DDL SQL Table Create with Primary & Foreign keys:

```
CREATE TABLE ELEMENTS (
IDELEMENTS SMALLINT NOT NULL PRIMARY KEY,
ENAME VARCHAR(12) NOT NULL);

CREATE TABLE STARPLANETS (
PNAME VARCHAR(10) NOT NULL PRIMARY KEY,
MASS DECIMAL(10,4) NOT NULL,
DISTTOSUN DECIMAL(4,2) NOT NULL,
SIDEREALP DECIMAL(10,6) NOT NULL,
ROTATIONP DECIMAL(11,8) NOT NULL,
NUMSATELLITES SMALLINT NOT NULL);

CREATE TABLE SATELLITES (
SNAME VARCHAR(10) NOT NULL PRIMARY KEY,
PNAME VARCHAR(10) NOT NULL REFERENCES STARPLANETS (PNAME),
MASS DECIMAL(10,4));

CREATE TABLE PLANETELEMENTS (
IDPLANETELEMENTS SMALLINT NOT NULL PRIMARY KEY,
PNAME VARCHAR(10) NOT NULL REFERENCES STARPLANETS (PNAME),
IDELEMENTS SMALLINT NOT NULL REFERENCES ELEMENTS (IDELEMENTS),
ELEMENTRATIO DECIMAL(3,2) NOT NULL);
```

Note: the satellite mass is left as a nullable feature, as for distant satellites of small size this magnitude may be hard to measure reliably (e.g. Nereid orbiting around Neptune).

DML SQL data inserts (just a sample of few rows on each table):

```
INSERT INTO ELEMENTS VALUES
(1, 'HYDROGEN'),
(2, 'HELIUM'),
(6, 'CARBON'),
(7, 'NITROGEN'),
(8, 'OXYGEN'),
(10,'NEON'),
(14,'SILICON'),
(26,'IRON');
```

```
db2 => SELECT * FROM ELEMENTS

IDELEMENTS ENAME
---------- ------------
         1 HYDROGEN
         2 HELIUM
         6 CARBON
         7 NITROGEN
         8 OXYGEN
        10 NEON
        14 SILICON
        26 IRON

  8 record(s) selected.
```

```
INSERT INTO STARPLANETS VALUES
('SUN', 333000, 0, 0, 24.47, 213),
('MERCURY', 0.0553, 0.39, 0.240846, 58.6462, 0),
('VENUS', 0.815, 0.72, 0.615, -243.0187, 0),
('EARTH', 1, 1, 1, 1, 1),
('MARS', 0.11, 1.52, 1.881, 1.025957, 2),
('JUPITER', 317.8, 5.20, 11.86, 0.41007, 79),
('SATURN', 95.2, 9.54, 29.46, 0.426, 82),
('URANUS', 14.6, 19.18, 84.01, -0.71833, 27),
('NEPTUNE', 17.2, 30.06, 164.8, 0.67125, 14);
```

Note: The rotation period may be negative if the spin is opposite to that of Earth.

```
db2 => SELECT * FROM STARPLANETS

PNAME      MASS         DISTTOSUN SIDEREALP    ROTATIONP     NUMSATELLITES
---------- ------------ --------- ------------ ------------- -------------
SUN         333000.0000      0.00     0.000000   24.47000000           213
MERCURY          0.0553      0.39     0.240846   58.64620000             0
VENUS            0.8150      0.72     0.615000 -243.01870000             0
EARTH            1.0000      1.00     1.000000    1.00000000             1
MARS             0.1100      1.52     1.881000    1.02595700             2
JUPITER        317.8000      5.20    11.860000    0.41007000            79
SATURN          95.2000      9.54    29.460000    0.42600000            82
URANUS          14.6000     19.18    84.010000   -0.71833000            27
NEPTUNE         17.2000     30.06   164.800000    0.67125000            14

  9 record(s) selected.
```

```
INSERT INTO SATELLITES VALUES
('MOON ', 'EARTH ', 73.46),
('PHOBOS ', 'MARS ', 0.0001),
('DEIMOS ', 'MARS ', 0.0001),
('IO ', 'JUPITER ', 89.3),
('EUROPA ', 'JUPITER ', 48),
('GANYMEDE', 'JUPITER ', 148),
('CALISTO ', 'JUPITER ', 108),
('TITAN ', 'SATURN ', 135),
('IAPETUS', 'SATURN', 1.806),
('DIONE', 'SATURN', 1.095),
('TITANIA', 'URANUS', 3.52),
('OBERON',  'URANUS', 3.01),
('ARIEL', 'URANUS', 1.25),
('UMBRIEL', 'URANUS', 1.28),
('TRITON', 'NEPTUNE', 21.4),
('NEREID', 'NEPTUNE', NULL),
('GALATEA', 'NEPTUNE', 0.0021);
```

```
db2 => SELECT * FROM SATELLITES

SNAME      PNAME      MASS
---------- ---------- ------------
MOON       EARTH           73.4600
PHOBOS     MARS             0.0001
DEIMOS     MARS             0.0001
IO         JUPITER         89.3000
EUROPA     JUPITER         48.0000
GANYMEDE   JUPITER        148.0000
CALISTO    JUPITER        108.0000
TITAN      SATURN         135.0000
IAPETUS    SATURN           1.8060
DIONE      SATURN           1.0950
TITANIA    URANUS           3.5200
OBERON     URANUS           3.0100
ARIEL      URANUS           1.2500
UMBRIEL    URANUS           1.2800
TRITON     NEPTUNE         21.4000
NEREID     NEPTUNE                -
GALATEA    NEPTUNE          0.0021

  17 record(s) selected.
```

```
INSERT INTO PLANETELEMENTS VALUES
(1, 'SUN', 1, 0.7),
(2, 'SUN', 2, 0.3),
(3, 'MERCURY', 14, 0.5),
(4, 'MERCURY', 26, 0.5),
(5, 'VENUS', 6, 0.3),
(6, 'VENUS', 8, 0.6),
(7, 'VENUS', 7, 0.1),
(8, 'EARTH', 8, 0.47),
(9, 'EARTH', 14, 0.30),
(10, 'EARTH', 26, 0.23),
(11, 'MARS', 14, 0.35),
(12, 'MARS', 8, 0.2),
(13, 'MARS', 26, 0.45),
(14, 'JUPITER', 1, 0.75),
(15, 'JUPITER', 2, 0.25),
(16, 'SATURN', 1, 0.75),
(17, 'SATURN', 2, 0.25),
(18, 'URANUS', 1, 0.83),
(19, 'URANUS', 2, 0.15),
(20, 'URANUS', 7, 0.02),
(21, 'NEPTUNE', 1, 0.8),
(22, 'NEPTUNE', 2, 0.2);
```

```
db2 => SELECT * FROM PLANETELEMENTS

IDPLANETELEMENTS PNAME      IDELEMENTS ELEMENTRATIO
---------------- ---------- ---------- -----------
               1 SUN                 1        0.70
               2 SUN                 2        0.30
               3 MERCURY            14        0.50
               4 MERCURY            26        0.50
               5 VENUS               6        0.30
               6 VENUS               8        0.60
               7 VENUS               7        0.10
               8 EARTH               8        0.47
               9 EARTH              14        0.30
              10 EARTH              26        0.23
              11 MARS               14        0.35
              12 MARS                8        0.20
              13 MARS               26        0.45
              14 JUPITER             1        0.75
              15 JUPITER             2        0.25
              16 SATURN              1        0.75
              17 SATURN              2        0.25
              18 URANUS              1        0.83
              19 URANUS              2        0.15
              20 URANUS              7        0.02
              21 NEPTUNE             1        0.80
              22 NEPTUNE             2        0.20

  22 record(s) selected.
```