1. **Basics of Data Models**
2. What is data model?
3. Why is data modeling important?
4. Who does this type of work?
5. Relational model and databases.
6. ACID properties.
7. Requirements
8. **Exercise** – Creating Tables in Postgres using Python.
9. **Project** – Building data model and creating database.

**Basics of Data Models**

1. What is data model?

A data model is an abstract model that **organizes elements of data** and standardizes **how they relate to one another** and to the properties of real-world entities.

**(Primary key & Foreign key)**

1. Why data modeling important?

* Really important to organize data
* Organized data determines later data use
* Begin prior to building out applications, business logic and analytical models
* Iterative process

1. Who does this type of work?

* Data Scientist
* Software Engineers
* Data Engineers
* Anyone involved in the process of using and analyzing data

1. **Relational model**

**Organizes data** into one or more tables of columns and rows, with **a unique key** identifying each row.

**Relational Database**

It is a digital database based on the relational model of data… a software system used to **maintain relational databases** is a relational database management system (RDBMS)

Common types of RDBMS

* MySQL
* PostgreSQL
* Oracle
* MSSQL

**The Basics**

* Database/Schema

Collection of tables

* Tables/Relations

A group of rows sharing the same labeled elements

**Advantages of using a relational database**

* Ease of use – SQL.
* Ability to do JOINS.
* Ability to do aggregations and analytics.
* Smaller data volumes.
* Flexibility of queries.
* ACID transactions – data integrity.

1. What are ACID properties?

**ACID Properties**

**Durability**

**Isolation**

**Consistency**

**Atomicity**

When to not use Relational Database?

* Large amounts of data.
* Need to be able to store different data type’s formats.
* Need a flexible schema.
* Need high availability.
* Need horizontal scalability.

What is PostgreSQL?

* Open source object-relational database system
* Uses and builds on SQL language

**First exercise (create a table with Postgres)**

Requirements

1. Install PostgreSQL
2. Python 3.6 or later version
3. Jupyter Notebook