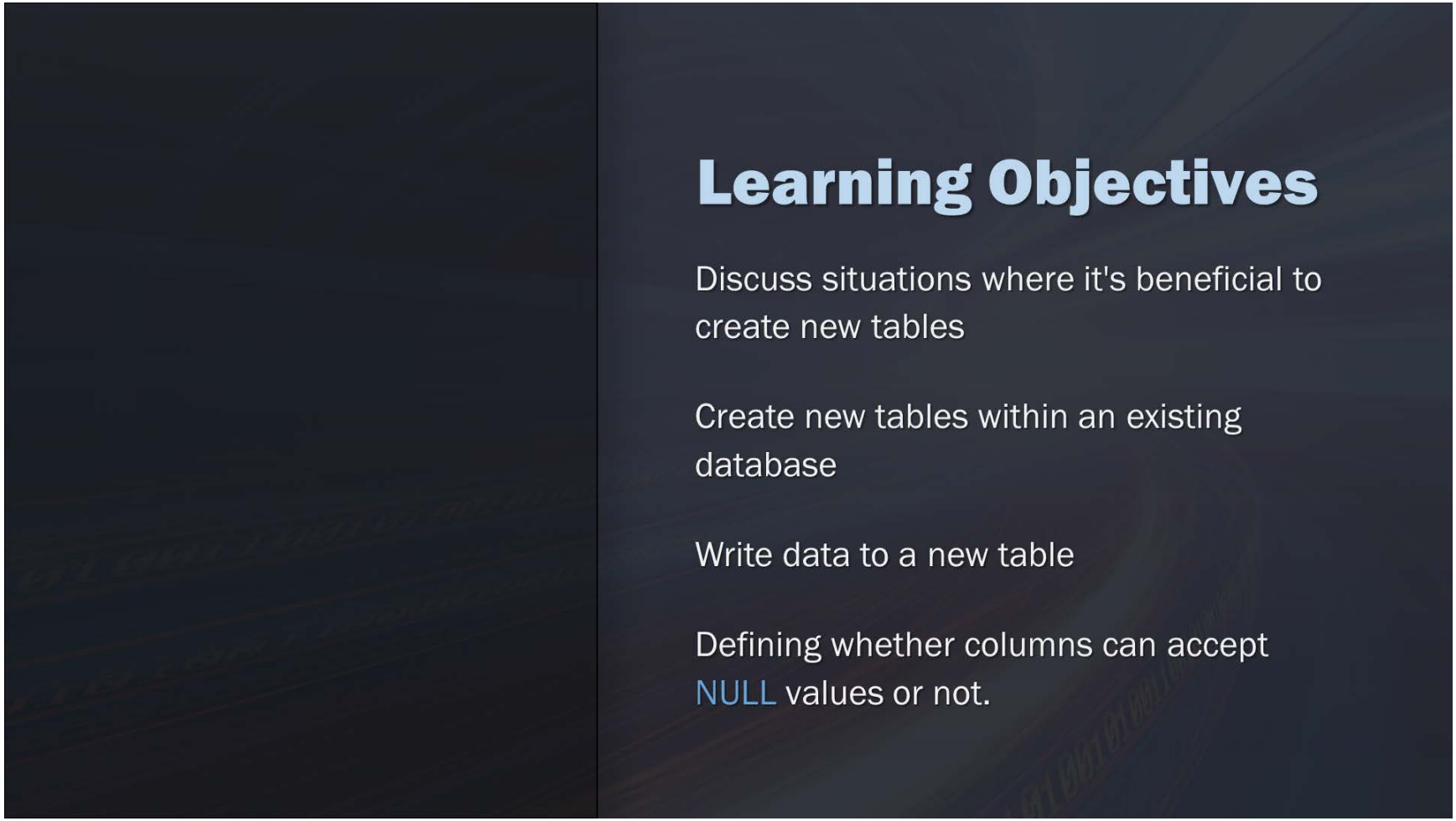
Slide 7: Limiting Results Using Different Syntaxes



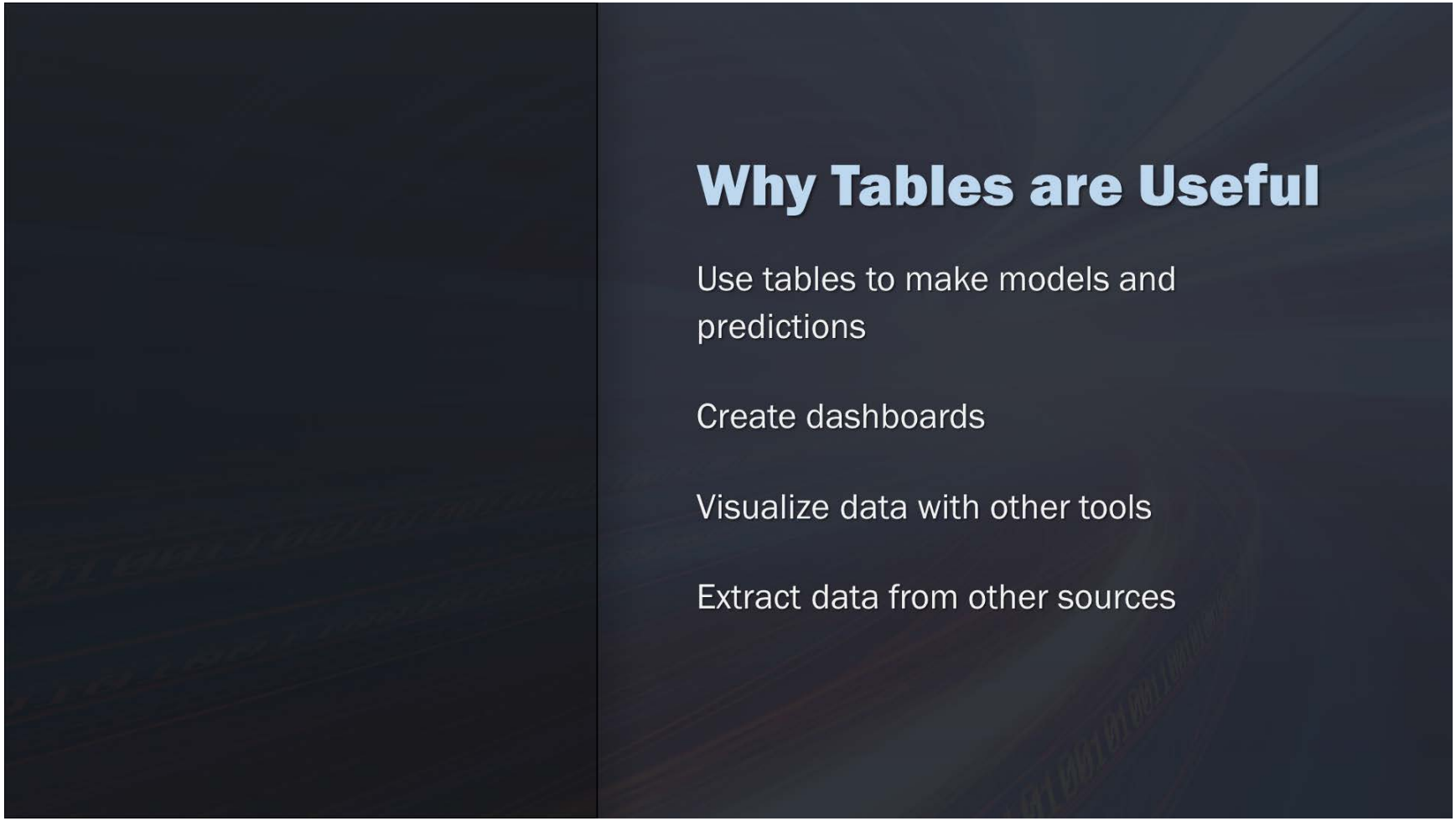
Slide 1: Creating Tables



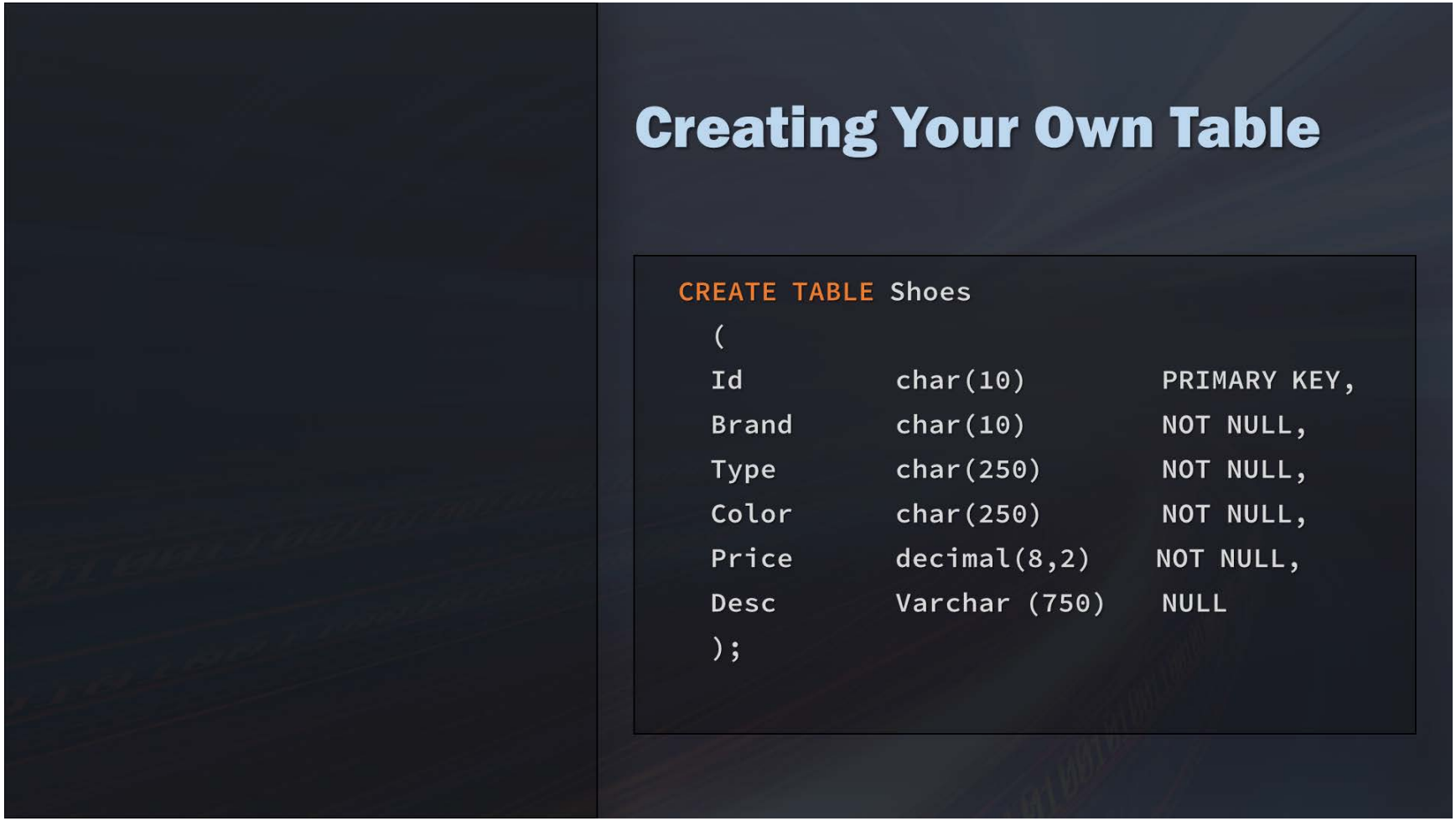
Slide 2: Learning Objectives



Slide 3: Why Tables are Useful



Slide 4: Creating Your Own Table



Slide 5: Nulls and Primary Keys

Nulls and Primary Keys

Every column is either NULL or NOT NULL

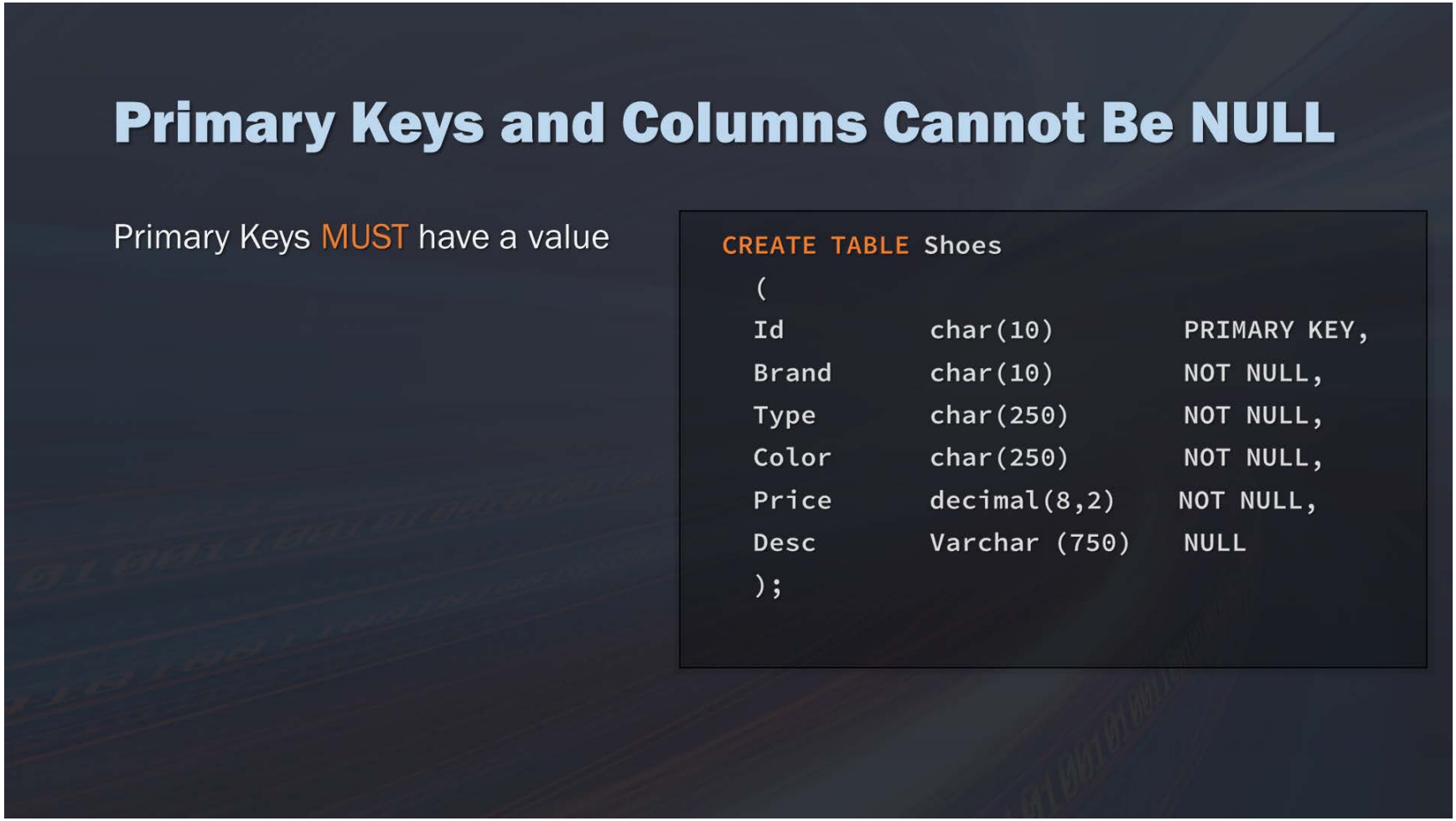
An error will be returned if one tries to submit a column with no value

Don't confuse null values with empty strings

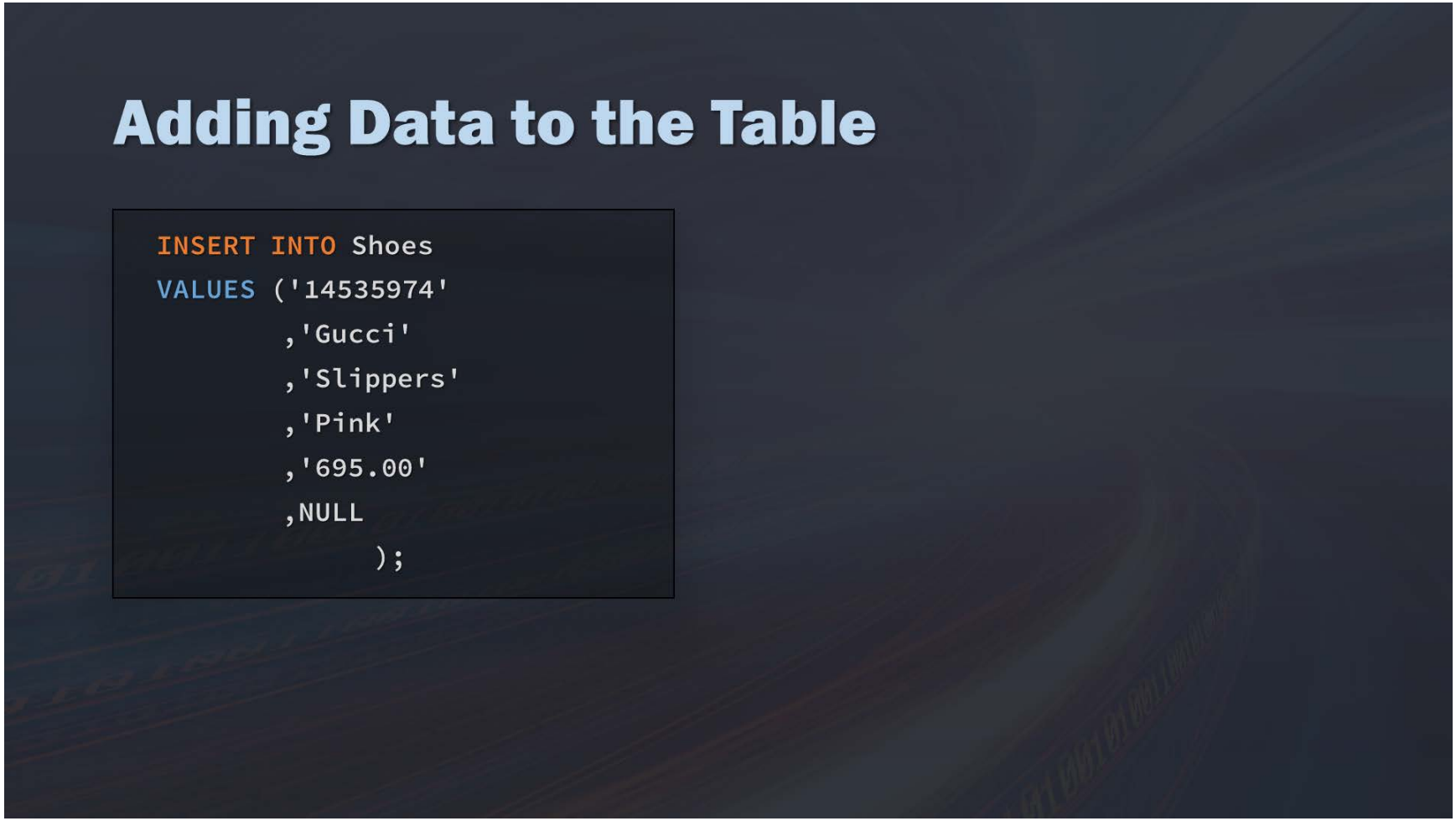
Primary keys can not be null

```
CREATE TABLE Shoes
  (
  Id          char(10)          PRIMARY KEY,
  Brand       char(10)          NOT NULL,
  Type        char(250)         NOT NULL,
  Color       char(250)         NOT NULL,
  Price       decimal(8,2)      NOT NULL,
  Desc        Varchar (750)     NULL
  );
```

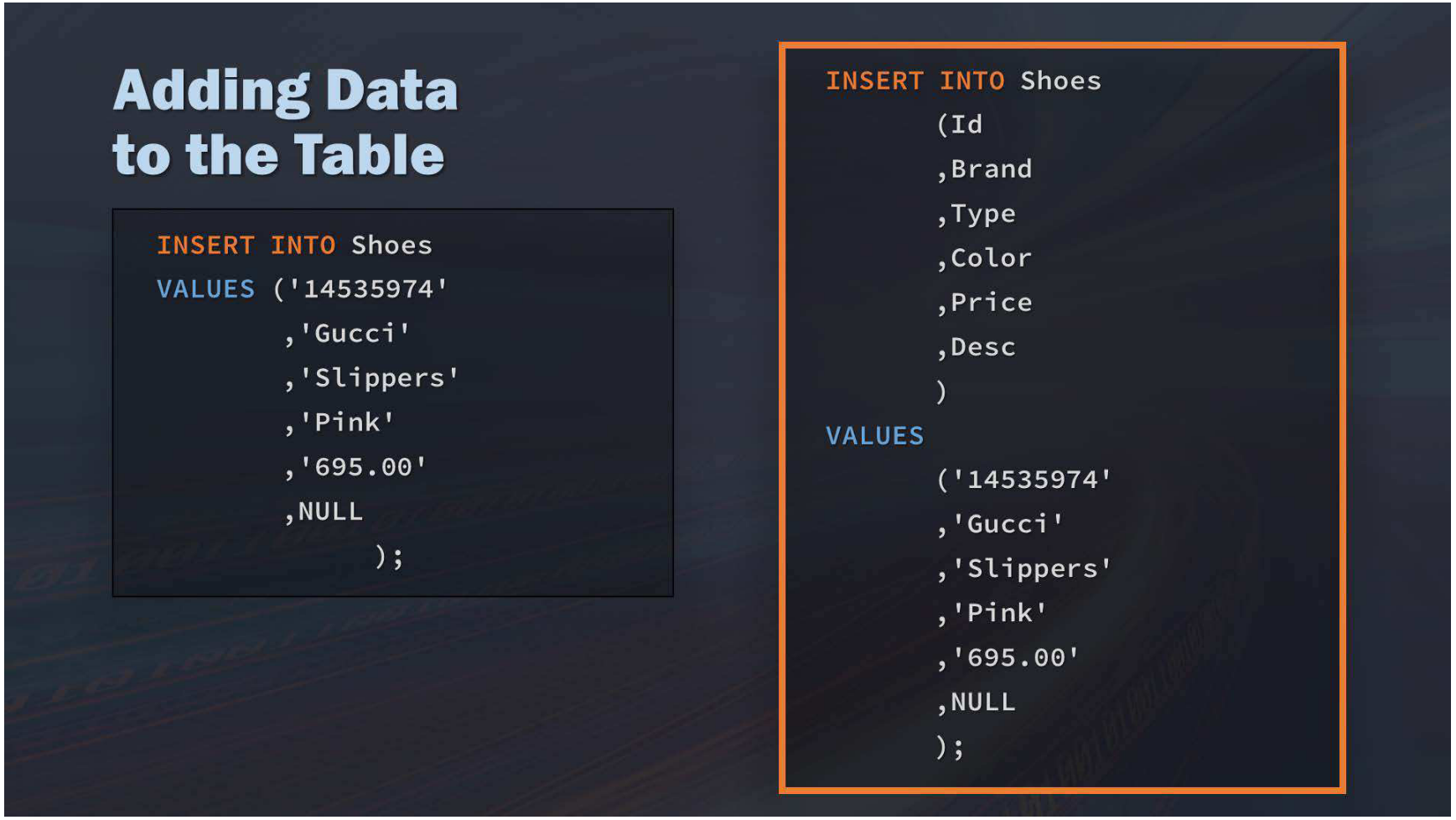
Slide 6: Primary Keys and Columns Cannot Be NULL



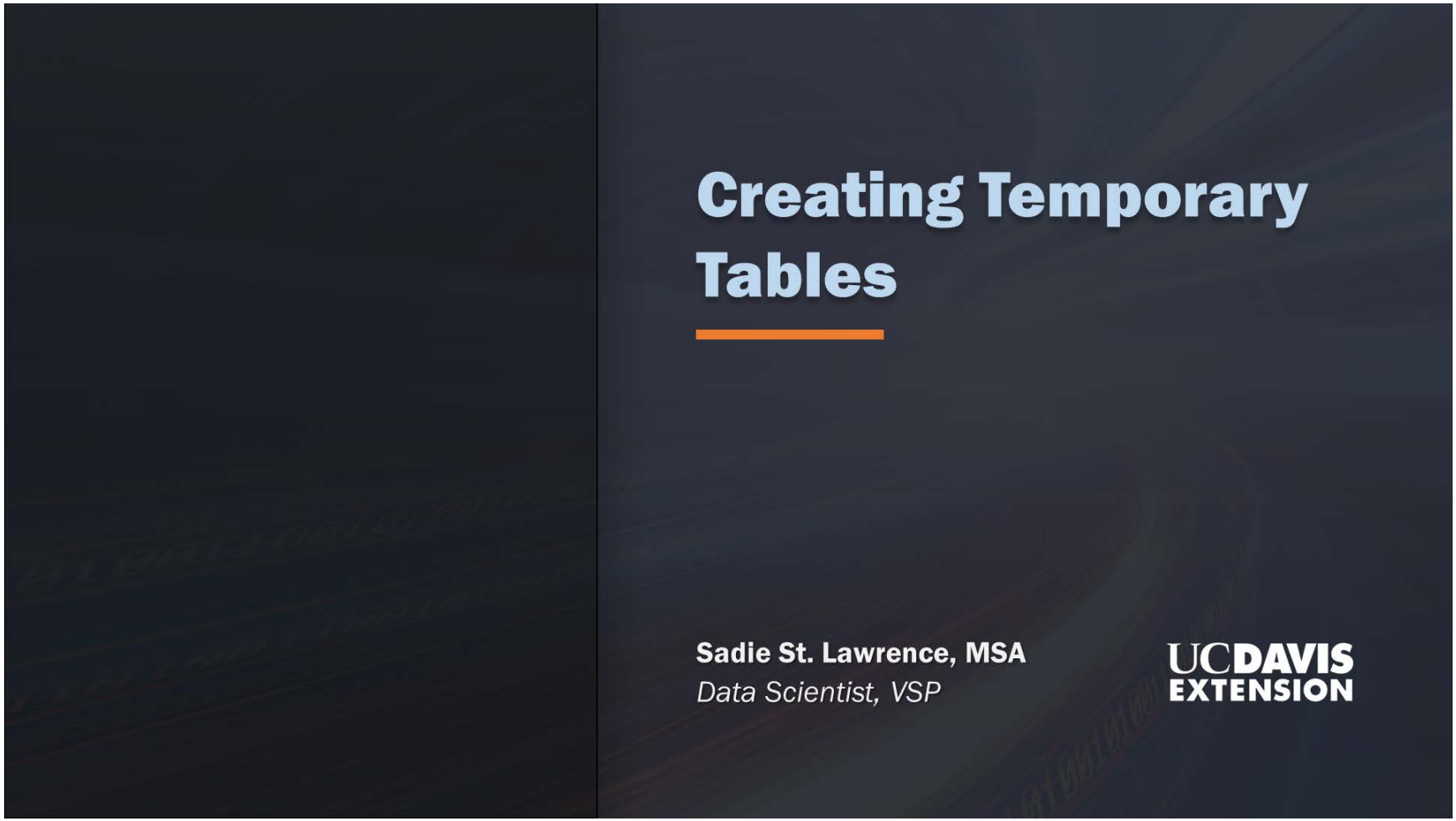
Slide 7: Adding Data to the Table



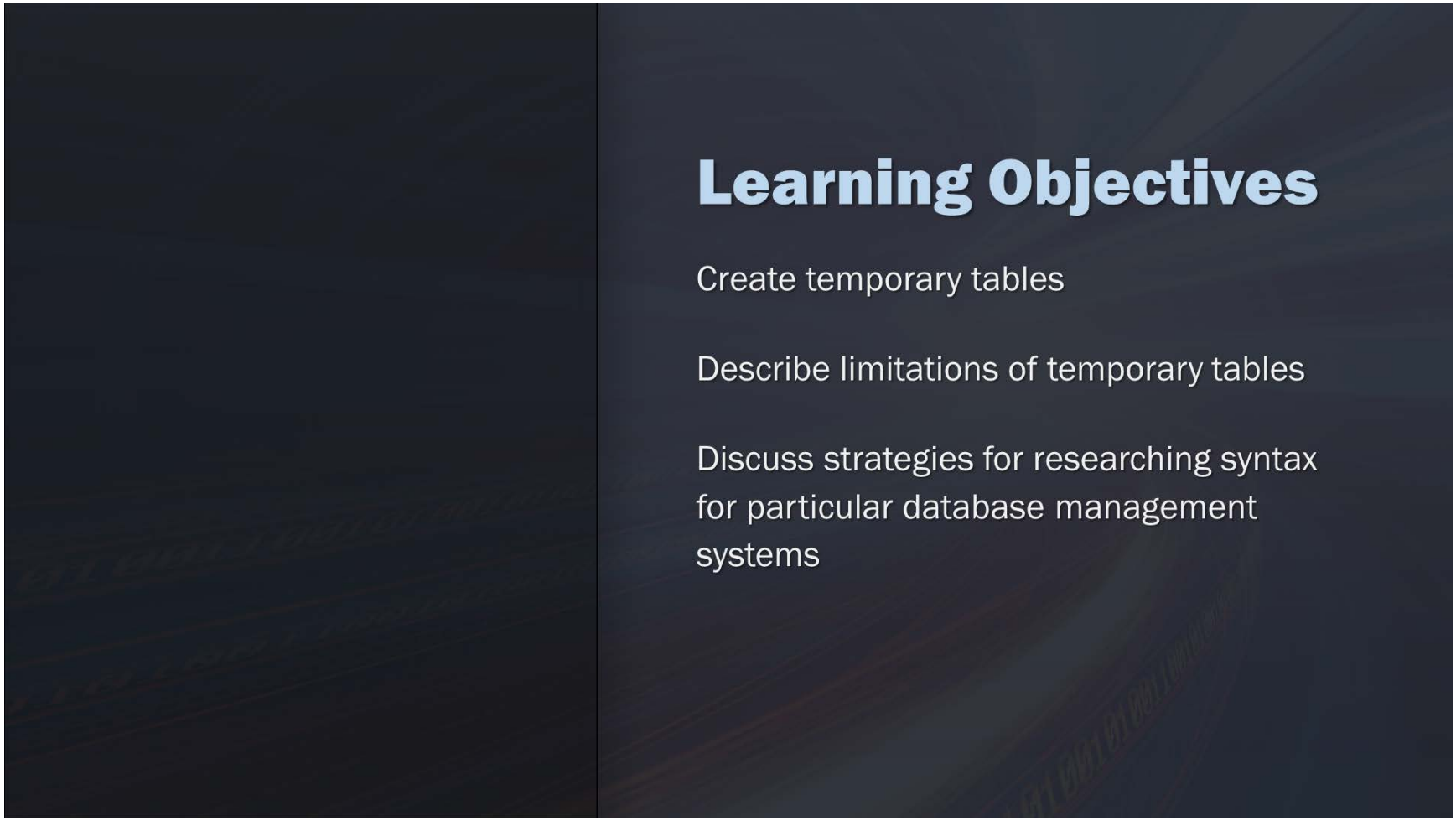
Slide 8: Adding Data to the Table



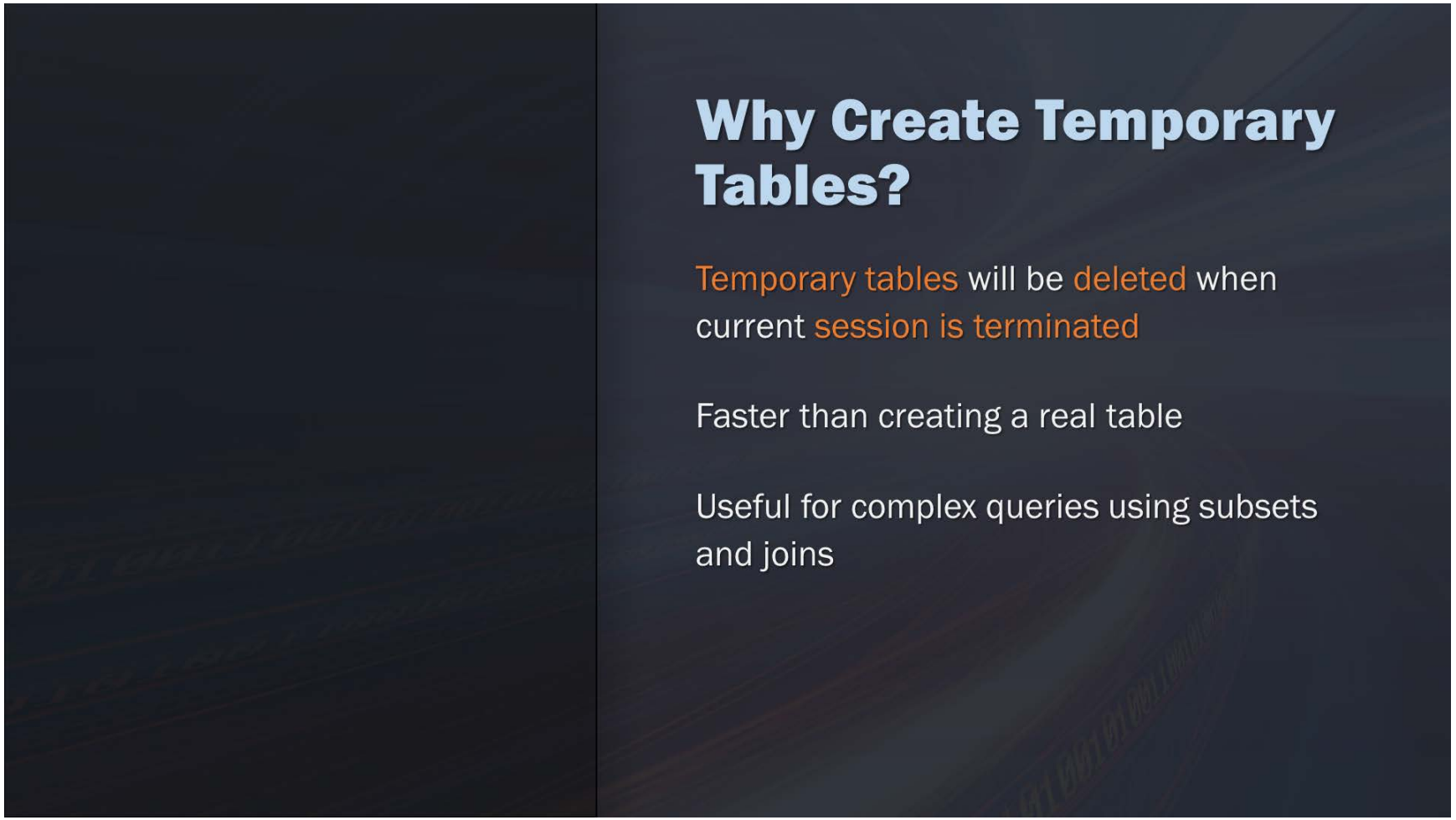
Slide 1: Creating Temporary Tables



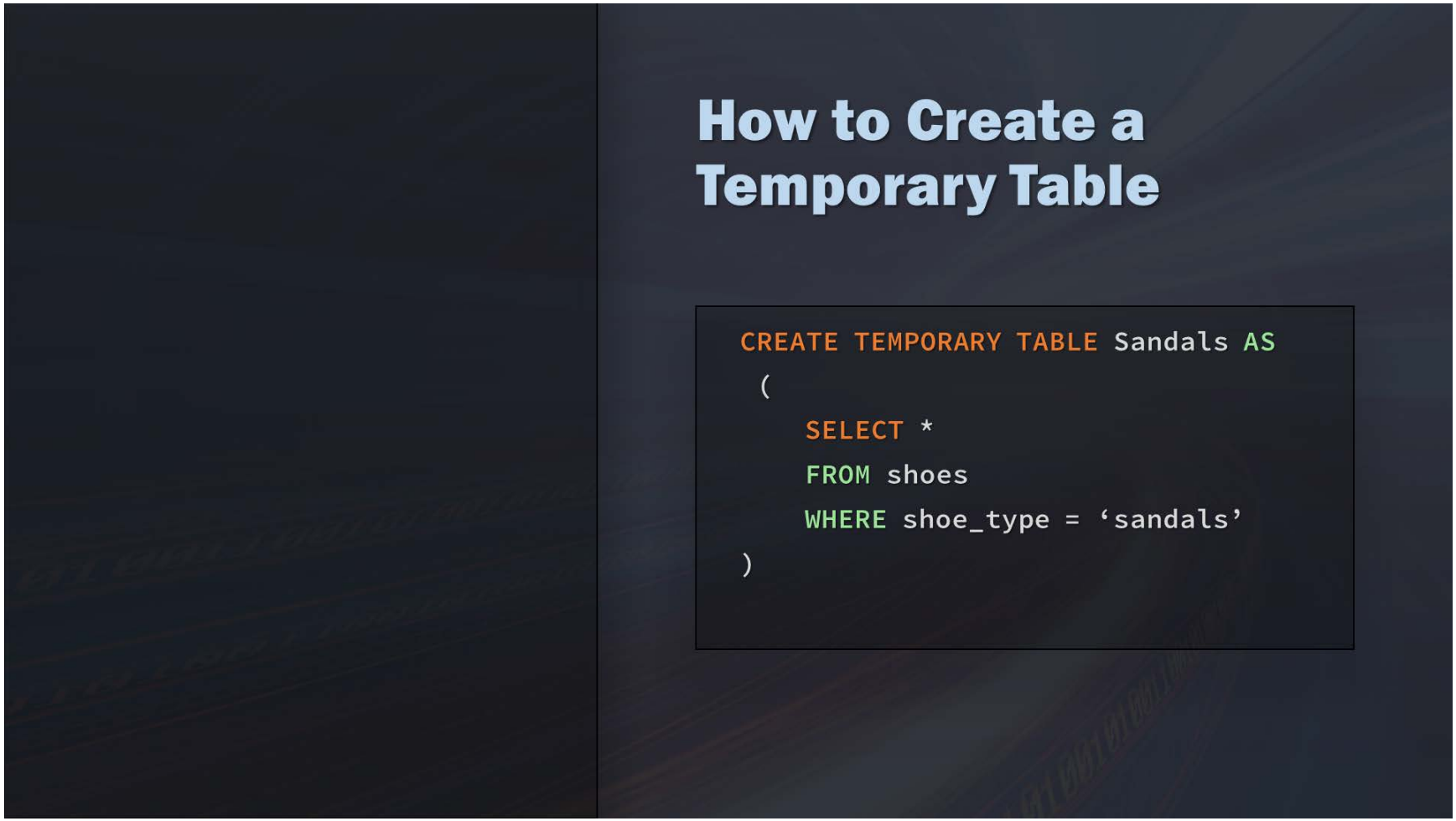
Slide 2: Learning Objectives



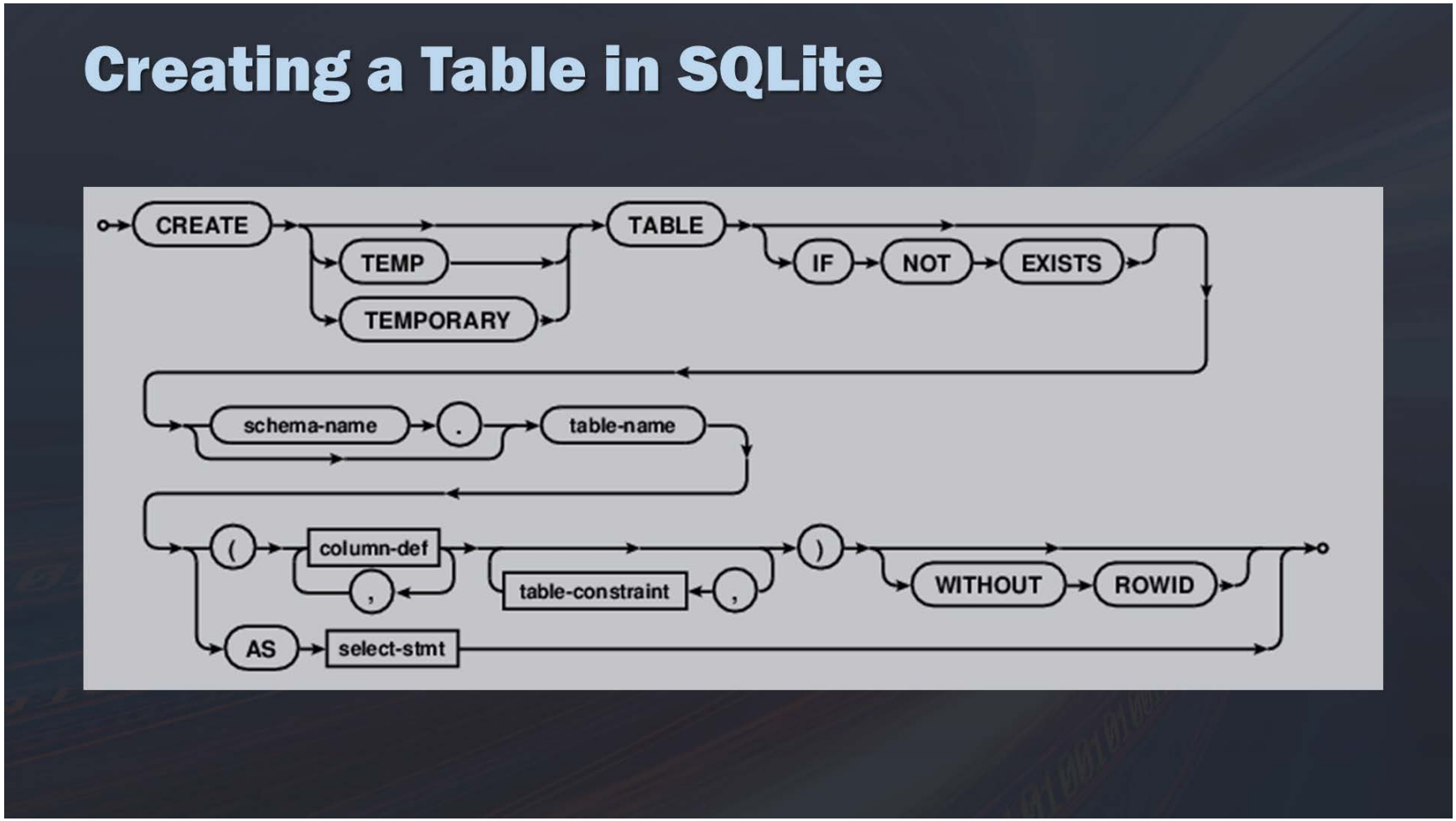
Slide 3: Why Create Temporary Tables?



Slide 4: How to Create a Temporary Table

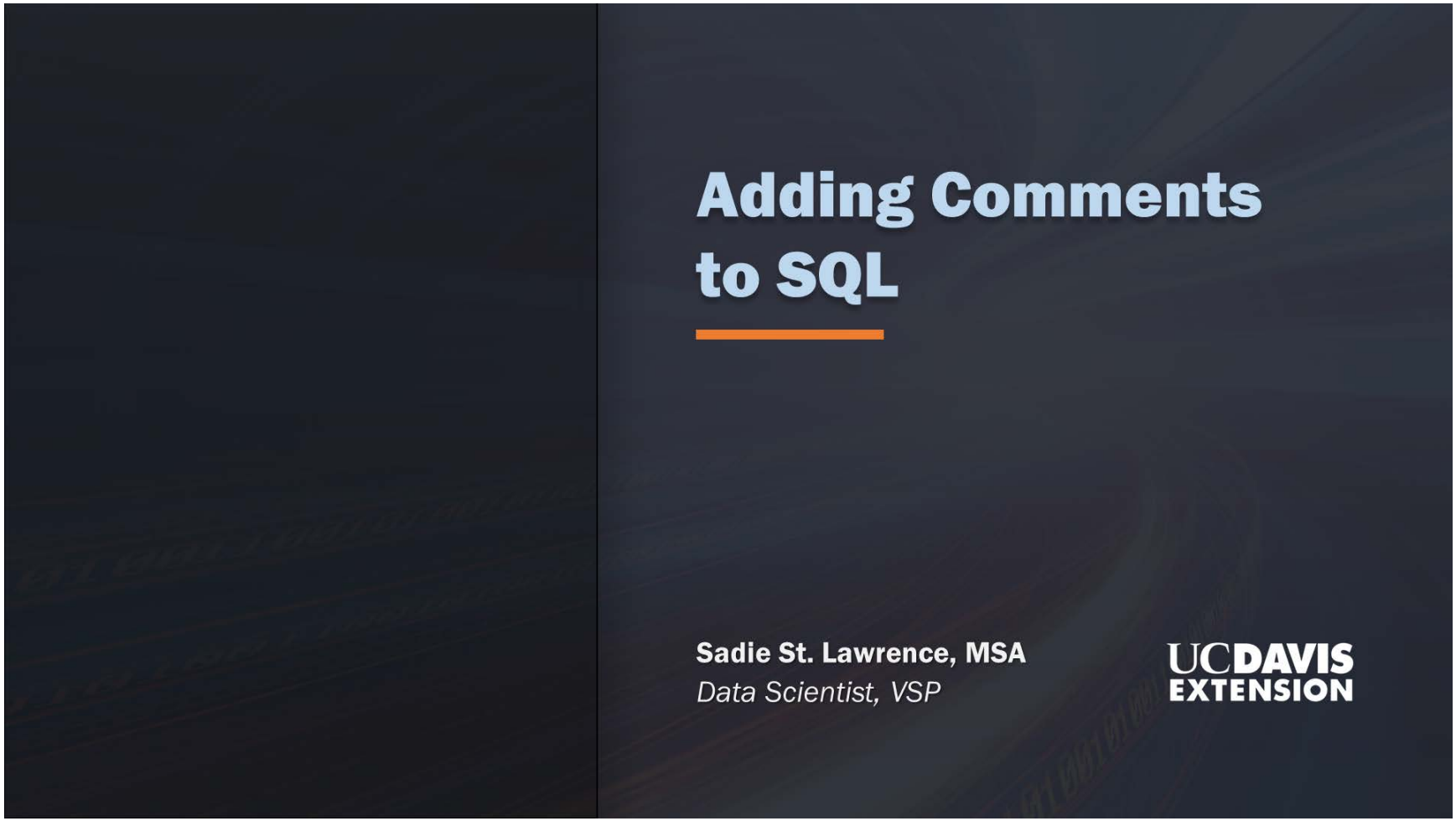


Slide 5: Creating a Table in SQL Lite

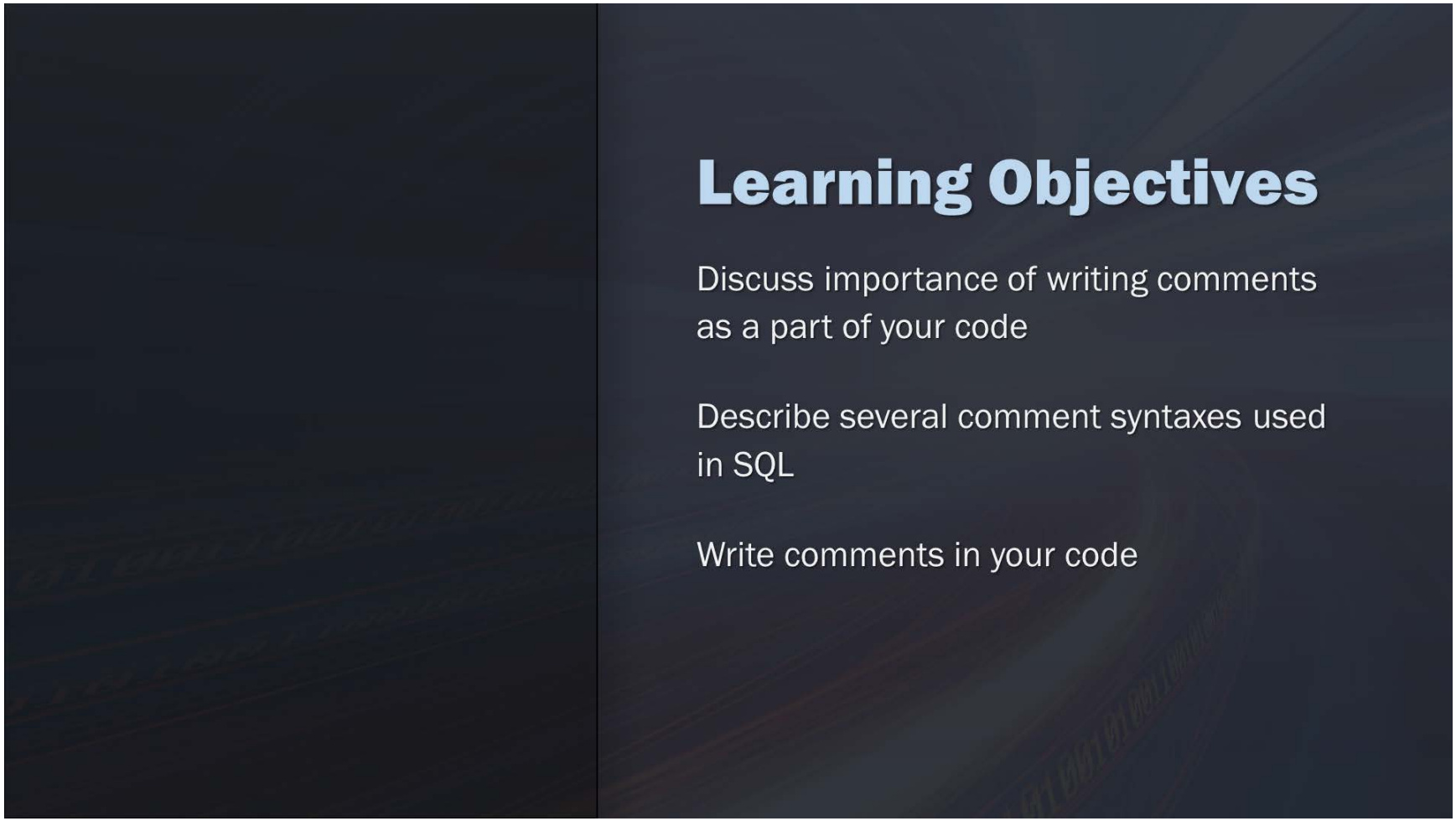


Slide 6: Primary Keys and Columns Cannot Be NULL

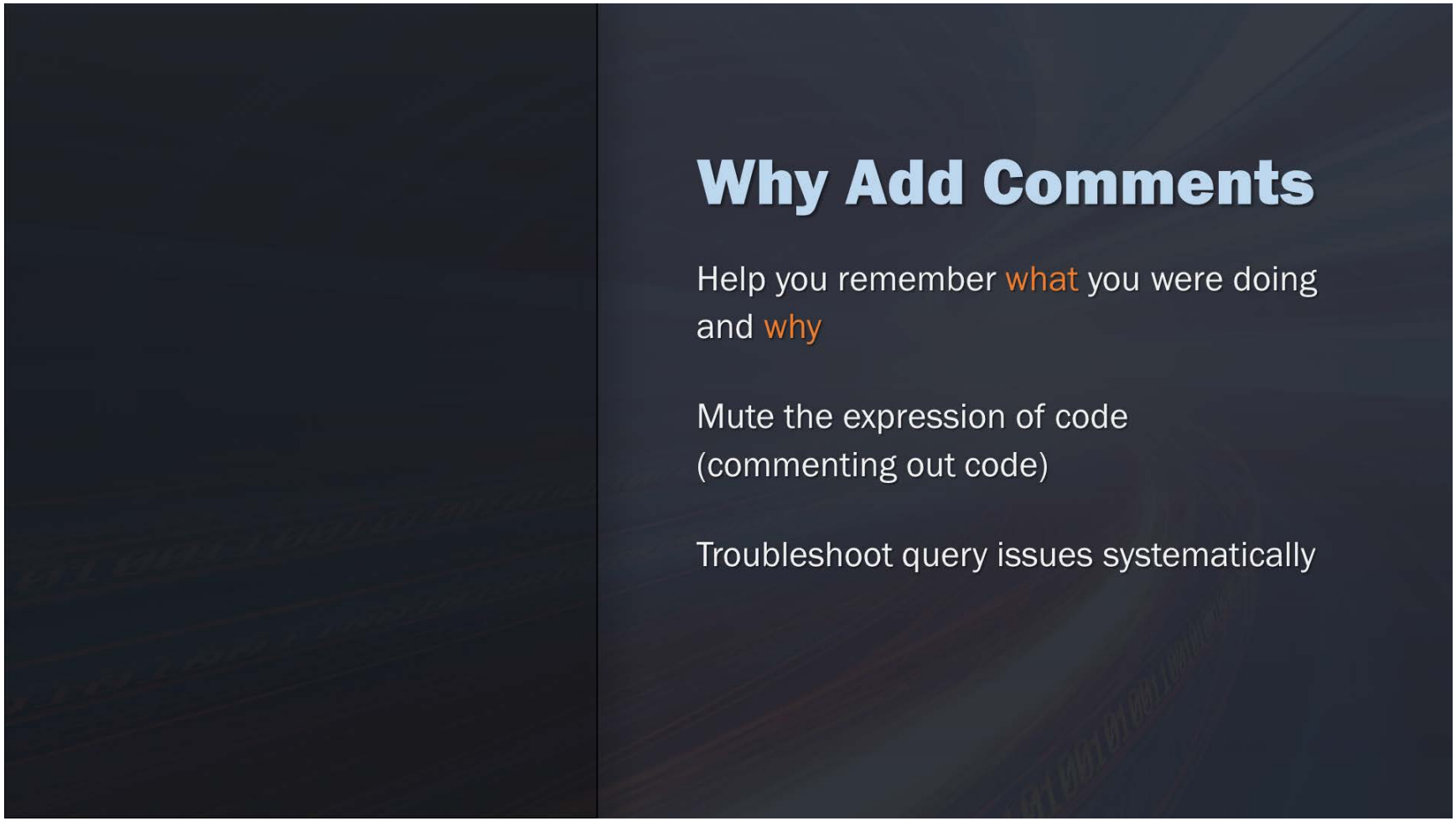
Slide 1: Adding Comments to SQL



Slide 2: Learning Objectives

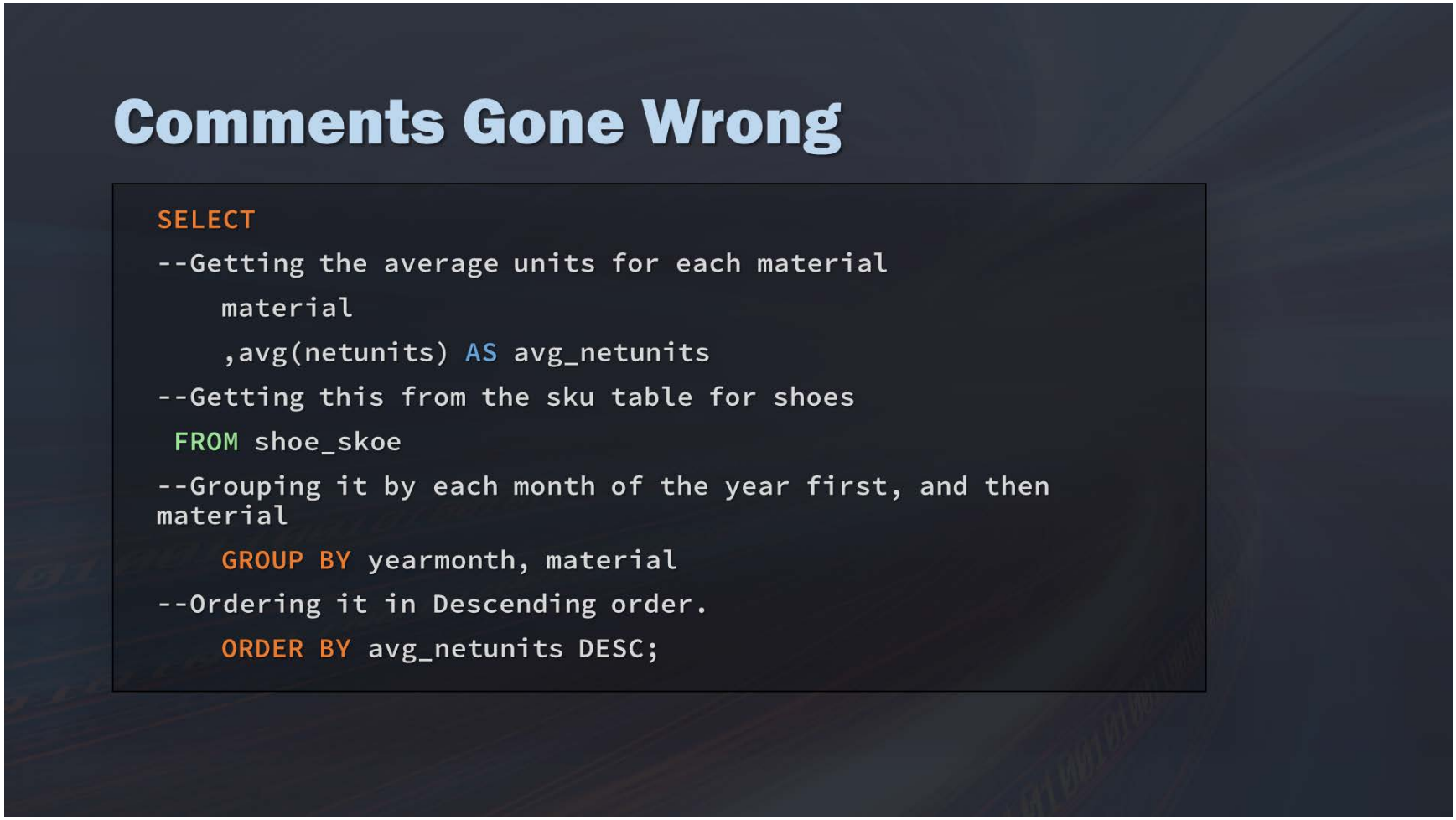


Slide 3: Why Add Comments



Slide 4: Adding Comments

Slide 5: Comments Gone Wrong



Slide 6

```
--Selecting the average amount for shirts
SELECT avg(c.Shirt_amount)
--Joining to the customer table and the dates table so we can provide
filters.
FROM Shirt c INNER JOIN Customer m ON c.shirt_nbr = m.shirt_nbr
                INNER JOIN dates dt ON c.date_skey = dt.date_skey
--Filtering on dates for 2014 and filtering
WHERE date_yyyymm between '201401' AND '201412'
---Need to create the customers age from their date of birth
          AND YEAR(CURRENT DATE - Customer_DOB) >= 0
          AND YEAR(CURRENT DATE - Customer_DOB) <  19
          AND c.sbtk = 1
          AND c.category in ('A','9')
--Ordering it by random
ORDER BY rand()
    FETCH first 10000 rows only;
```

Slide 7: Source Code Editors