DECEMBER 15, 2022

DATA FORSTÅELSE - SQL

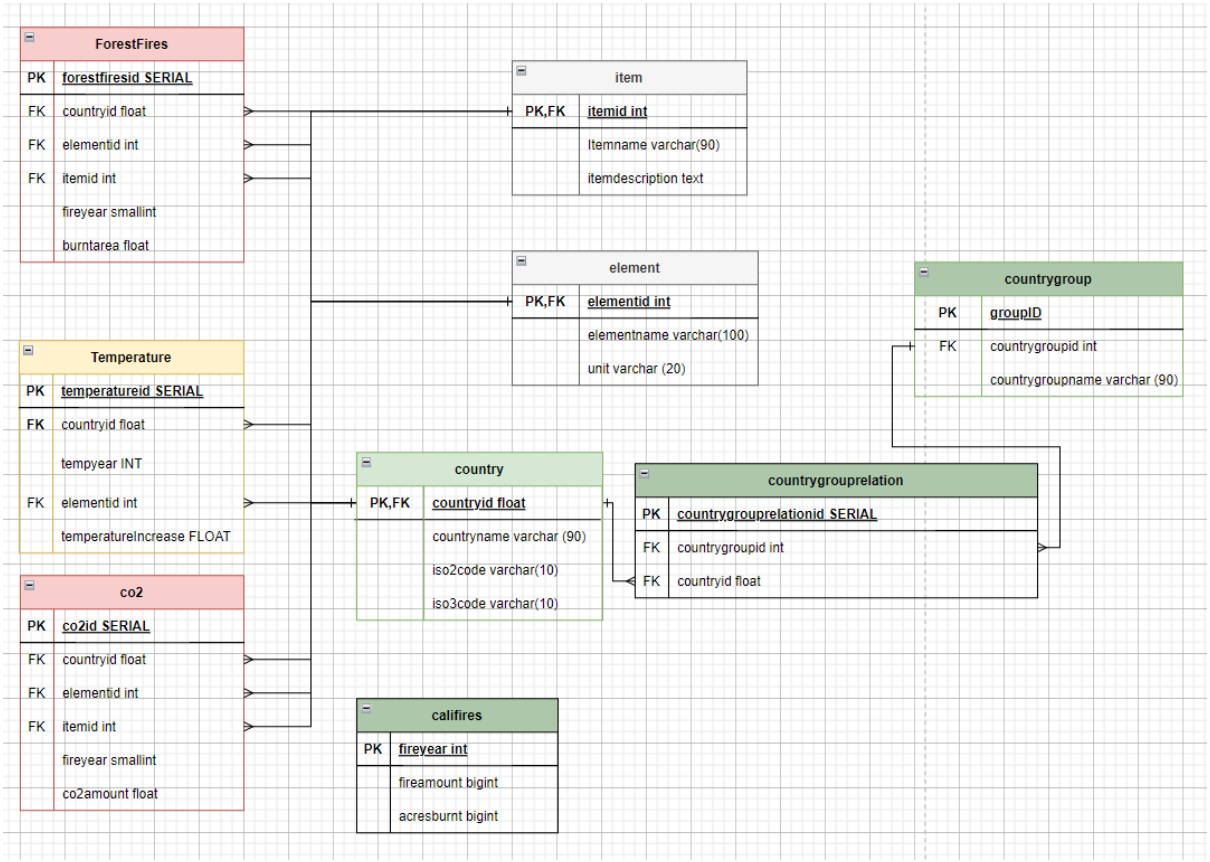
NATURBRANDE
DEN UOPLYSTE KLIMAFORANDRING

THE SEVEN (WELAT, NICOLAJ, AUGUST & JEFF)

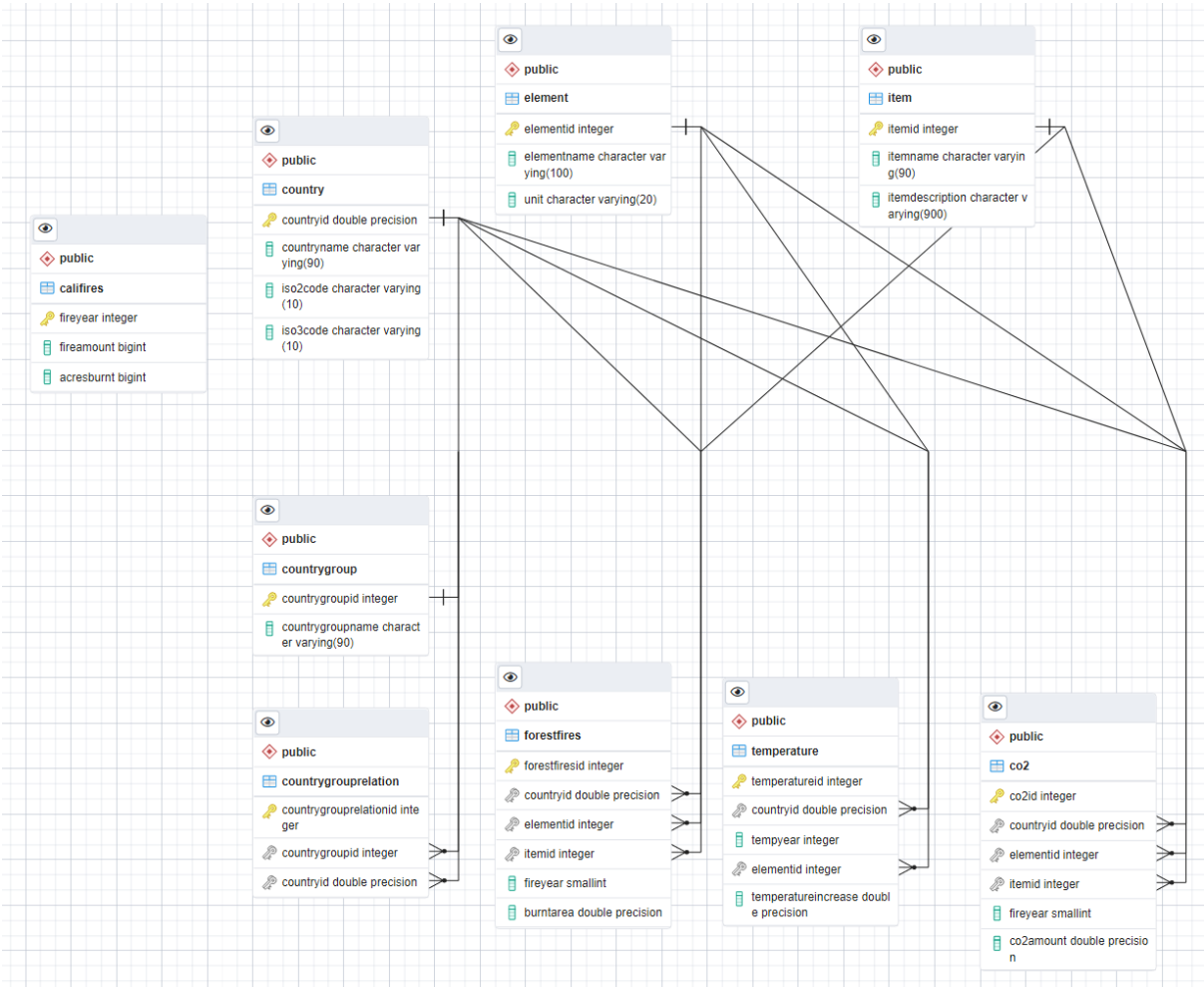
ITA-E22A
EAAA – Erhvervsakademi Aarhus

INDHOLDSFORTEGNELSE

LOGISK ERD DIAGRAM:



FYSISK ERD DIAGRAM:



SQL CALLS:

OPRETTELSE AF TABELLER:

```
CREATE TABLE item(
    itemid int PRIMARY KEY,
    itemname varchar(90),
    itemdescription varchar(900)

);

CREATE TABLE element (
    elementid int PRIMARY KEY,
    elementname varchar(100),
    unit varchar(20)
);

CREATE TABLE countrygroup(
    countrygroupid int PRIMARY KEY,
    countrygroupname varchar(90)
);

CREATE TABLE country(
    countryid float UNIQUE PRIMARY KEY,
    countryname varchar(90),
    iso2code varchar(10),
    iso3code varchar(10)
);

CREATE TABLE countrygrouprelation(
    countrygrouprelationid SERIAL PRIMARY KEY,
    countrygroupid int REFERENCES countrygroup (countrygroupid),
    countryid float REFERENCES country (countryid)
);

CREATE TABLE forestfires (
    forestfiresid int PRIMARY KEY,
    countryid float,
    elementid int,
    itemid int,
    fireyear smallint,
    burntarea float,
    CONSTRAINT fkf1 FOREIGN KEY (countryid) REFERENCES country (countryid),
    CONSTRAINT fkf2 FOREIGN KEY (elementid) REFERENCES element (elementid),
    CONSTRAINT fkf3 FOREIGN KEY (itemid) REFERENCES item (itemid)
);

CREATE TABLE temperature(
    temperatureid SERIAL PRIMARY KEY,
    countryid float,
    tempyear int,
    elementid int,
    temperatureincrease float,
    CONSTRAINT fkt1 FOREIGN KEY (countryid) REFERENCES country (countryid),
    CONSTRAINT fkt2 FOREIGN KEY (elementid) REFERENCES element (elementid)
);
```

```
CREATE TABLE co2(
    co2id SERIAL PRIMARY KEY,
    countryid float,
    elementid int,
    itemid int,
    fireyear smallint,
    co2amount float,
    CONSTRAINT fkf1 FOREIGN KEY (countryid) REFERENCES country (countryid),
    CONSTRAINT fkf2 FOREIGN KEY (elementid) REFERENCES element (elementid),
    CONSTRAINT fkf3 FOREIGN KEY (itemid) REFERENCES item (itemid)
);

CREATE TABLE califires(
    fireyear int PRIMARY KEY,
    fireamount bigint,
    acresburnt bigint
);
```

OPRETTELSE AF VIEWS & INDEXES

```
CREATE MATERIALIZED VIEW countryfireinfoview AS
SELECT * FROM countryfireinfo;


CREATE INDEX indexCountryFireInfo
ON countryfireinfoview (countryid, countryname, elementname, fire,
iso2code, itemname, year);
```

```
CREATE MATERIALIZED VIEW countryfireyear AS
    SELECT countryname, fireyear, iso2code, SUM(burntarea) AS fire FROM
forestfires
    INNER JOIN country USING (countryid)
    INNER JOIN countrygrouprelation using(countryid)
    INNER JOIN countrygroup USING (countrygroupid)
    WHERE burntarea <> 0
    GROUP BY country.countryname, country.iso2code, forestfires.fireyear
    ORDER BY country.countryname, fireyear asc
```

```
CREATE MATERIALIZED VIEW continentfireyear AS
    SELECT countryname, fireyear, iso2code, SUM(burntarea) AS fire FROM
forestfires
    INNER JOIN country USING (countryid)
    INNER JOIN countrygrouprelation using(countryid)
    INNER JOIN countrygroup USING (countrygroupid)
    WHERE burntarea <> 0
    GROUP BY country.countryname, country.iso2code, forestfires.fireyear
    ORDER BY country.countryname, fireyear asc
```

```
CREATE MATERIALIZED VIEW countryfiretype AS
    SELECT country.countryname, SUM(burntarea) AS fire, item.itemname FROM
forestfires
    INNER JOIN country USING (countryid)
    INNER JOIN countrygrouprelation using(countryid)
    INNER JOIN countrygroup USING (countrygroupid)
    INNER JOIN item USING (itemid)
    GROUP BY country.countryname, item.itemname


CREATE MATERIALIZED VIEW continentfiretype AS
    SELECT countrygroup.countrygroupname, SUM(burntarea) AS fire,
item.itemname FROM forestfires
    INNER JOIN country USING (countryid)
    INNER JOIN countrygrouprelation using(countryid)
    INNER JOIN countrygroup USING (countrygroupid)
    INNER JOIN item USING (itemid)
    GROUP BY countrygroup.countrygroupname, item.itemname


 SELECT countrygroup.countrygroupname,
    forestfires.fireyear,
    temperature.temperatureincrease,
    sum(forestfires.burntarea) AS fire
   FROM forestfires
     JOIN country USING (countryid)
     JOIN countrygrouprelation USING (countryid)
     JOIN countrygroup USING (countrygroupid)
     JOIN temperature ON forestfires.fireyear = temperature.tempyear
     JOIN element ON temperature.elementid = element.elementid
  WHERE forestfires.burntarea <> 0::double precision AND
temperature.elementid = 7271
  GROUP BY countrygroup.countrygroupname, forestfires.fireyear,
temperature.temperatureincrease
  ORDER BY countrygroup.countrygroupname, forestfires.fireyear;

CREATE INDEX continentfiretypeIndex ON continentfiretype (countrygroupname,
fire, itemname);
CREATE INDEX continentfireyearindex ON continentfireyear (countrygroupname,
fireyear, avg, fire);
CREATE INDEX countryfireinfoviewIndex on countryfireinfoview (countryid,
countryname, fire, year, iso2code, elementname, itemname);
CREATE INDEX countryfiretypeIndex on countryfiretype (countryname,
iso2code, fire, itemname);
CREATE INDEX countryfireyearIndex on countryfireyear (countryname,
iso2code, fireyear, avg, fire);
```