

CS306 Project: Energy Production and Emission

STEP II

Berkem Elgöl – 29363

Hamza Özdemir – 31239

Mert Dilek – 27927

Doğukan Dizman – 28196

Mehmet Eren Ege – 28185

https://github.com/xxRevo/CS306Project_Group10

In our previous step, we have chosen energy production of nations along with their population and years to create a database. In the previous step we decided to use 3 entities (being “population”, “countries” and “energy”) for our project with 2 relations that added up to 5 tables in total. 2 entities out of our total 3 were both weak entities so whilst converting our ER model into relational model to import into SQL we made sure to include the necessary key constraints and foreign keys to avoid any errors however it took some time and a process of trial and error as we corrected the syntax of our import statements. In addition we have added another entity that joins with our previous “energy” table to increase the entity amount according to the feedback in the first step.

We created 7 tables in MYSQL database were created from 5 tables in our ER model with each table with its same name in the database and 2 in addition by our newly added data. We did not convert multiple sets into any single tables. We did not run into any errors other than syntax errors for SQL code since we formatted our tables for the database during step 1. Our new ER diagram from reverse-engineering the SQL database is provided in the folder as well.

Our SQL database, log and query files for creating the MYSQL database are named as the following within CS306_Step2 folder of our repository:

- sql_loc_latest.txts
- cs306_group10_step2_sql.sql
- sql_database (folder)
- ER_diagram_step2.png

The SQL query code is also available on the second page.

```
USE test;
```

```
CREATE TABLE countries (  
  name_ VARCHAR(30),  
  iso_code VARCHAR(3),  
  PRIMARY KEY (iso_code)  
);
```

```
CREATE TABLE population (  
  year_ INT,  
  amount INT,  
  iso_code VARCHAR(3),  
  FOREIGN KEY (iso_code) REFERENCES countries(iso_code)  
);
```

```
CREATE TABLE energy (  
  year_ INT,  
  clean_energy INT,  
  dirty_energy INT,  
  iso_code VARCHAR(3),  
  FOREIGN KEY (iso_code) REFERENCES countries(iso_code)  
);
```

```
ALTER TABLE energy  
ADD COLUMN total_energy INT;
```

```
UPDATE energy  
SET total_energy = dirty_energy + clean_energy  
WHERE iso_code IS NOT NULL;
```

```
CREATE TABLE have_relationship (  
  iso_code VARCHAR(3),  
  year_ INT,  
  amount INT,  
  PRIMARY KEY (year_, iso_code),  
  FOREIGN KEY (iso_code) REFERENCES countries(iso_code)  
);
```

```
CREATE TABLE consumer_relationship (  
  iso_code VARCHAR(3),  
  year_ INT,  
  clean_energy INT,  
  dirty_energy INT,  
  co2_emission INT,  
  PRIMARY KEY (year_, iso_code),  
  FOREIGN KEY (iso_code) REFERENCES countries(iso_code) ON UPDATE CASCADE  
);
```

```
CREATE TABLE pollution (  
  year_ INT,  
  ozone_density FLOAT,  
  temperature_anomaly FLOAT  
);
```

```
CREATE TABLE world_total AS  
  SELECT energy.total_energy, pollution.ozone_density, pollution.temperature_anomaly  
  FROM energy  
  JOIN pollution ON energy.year_ = pollution.year_;
```