Schemas, The Basics

Into to Schemas

- A schema is a table set of constraints on data
- In simple terms it is the table definition
- Schemas exist for Entities and Relationships
- Schemas are composed of attributes and constraints
- When I say schemas going forward, I mean conceptual schemas

Some Confusing Definitions

- A Relation – A table and all its entries (can be a table of Entities or Relationships)
  - Rows are not ordered
  - Rows are unique
- A Relation Schema – The set of constraints on the relation

Other Definitions

- Tuple – A row in the table
- Degree – Number of attributes in a relation
  - Number of columns in the table
- Cardinality – Number of possible unique rows in a relation

Integrity Constraints

Integrity Constraints – Rules specifying what can go in a tuple

Types

- Domain – Restricts the domain of an attribute (e.g. int, varchar, float)
- Key – Requires that the entries in a column or combination of columns be unique (a lot more on this later)
- Not Null – Requires that a value always be specified for an attribute

Other Integrity Constraints

- Entity – Primary keys can not be null
- Referential – Requires that an attribute be present in another table (a lot more on this later, it's how we set up relationships)
- Semantic – Rules about the system outside of the database (e.g. Only Juniors and Seniors can take 300 level classes)

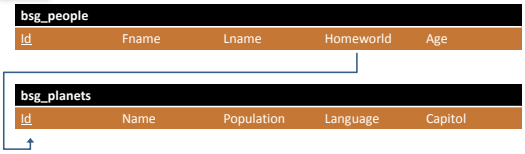
Schema Notation

- Your book does this:

students				
ID	Name	Year	GPA	Birthday

- That's ok but I prefer
  Students(
  ID,
  Name,
  Year,
  GPA,
  Birthday)
- It looks more like SQL, you can do either

More notation



- Underlined Attributes – These are the attributes making up the primary key
- The arrow – Signifies one attribute references another
- More on both of these in later lectures

In Review

- Relations and Relationships are different
- Schemas define the rules for tables
- There are many different kinds of rules
  - Key, Domain and Referential are the most important