

DMD II

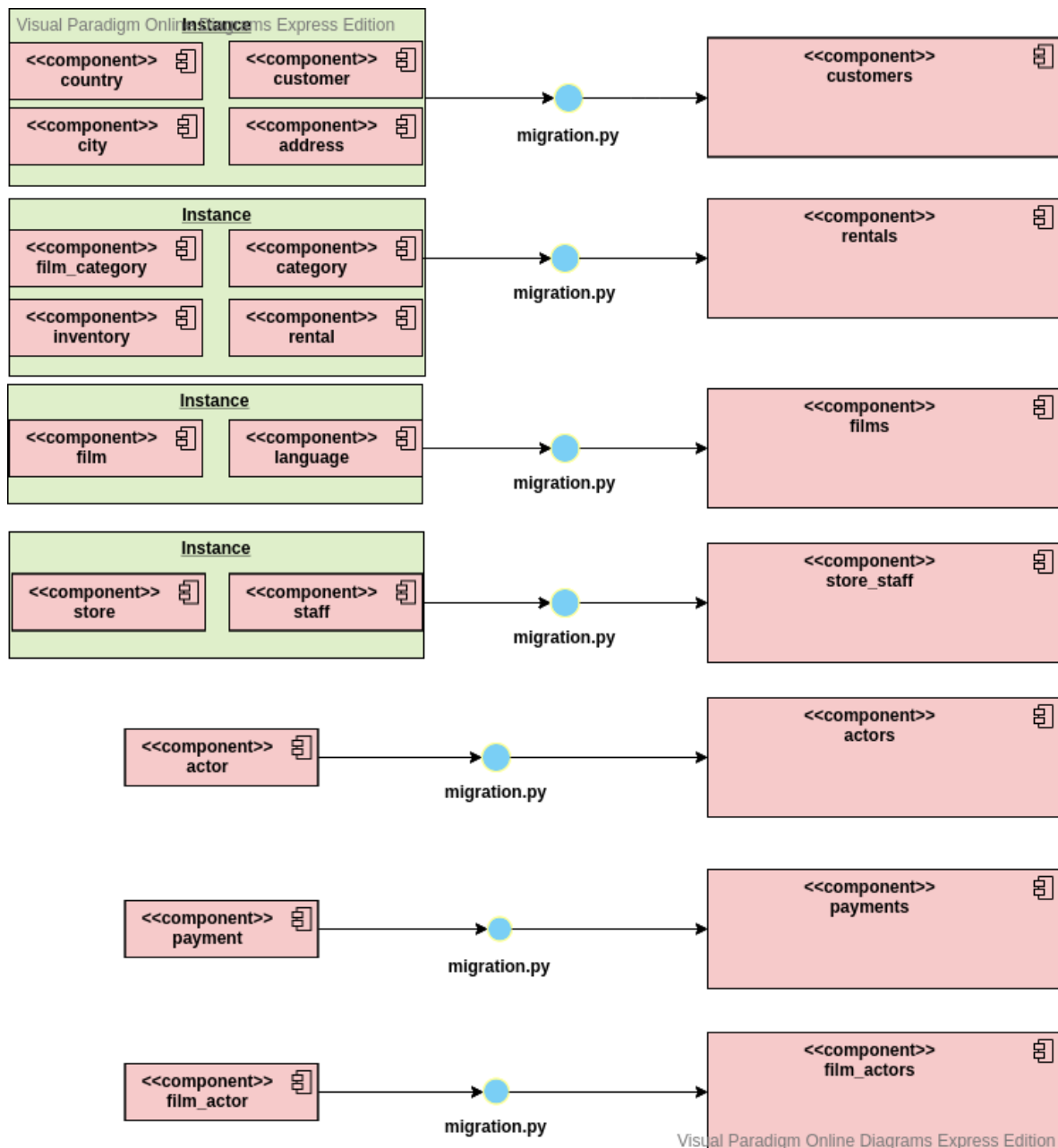
Assignment I report

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1. Process of moving the database

Firstly I followed the assignment instructions to restore dvdrental postgres database. Then I created migration.py python script to move the database to mongodb. Inside migration.py using psycopg2 python library I executed postgres queries to merge several tables (depicted in component diagram). Finally, I converted each row of new merged table into the dictionary and insert them into mongodb collections one by one in loop. Tables actor, payment and film_actor transferred to mongodb without changes.

2. Component Diagram



Mongodb is run on localhost, port: 27017, postgresql is run on localhost, port: 5432.

3. Necessary adjustments

1. Since after the migration to mongodb collections customers, rentals, films and store_staff contain contents from several tables, each "last_update" field was renamed to "postgres_tablename_last_update" to avoid ambiguity.

Example: table "inventory", field "last_update" -> "inventory_last_update".

2. Primary key/_id fields:

- 1) Collection customers: "_id" is "customer_id" from table "customer";

- 2) Collection rentals: "_id" is "rental_id" from table rental;

- 3) Collection films: "_id" is "film_id" from table film;

- 4) Collection store_staff: "_id" is "store_id" from table store;

- 5) Collection actor: "_id" is "actor_id" (no changes);

- 6) Collection payment: "_id" is "payment_id" (no changes);

- 7) Collection film_actors: "_id" is mongodb auto-generated object_id, since initial primary key was composite, no changes to fields: "actor_id" and "film_id".

4. Query performance

I considered query performance as elapsed time for query execution, without time taken to connect the database. Each result is the average elapsed time among 30 executions. The more times the access to the database is needed, the longer is the query execution.

Query 1: [0.276 sec];

Query 2: [0.132 sec];

Query 3: [2.475 sec];

Query 4: [0.247 sec], for the same predefined customer;

Query 5: [0.421 sec]