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Overview of the ER Model

- The Entity-Relationship model is a high level way to look at data
- The ER model is made up of three parts
 - Entities
 - Relationships
 - Attributes
- These things tend to translate well to relational databases



Attributes

- Attributes are the smallest division of data
- They should not be able to be split
- Good Examples
 - First name
 - Social Security Number
 - Quantity
- Bad Examples
 - Address
 - Car
 - Toppings on a pizza

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• 1	f you can bre lame: – Jane Smith	eak up an attribute you should				
• L	irst name: – Jane ast name: – Smith	GOOD				

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Attributes continued 2

Good

- Street address
 - 123 Lani Kai St
- City
- Kahului
- St
- HI
- Zip – 96790

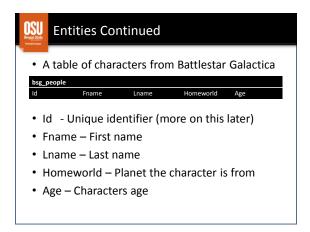
Bad

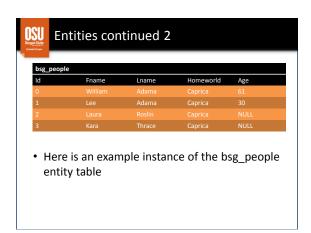
- Address
 - 123 Lani Kai St, Kahului, HI 96790

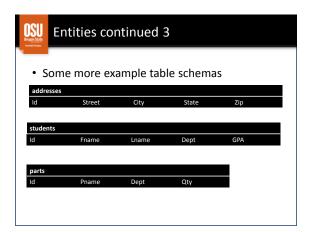
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Entities

- Entities are the things in your data
- Examples:
 - People
 - Space ships
 - Locations
 - Inventory
- Composed of attributes
- Stored together in tables







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Relationships

- Relationships in the ER model are relations between entities
- · They connect entities to other entities
- Can have restrictions on number of entities allowed
- Can be built into entity tables or can be its own table
 - Depends on number of entities involved

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Relationship examples

- Employees can work in many departments
- Managers can manage one department
- Students can be in many classes
- A class **must be in at least one** department
- A transaction must be associated to one customer

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Relationships examples 2

· We had characters from a homeworld

bsg_people

Homoworld A

- Previously 'Homeworld' was an attribute
- What if 'Homeworld' was an entity?

Name

bsg_planets Id

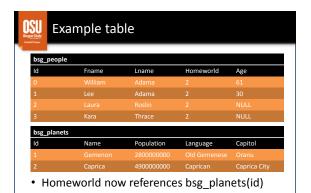
Population

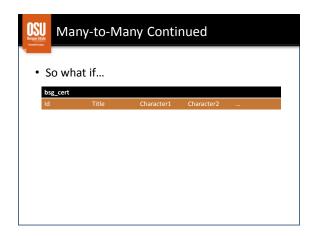
Language Capitol

 We might now say "A character must be from one planet."

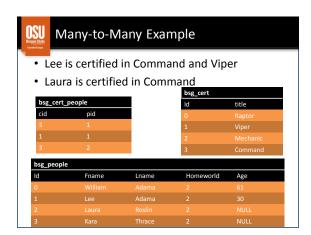
A One to Many Relationship

- In this case we have a few conditions
 - A character **must** be from a planet
 - A character is only from **one** planet
 - A planet can be the homeworld for many characters
- Depending on how you phrase it this is a many-to-one or a one-to-many relationship
- We can just add a column for this (or change our current column)









In Review

- Attributes describe Entities and Relationships
- Entities are things
- Relationships say how things are related
 - Can be required or optional
 - Can allow only one entity or can allow many
 - Sometimes requires its own table, sometimes not
 - Can have its own attributes