이번 프로젝트의 목표는 6개이상의 국가, 임의의 강을 포함한 5개 이상의 강으로 8가지의 관계를 구현하는 것이다.

먼저, 국가의 좌표는 다음과 같다.

**italiana**

37.943925, 12.063867, 36.578963, 15.065327, 37.849184, 15.991491, 39.071268, 17.243529, 39.812993, 16.523178, 40.481604, 17.003412, 39.799817, 18.409810, 40.324876, 18.495566, 41.811806, 16.283062, 42.308419, 14.533640, 43.576438, 13.641778, 45.302897, 12.458345, 45.651658, 13.521719, 47.036816, 12.475496, 45.890925, 6.867055, 43.731008, 7.552106, 43.996819, 9.872228, 39.851941, 8.133797,37.943925, 12.063867

**France**

39.851941, 8.133797, 49.867106, -1.895244, 48.216819, -5.420298, 43.494538, -1.943203, 42.441763, 3.236468, 43.581456, 7.600821, 48.930793, 8.200320, 51.148059, 2.397170, 39.851941, 8.133797

**spain**

43.040548, -9.137192, 37.235147, -9.209132, 35.906350, -5.564178, 38.559683, 0.238973, 42.370938, 3.332388, 43.650899, -2.135043, 43.040548, -9.137192

**England**

58.949794, -5.217394, 54.191357, -10.458454, 51.459448, -10.602044, 49.634879, -5.576370, 51.055070, 1.423676, 52.933519, 1.926243, 59.005296, -2.309682, 58.949794, -5.217394

**swiss**

47.494465, 6.831210, 46.140421, 5.812534, 45.904640, 7.814759, 45.831262, 8.962233, 46.237691, 10.168251, 46.841732, 10.578063, 47.557717, 9.559387, 47.731267, 8.119191, 47.494465, 6.831210

**germany**

54.965510, 8.579042, 53.631837, 6.857743, 53.631837, 6.857743, 49.495793, 6.519127, 50.904536, 14.984534, 54.180403, 14.222647, 54.884433, 13.347889, 54.591200, 11.118665, 54.868198, 9.651327, 54.965510, 8.579042

**Austria**

47.582771, 9.476611, 47.043727, 9.504028, 47.006348, 12.108577, 46.310128, 14.548628, 47.006348, 16.330688, 47.932959, 17.098344, 48.734882, 16.933846, 49.041341, 15.042121, 48.644389, 14.055134, 47.638221, 12.848817, 47.638221, 9.613693, 47.582771, 9.476611

강의 좌표는 다음과 같다.

**lucerne river**

46.987882, 8.525983, 45.500296, 10.655721, 43.736551, 12.123969, 43.144292, 13.801966

**san river**

48.948709, 2.305865, 48.985683, 2.083492, 49.112972, 1.453272, 49.442399, 0.217108

**dordogne river**

43.764270, 1.334080, 44.575004, -0.099210, 44.851722, -0.563378, 45.276961, -0.73622

**elbe river**

53.512585, 10.042253, 53.789327, 9.391313, 53.881711, 8.916155

**make river(임의의 강)**

46.693735, 14.754785, 50.725504, 8.117755, 44.051153, 0.696824, 42.837034, -5.469865

**make2 river(임의의 강, cover 관계를 충족하기 위함.)**

47.043727, 9.504028, 47.030000, 11.000000, 47.006348, 12.108577

**make3 river(meet 관계를 위한 임의의 강**

47.582771, 9.476611,45.582771, 9.476611)

각 테이블의 스키마는 다음과 같다.

**Countrys 테이블**

테이블이(가) 표시된 사진

자동 생성된 설명

**rivers 테이블**

테이블이(가) 표시된 사진

자동 생성된 설명

**DESC로 확인**

텍스트이(가) 표시된 사진

자동 생성된 설명

sql이 익숙치 않아 설치부터 약간의 고생이 있었으나, 8가지 관계가 모두 잘 재현됨을 확인할수 있었다.

**disjoint**

텍스트이(가) 표시된 사진

자동 생성된 설명

**contains**

텍스트이(가) 표시된 사진

자동 생성된 설명

**inside**

텍스트이(가) 표시된 사진

자동 생성된 설명

**equal**

텍스트이(가) 표시된 사진

자동 생성된 설명

**meet**

텍스트이(가) 표시된 사진

자동 생성된 설명

**covers**

텍스트이(가) 표시된 사진

자동 생성된 설명

**coveredby**

텍스트이(가) 표시된 사진

자동 생성된 설명

**overlap**

텍스트이(가) 표시된 사진

자동 생성된 설명

sql문

CREATE TABLE countrys(

sid NUMBER PRIMARY KEY,

cname VARCHAR2(20),

cshape SDO\_GEOMETRY

);

CREATE TABLE rivers(

rid NUMBER PRIMARY KEY,

rname VARCHAR2(20),

rshape SDO\_GEOMETRY

);

INSERT INTO countrys VALUES(

1,

'italiana',

SDO\_GEOMETRY(

2003,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,1003,1),

SDO\_ORDINATE\_ARRAY(37.943925, 12.063867, 36.578963, 15.065327, 37.849184, 15.991491, 39.071268, 17.243529, 39.812993, 16.523178, 40.481604, 17.003412, 39.799817, 18.409810, 40.324876, 18.495566, 41.811806, 16.283062, 42.308419, 14.533640, 43.576438, 13.641778, 45.302897, 12.458345, 45.651658, 13.521719, 47.036816, 12.475496, 45.890925, 6.867055, 43.731008, 7.552106, 43.996819, 9.872228, 39.851941, 8.133797,37.943925, 12.063867

)

)

);

INSERT INTO countrys VALUES(

2,

'France',

SDO\_GEOMETRY(

2003,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,1003,1),

SDO\_ORDINATE\_ARRAY(39.851941, 8.133797, 49.867106, -1.895244, 48.216819, -5.420298, 43.494538, -1.943203, 42.441763, 3.236468, 43.581456, 7.600821, 48.930793, 8.200320, 51.148059, 2.397170, 39.851941, 8.133797

)

)

);

INSERT INTO countrys VALUES(

3,

'spain',

SDO\_GEOMETRY(

2003,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,1003,1),

SDO\_ORDINATE\_ARRAY(43.040548, -9.137192, 37.235147, -9.209132, 35.906350, -5.564178, 38.559683, 0.238973, 42.370938, 3.332388, 43.650899, -2.135043, 43.040548, -9.137192

)

)

);

INSERT INTO countrys VALUES(

4,

'england',

SDO\_GEOMETRY(

2003,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,1003,1),

SDO\_ORDINATE\_ARRAY(58.949794, -5.217394, 54.191357, -10.458454, 51.459448, -10.602044, 49.634879, -5.576370, 51.055070, 1.423676, 52.933519, 1.926243, 59.005296, -2.309682, 58.949794, -5.217394

)

)

);

INSERT INTO countrys VALUES(

5,

'swiss',

SDO\_GEOMETRY(

2003,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,1003,1),

SDO\_ORDINATE\_ARRAY(47.494465, 6.831210, 46.140421, 5.812534, 45.904640, 7.814759, 45.831262, 8.962233, 46.237691, 10.168251, 46.841732, 10.578063, 47.557717, 9.559387, 47.731267, 8.119191, 47.494465, 6.831210

)

)

);

INSERT INTO countrys VALUES(

6,

'germany',

SDO\_GEOMETRY(

2003,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,1003,1),

SDO\_ORDINATE\_ARRAY(54.965510, 8.579042, 53.631837, 6.857743, 53.631837, 6.857743, 49.495793, 6.519127, 50.904536, 14.984534, 54.180403, 14.222647, 54.884433, 13.347889, 54.591200, 11.118665, 54.868198, 9.651327, 54.965510, 8.579042

)

)

);

INSERT INTO countrys VALUES(

7,

'austria',

SDO\_GEOMETRY(

2003,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,1003,1),

SDO\_ORDINATE\_ARRAY(47.582771, 9.476611, 47.043727, 9.504028, 47.006348, 12.108577, 46.310128, 14.548628, 47.006348, 16.330688, 47.932959, 17.098344, 48.734882, 16.933846, 49.041341, 15.042121, 48.644389, 14.055134, 47.638221, 12.848817, 47.638221, 9.613693, 47.582771, 9.476611

)

)

);

INSERT INTO rivers VALUES(

1,

'lucerne river',

SDO\_GEOMETRY(

2002,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,2,1),

SDO\_ORDINATE\_ARRAY(46.987882, 8.525983, 45.500296, 10.655721, 43.736551, 12.123969, 43.144292, 13.801966)

)

);

INSERT INTO rivers VALUES(

2,

'san river',

SDO\_GEOMETRY(

2002,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,2,1),

SDO\_ORDINATE\_ARRAY(48.948709, 2.305865, 48.985683, 2.083492, 49.112972, 1.453272, 49.442399, 0.217108)

)

);

INSERT INTO rivers VALUES(

3,

'dordogne river',

SDO\_GEOMETRY(

2002,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,2,1),

SDO\_ORDINATE\_ARRAY(43.764270, 1.334080, 44.575004, -0.099210, 44.851722, -0.563378, 45.276961, -0.736227)

)

);

INSERT INTO rivers VALUES(

4,

'elbe river',

SDO\_GEOMETRY(

2002,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,2,1),

SDO\_ORDINATE\_ARRAY(53.512585, 10.042253, 53.789327, 9.391313, 53.881711, 8.916155)

)

);

INSERT INTO rivers VALUES(

5,

'make river',

SDO\_GEOMETRY(

2002,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,2,1),

SDO\_ORDINATE\_ARRAY(46.693735, 14.754785, 50.725504, 8.117755, 44.051153, 0.696824, 42.837034, -5.469865)

)

);

INSERT INTO rivers VALUES(

6,

'make2 river',

SDO\_GEOMETRY(

2002,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,2,1),

SDO\_ORDINATE\_ARRAY(47.043727, 9.504028, 47.030000, 11.000000, 47.006348, 12.108577)

)

);

INSERT INTO rivers VALUES(

7,

'make3 river',

SDO\_GEOMETRY(

2002,

NULL,

NULL,

SDO\_ELEM\_INFO\_ARRAY(1,2,1),

SDO\_ORDINATE\_ARRAY(47.582771, 9.476611,45.582771, 9.476611)

)

);

/\*disjoint \*/

SELECT cname2

FROM (

SELECT c1.cname cname1, c2.cname cname2, SDO\_GEOM.RELATE(c1.cshape,'determine',c2.cshape,0.001) relationship

FROM countrys c1, countrys c2

)

WHERE relationship='DISJOINT';

/\* contains \*/

SELECT cname, rname

FROM (

SELECT c1.cname, r2.rname, SDO\_GEOM.RELATE(c1.cshape,'determine',r2.rshape,0.001) relationship

FROM countrys c1, rivers r2

)

WHERE relationship='CONTAINS';

/\*inside\*/

SELECT cname, rname

FROM (

SELECT c1.cname, r2.rname, SDO\_GEOM.RELATE(r2.rshape,'determine',c1.cshape,0.001) relationship

FROM countrys c1, rivers r2

)

WHERE relationship='INSIDE';

/\* equal \*/

SELECT \*

FROM (

SELECT c1.cname cname1, c2.cname cname2, SDO\_GEOM.RELATE(c1.cshape,'determine',c2.cshape,0.001) relationship

FROM countrys c1, countrys c2

)

WHERE relationship='EQUAL';

SELECT rname1

FROM (

SELECT r1.rname rname1, r2.rname rname2, SDO\_GEOM.RELATE(r1.rshape,'determine',r2.rshape,0.001) relationship

FROM rivers r1, rivers r2

)

WHERE relationship='EQUAL';

/\* meet \*/

SELECT \*

FROM (

SELECT c1.cname, r2.rname, SDO\_GEOM.RELATE(c1.cshape,'determine',r2.rshape,0.001) relationship

FROM countrys c1, rivers r2

)

WHERE relationship='TOUCH';

/\* covers \*/

SELECT cname, rname

FROM (

SELECT c1.cname, r2.rname, SDO\_GEOM.RELATE(c1.cshape,'determine',r2.rshape,0.001) relationship

FROM countrys c1, rivers r2

)

WHERE relationship='COVERS';

/\* coverdby \*/

SELECT cname, rname

FROM (

SELECT c1.cname, r2.rname, SDO\_GEOM.RELATE(r2.rshape,'determine',c1.cshape,0.001) relationship

FROM countrys c1, rivers r2

)

WHERE relationship='COVEREDBY';

/\*overlapbdydisjoint \*/

SELECT cname

FROM (

SELECT c1.cname, r2.rname, SDO\_GEOM.RELATE(c1.cshape,'determine',r2.rshape,0.001) relationship

FROM countrys c1, rivers r2

)

WHERE relationship='OVERLAPBDYDISJOINT' and rname='make river';

/\* 모든 관계 보기 \*/

SELECT r1.rname, r2.rname, SDO\_GEOM.RELATE(r1.rshape,'determine',r2.rshape,0.001) relationship

FROM rivers r1, rivers r2;

SELECT c1.cname, c2.cname, SDO\_GEOM.RELATE(c1.cshape,'determine',c2.cshape,0.001) relationship

FROM countrys c1, countrys c2;

SELECT c1.cname, r2.rname, SDO\_GEOM.RELATE(c1.cshape,'determine',r2.rshape,0.001) relationship

FROM countrys c1, rivers r2;

SELECT c1.cname, r2.rname, SDO\_GEOM.RELATE(r2.rshape,'determine',c1.cshape,0.001) relationship

FROM countrys c1, rivers r2;