

The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic visual effect.

CS 217 Data Management and Information Processing

Relational Database Design Examples

Last Lecture: Relational Database Design

- ▶ **Primary** and **unique keys** prevent rows from repeating certain columns.
- ▶ **Foreign keys** link tables and point to primary/unique keys.
 - ▶ Create **parent/child** table relationships. Must fill in parent before child.
 - ▶ Parent rows cannot be deleted unless default foreign key behavior is changed.
 - ▶ Must kill children first!
- ▶ Tables can represent **Objects**, **Events** (have time), and **Relationships**:
 - ▶ **One to many** relationships allow multiple child rows referencing one parent row
 - ▶ Implemented with a single foreign key.
 - ▶ **Many to many** relationships link two or more rows
 - ▶ Implemented with a linking table
 - ▶ **One to one** relationships create subset tables
 - ▶ Implemented with a single foreign key that is also a unique key.

Database Schema Design Steps

1. List tables

► (Objects, events, relationships)

2. Choose **primary key** for each table

3. Choose **foreign keys** to link tables

4. Add unique keys and/or optional columns

5. Refine the design, revisiting decisions made above

More examples

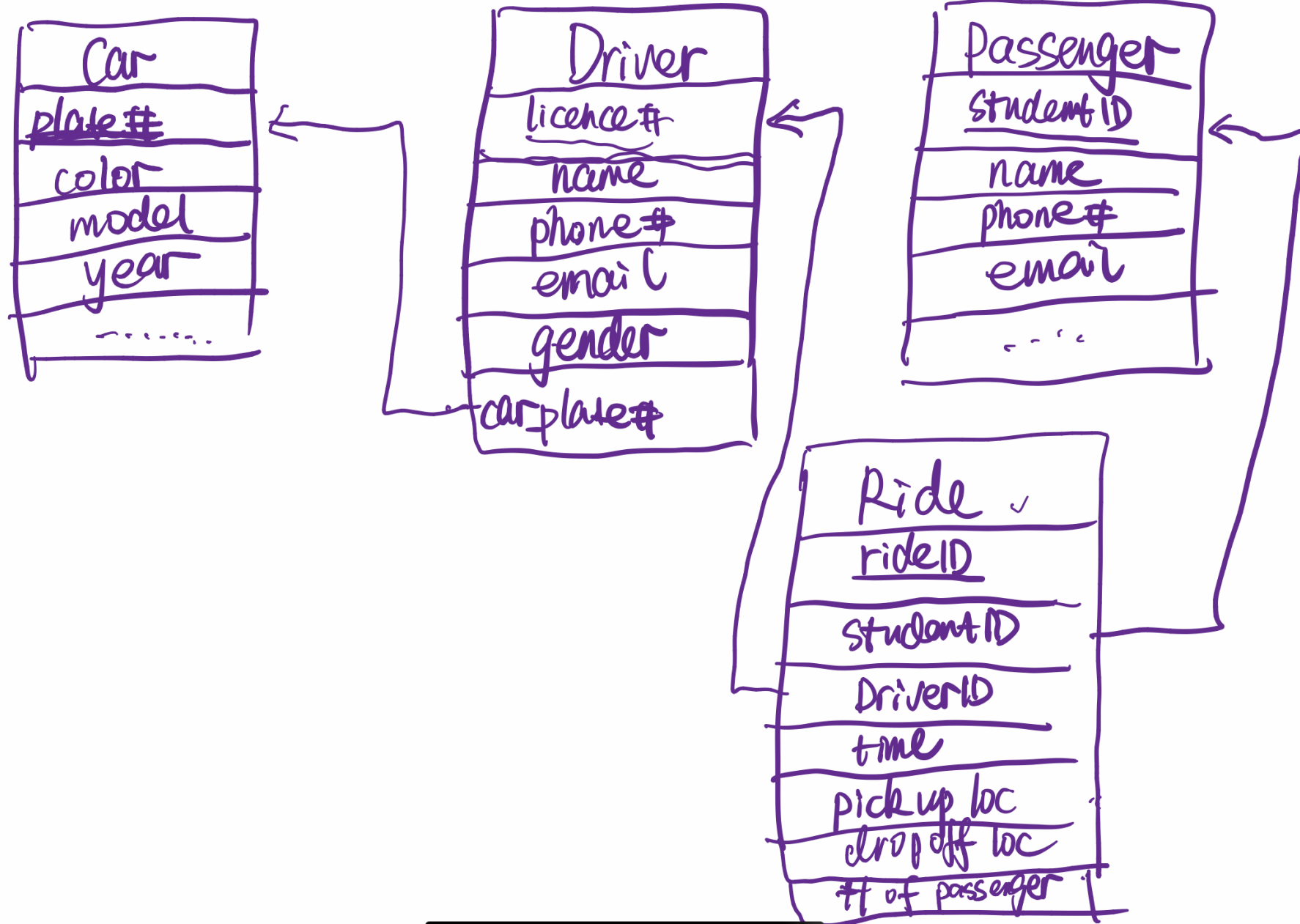
Safe Ride

Safe Ride

Design a database schema for the safe-ride service (or think of Uber). It should contain:

- ▶ Cars
- ▶ Drivers
- ▶ Passengers
- ▶ Rides
- ▶ ...

Safe Ride



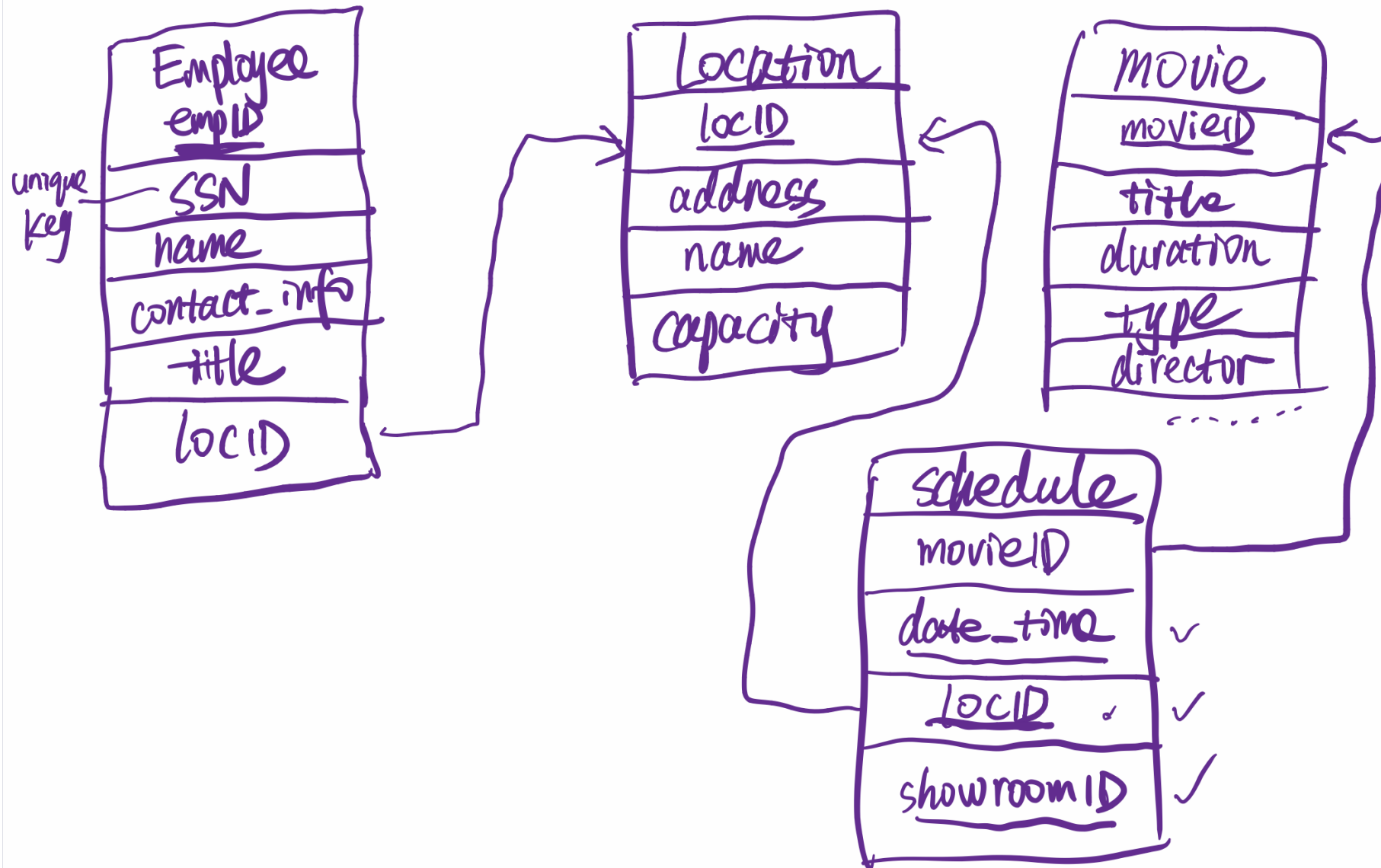
Movie Theater Chain

Movie Theater Chain

Design a database schema for a movie theater chain. It should contain:

- ▶ Locations/branches
- ▶ Employees
- ▶ Movies
- ▶ Schedule of movies
- ▶ ...

A Movie Theater Chain



The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, ranging from light lime to dark forest green. These shapes are concentrated on the right side of the image, with some extending towards the left. The overall effect is a modern, layered, and organic-looking design.

Lending Library

Lending Library

Design a database schema for a lending library. It should contain:

- ▶ Item (books, DVD, ...)
- ▶ Students
- ▶ Loan/rental
- ▶ Donation
- ▶ ...

Lending Library

