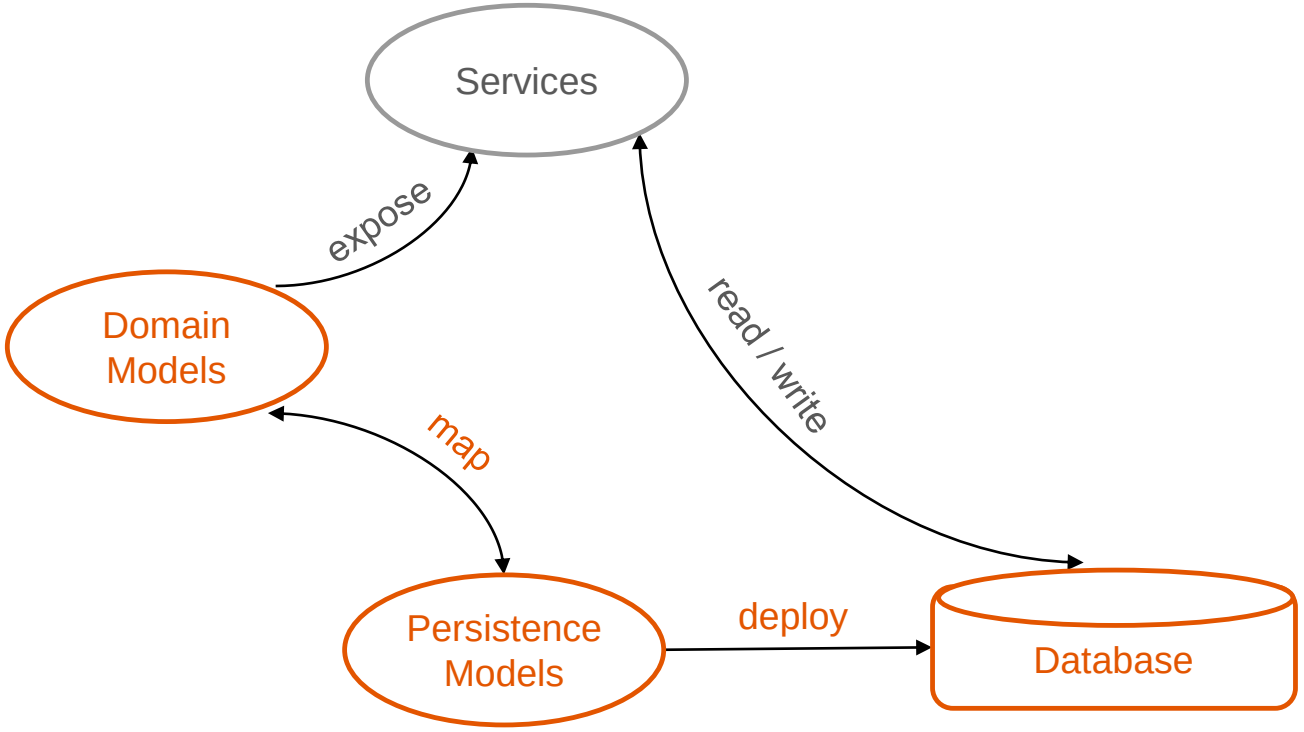
Week 2: Development Tasks

Unit 4: Using Databases

Introduction



Domain Models

Static and data-related aspects of a problem domain in terms of entity-relationship models.

Persistence Models

A set of entities mapped from a domain model and deployed to the database

Services

Exposed interfaces based on the domain model

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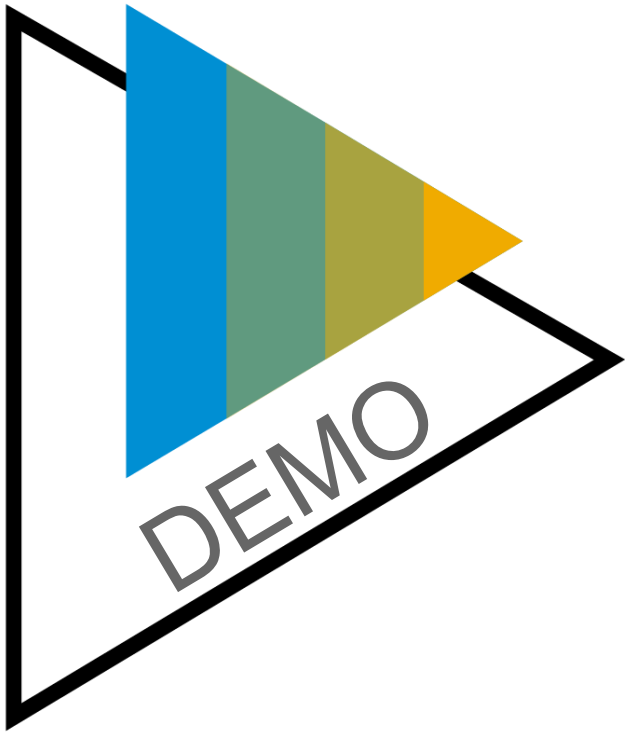
Demo



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CDS model mapping to SQL [1]

```
namespace my.bookshop;
entity Books {
  key ID : Integer;
  title  : localized String;
  author : Association to Authors;
  stock  : Integer;
}
entity Authors {
  key ID : Integer;
  name   : String;
  books  : Association to many Books on books.author = $self;
}

entity MyOrders as projection on Orders;
```

Default mapping

- CDS entity → SQL table
- CDS entity w/ query → SQL view
- "." in CDS names → "_" in SQL table name

```
CREATE TABLE my_bookshop_Books (
  ID int,
  title varchar(111),
  author_ID varchar(36),
  stock int
) WITH ASSOCIATIONS (
JOIN Authors as author ON author.ID = author_ID
)

VIEW MyOrders as SELECT FROM Orders ...
```

Influence mapping through annotations

- **@cds.persistence.exists** [2]: instruct CDS ***during compiling*** not to create table and use existing table in DB
- **@cds.persistence.skip** [3]: indicate an object ***during runtime*** not to be looked-up in DB because it is implemented in service layer
- **@cds.persistence.table**: create a table with the effective signature of a view definition instead of a SQL view

```
@cds.persistence.exists
entity Publishers {
  key ID : Integer;
  name : String;
}
```

```
// defined outside of CDS
COLUMN TABLE Publishers (
  ID integer,
  name varchar(111),
  primary key ( ID )
)
```

```
using API_BUSINESS_PARTNER as bp from '../srv/external...';

@cds.persistence.skip
entity A_Customer as projection on bp.A_CustomerType;
```

[1] Demonstrated here with SAP HANA SQL statement. SQLite differs slightly.

[2] Unit 3.5 "Accessing Native SAP HANA Tables and Views" offers further details.

[3] Unit 4.2 "Connecting to Remote Services" offers further details.

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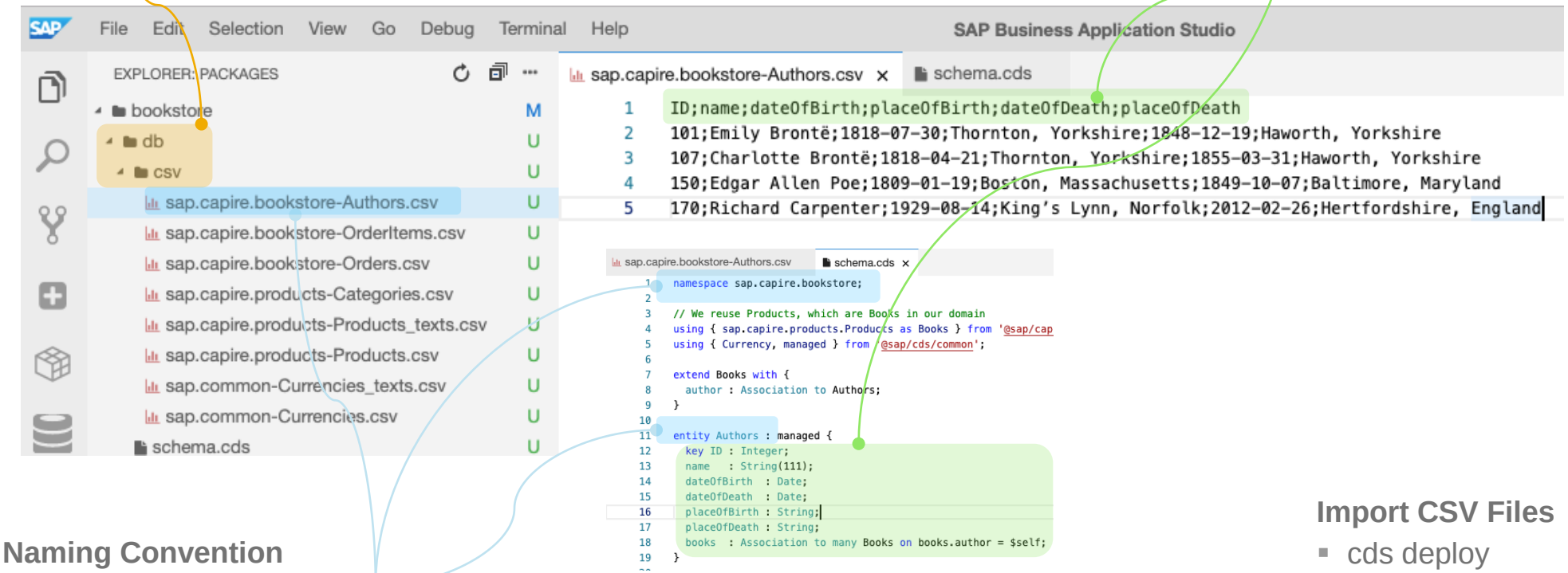
Provide initial data

File Location

- db/data
- db/csv

File content

- Header line listing element names



File Naming Convention

- <namespace>-<entity>.csv
  e.g. sap.capire.bookstore-Authors.csv

Import CSV Files

- cds deploy
- SAP HDI Deployer for SAP HANA
- DB tables will be created automatically during deployment

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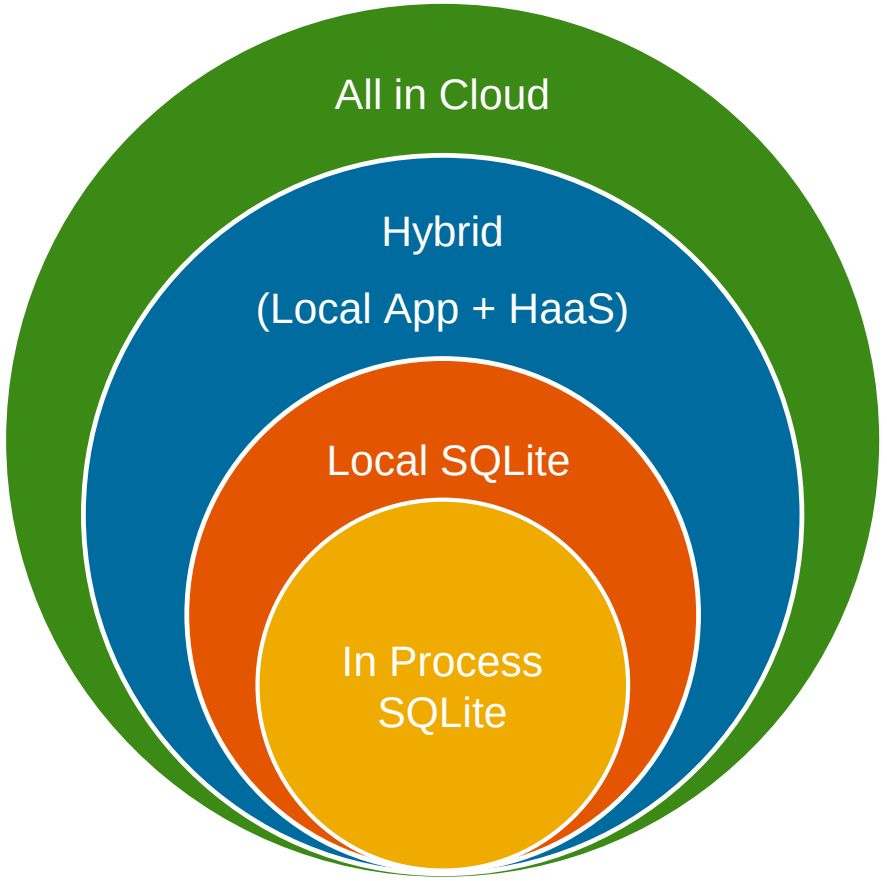
Deploy to database – Grow as you go



Deploying for Production [1]

Deploy MTA to SAP Cloud Platform

SAP HANA

cds deploy --to hana [2]

Deploy data to SAP HANA

App stays local

SAP HANA

cds deploy --to sqlite

Deploy to local SQLite database

Local SQLite

cds run [app] --in-memory

Run app with in-memory SQLite

In-Memory SQLite

[1] Unit 3.4 “Deploying for Production” discusses how to deploy complete project as MTA to SAP CP.

[2] It only deploys database parts to SAP HANA DB on SAP Cloud Platform while the app still runs locally. To understand what happens behind the scenes, please refer to deploy --to hana.

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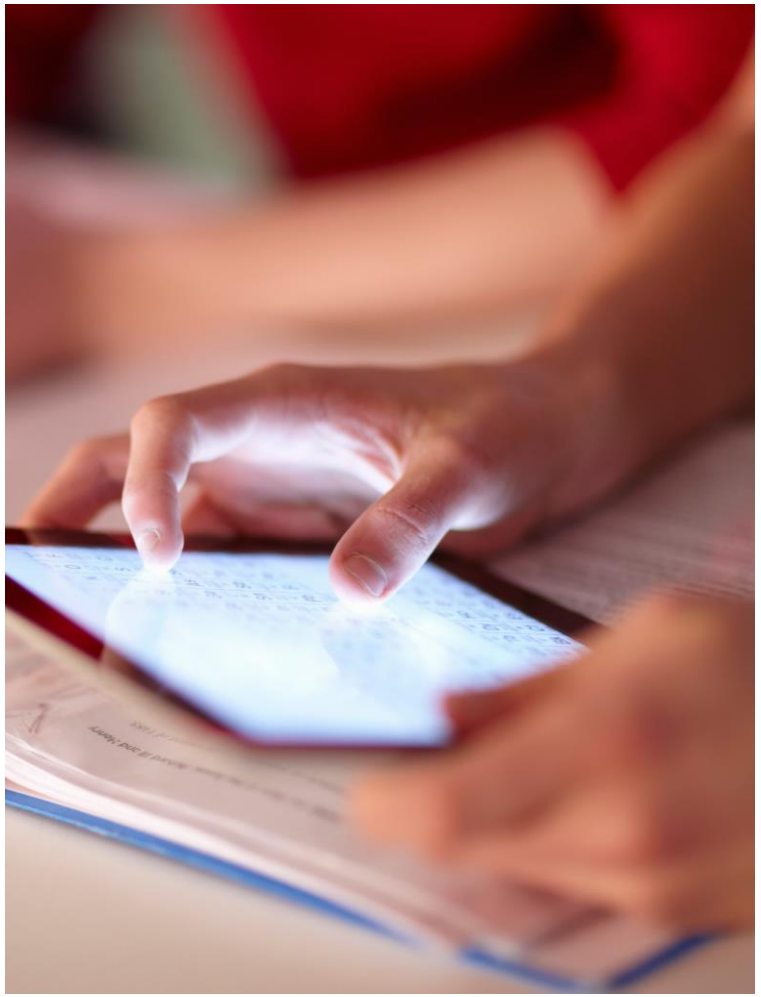
What you've learned in this unit

- How to grow your database deployment along with your development
- How to deploy only data of your project to SAP HANA service on SAP Cloud Platform
- How to provide initial data for CDS model
- How CDS models get mapped to persistence model



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