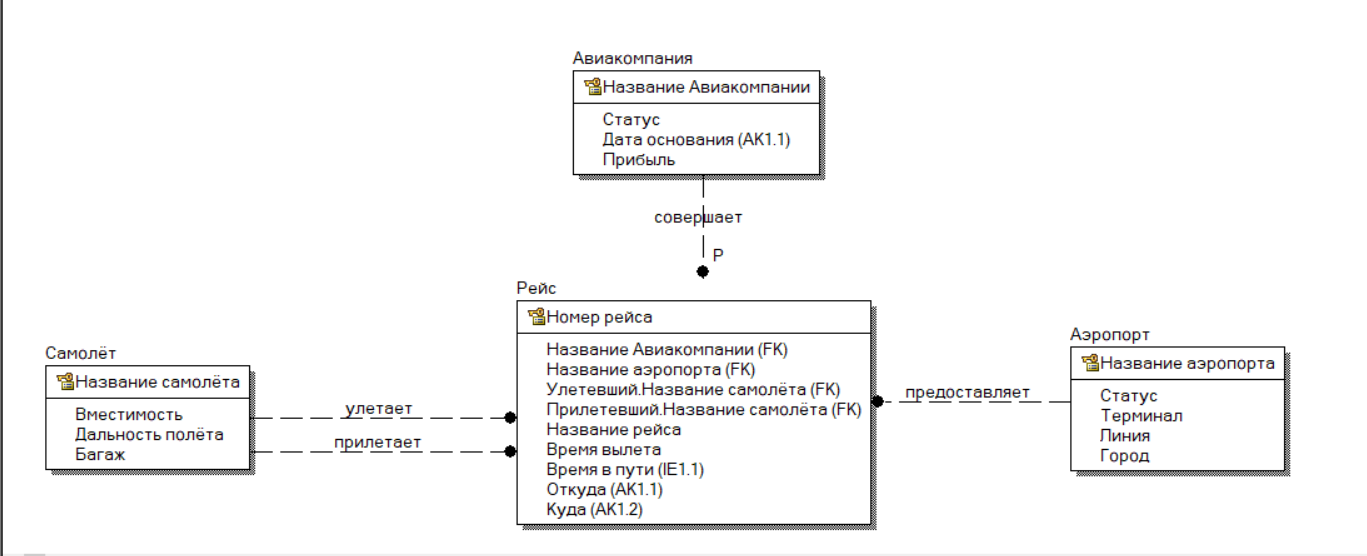
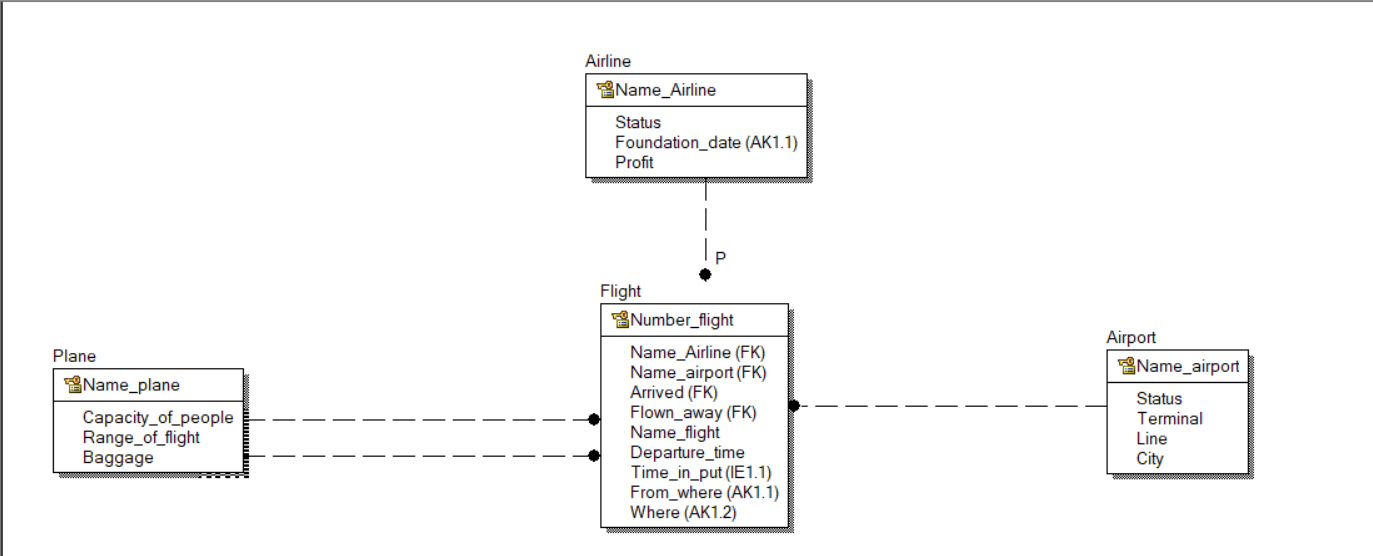
**Схема в ErWin**

**Задание.** Разработать модель базы данных в среде ERWIN.

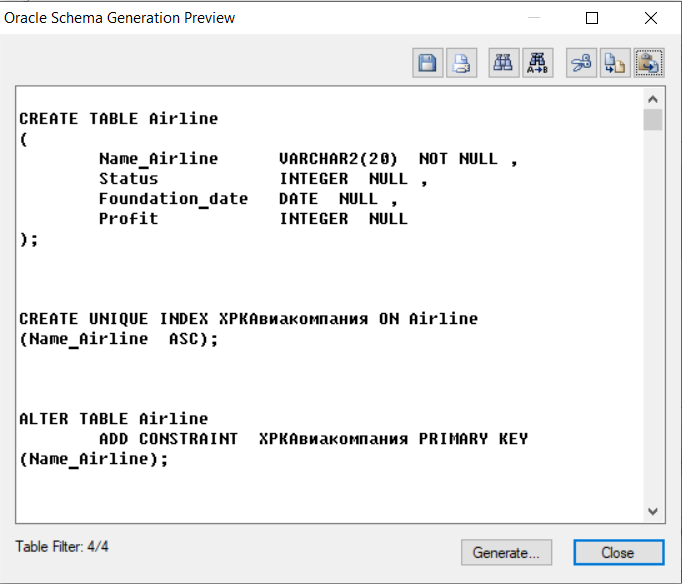
Logical: (Логическая схема)



Physical: (Физическая схема)



Компиляция:



CREATE TABLE Airline

(

Name\_Airline VARCHAR2(20) NOT NULL ,

Status INTEGER NULL ,

Foundation\_date DATE NULL ,

Profit INTEGER NULL

);

CREATE UNIQUE INDEX XPKАвиакомпания ON Airline

(Name\_Airline ASC);

ALTER TABLE Airline

ADD CONSTRAINT XPKАвиакомпания PRIMARY KEY (Name\_Airline);

CREATE UNIQUE INDEX XAK1Авиакомпания ON Airline

(Foundation\_date ASC);

CREATE TABLE Airport

(

Name\_airport VARCHAR2(20) NOT NULL ,

Status INTEGER NULL ,

Terminal INTEGER NULL ,

Line INTEGER NULL ,

City VARCHAR2(20) NULL

);

CREATE UNIQUE INDEX XPKАэропорт ON Airport

(Name\_airport ASC);

ALTER TABLE Airport

ADD CONSTRAINT XPKАэропорт PRIMARY KEY (Name\_airport);

CREATE TABLE Flight

(

Name\_Airline VARCHAR2(20) NOT NULL ,

Name\_airport VARCHAR2(20) NOT NULL ,

Name\_plane VARCHAR2(20) NOT NULL ,

Number\_flight INTEGER NOT NULL ,

Name\_flight VARCHAR2(20) NULL ,

Departure\_time DATE NULL ,

Time\_in\_put DATE NULL ,

From\_where VARCHAR2(20) NULL ,

Where VARCHAR2(20) NULL

);

CREATE UNIQUE INDEX XPKРейс ON Flight

(Number\_flight ASC);

ALTER TABLE Flight

ADD CONSTRAINT XPKРейс PRIMARY KEY (Number\_flight);

CREATE UNIQUE INDEX XAK1Рейс ON Flight

(From\_where ASC,Where ASC);

CREATE INDEX XIE1Рейс ON Flight

(Time\_in\_put ASC);

CREATE TABLE Plane

(

Name\_plane VARCHAR2(20) NOT NULL ,

Range\_of\_flight INTEGER NULL ,

Baggage INTEGER NULL ,

Capacity\_of\_people INTEGER NULL

);

CREATE UNIQUE INDEX XPKСамолёт ON Plane

(Name\_plane ASC);

ALTER TABLE Plane

ADD CONSTRAINT XPKСамолёт PRIMARY KEY (Name\_plane);

ALTER TABLE Flight

ADD (CONSTRAINT R\_1 FOREIGN KEY (Name\_Airline) REFERENCES Airline(Name\_Airline));

ALTER TABLE Flight

ADD (CONSTRAINT R\_4 FOREIGN KEY (Name\_airport) REFERENCES Airport(Name\_airport));

ALTER TABLE Flight

ADD (CONSTRAINT R\_2 FOREIGN KEY (Name\_plane) REFERENCES Plane(Name\_plane));

ALTER TABLE Flight

ADD (CONSTRAINT R\_3 FOREIGN KEY (Name\_plane) REFERENCES Plane(Name\_plane));

CREATE TRIGGER tD\_Airline AFTER DELETE ON Airline for each row

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

-- DELETE trigger on Airline

DECLARE NUMROWS INTEGER;

BEGIN

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Airline R/1 Flight on parent delete restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="0000dfc1", PARENT\_OWNER="", PARENT\_TABLE="Airline"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/1", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_1", FK\_COLUMNS="Name\_Airline" \*/

SELECT count(\*) INTO NUMROWS

FROM Flight

WHERE

/\* %JoinFKPK(Flight,:%Old," = "," AND") \*/

Flight.Name\_Airline = :old.Name\_Airline;

IF (NUMROWS > 0)

THEN

raise\_application\_error(

-20001,

'Cannot delete Airline because Flight exists.'

);

END IF;

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

END;

/

CREATE TRIGGER tU\_Airline AFTER UPDATE ON Airline for each row

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

-- UPDATE trigger on Airline

DECLARE NUMROWS INTEGER;

BEGIN

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Airline R/1 Flight on parent update restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00010a14", PARENT\_OWNER="", PARENT\_TABLE="Airline"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/1", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_1", FK\_COLUMNS="Name\_Airline" \*/

IF

/\* %JoinPKPK(:%Old,:%New," <> "," OR ") \*/

Airline.Name\_Airline <> Airline.Name\_Airline

THEN

SELECT count(\*) INTO NUMROWS

FROM Flight

WHERE

/\* %JoinFKPK(Flight,:%Old," = "," AND") \*/

Flight.Name\_Airline = :old.Name\_Airline;

IF (NUMROWS > 0)

THEN

raise\_application\_error(

-20005,

'Cannot update Airline because Flight exists.'

);

END IF;

END IF;

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

END;

/

CREATE TRIGGER tD\_Airport AFTER DELETE ON Airport for each row

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

-- DELETE trigger on Airport

DECLARE NUMROWS INTEGER;

BEGIN

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Airport R/4 Flight on parent delete restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="0000daa9", PARENT\_OWNER="", PARENT\_TABLE="Airport"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/4", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_4", FK\_COLUMNS="Name\_airport" \*/

SELECT count(\*) INTO NUMROWS

FROM Flight

WHERE

/\* %JoinFKPK(Flight,:%Old," = "," AND") \*/

Flight.Name\_airport = :old.Name\_airport;

IF (NUMROWS > 0)

THEN

raise\_application\_error(

-20001,

'Cannot delete Airport because Flight exists.'

);

END IF;

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

END;

/

CREATE TRIGGER tU\_Airport AFTER UPDATE ON Airport for each row

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

-- UPDATE trigger on Airport

DECLARE NUMROWS INTEGER;

BEGIN

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Airport R/4 Flight on parent update restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="000107f9", PARENT\_OWNER="", PARENT\_TABLE="Airport"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/4", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_4", FK\_COLUMNS="Name\_airport" \*/

IF

/\* %JoinPKPK(:%Old,:%New," <> "," OR ") \*/

Airport.Name\_airport <> Airport.Name\_airport

THEN

SELECT count(\*) INTO NUMROWS

FROM Flight

WHERE

/\* %JoinFKPK(Flight,:%Old," = "," AND") \*/

Flight.Name\_airport = :old.Name\_airport;

IF (NUMROWS > 0)

THEN

raise\_application\_error(

-20005,

'Cannot update Airport because Flight exists.'

);

END IF;

END IF;

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

END;

/

CREATE TRIGGER tI\_Flight BEFORE INSERT ON Flight for each row

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

-- INSERT trigger on Flight

DECLARE NUMROWS INTEGER;

BEGIN

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Airline R/1 Flight on child insert restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="0004124a", PARENT\_OWNER="", PARENT\_TABLE="Airline"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/1", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_1", FK\_COLUMNS="Name\_Airline" \*/

SELECT count(\*) INTO NUMROWS

FROM Airline

WHERE

/\* %JoinFKPK(:%New,Airline," = "," AND") \*/

:new.Name\_Airline = Airline.Name\_Airline;

IF (

/\* %NotnullFK(:%New," IS NOT NULL AND") \*/

NUMROWS = 0

)

THEN

raise\_application\_error(

-20002,

'Cannot insert Flight because Airline does not exist.'

);

END IF;

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Plane R/2 Flight on child insert restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00000000", PARENT\_OWNER="", PARENT\_TABLE="Plane"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/2", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_2", FK\_COLUMNS="Name\_plane" \*/

SELECT count(\*) INTO NUMROWS

FROM Plane

WHERE

/\* %JoinFKPK(:%New,Plane," = "," AND") \*/

:new.Name\_plane = Plane.Name\_plane;

IF (

/\* %NotnullFK(:%New," IS NOT NULL AND") \*/

NUMROWS = 0

)

THEN

raise\_application\_error(

-20002,

'Cannot insert Flight because Plane does not exist.'

);

END IF;

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Plane R/3 Flight on child insert restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00000000", PARENT\_OWNER="", PARENT\_TABLE="Plane"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/3", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_3", FK\_COLUMNS="Name\_plane" \*/

SELECT count(\*) INTO NUMROWS

FROM Plane

WHERE

/\* %JoinFKPK(:%New,Plane," = "," AND") \*/

:new.Name\_plane = Plane.Name\_plane;

IF (

/\* %NotnullFK(:%New," IS NOT NULL AND") \*/

NUMROWS = 0

)

THEN

raise\_application\_error(

-20002,

'Cannot insert Flight because Plane does not exist.'

);

END IF;

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Airport R/4 Flight on child insert restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00000000", PARENT\_OWNER="", PARENT\_TABLE="Airport"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/4", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_4", FK\_COLUMNS="Name\_airport" \*/

SELECT count(\*) INTO NUMROWS

FROM Airport

WHERE

/\* %JoinFKPK(:%New,Airport," = "," AND") \*/

:new.Name\_airport = Airport.Name\_airport;

IF (

/\* %NotnullFK(:%New," IS NOT NULL AND") \*/

NUMROWS = 0

)

THEN

raise\_application\_error(

-20002,

'Cannot insert Flight because Airport does not exist.'

);

END IF;

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

END;

/

CREATE TRIGGER tU\_Flight AFTER UPDATE ON Flight for each row

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

-- UPDATE trigger on Flight

DECLARE NUMROWS INTEGER;

BEGIN

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Airline R/1 Flight on child update restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00040325", PARENT\_OWNER="", PARENT\_TABLE="Airline"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/1", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_1", FK\_COLUMNS="Name\_Airline" \*/

SELECT count(\*) INTO NUMROWS

FROM Airline

WHERE

/\* %JoinFKPK(:%New,Airline," = "," AND") \*/

:new.Name\_Airline = Airline.Name\_Airline;

IF (

/\* %NotnullFK(:%New," IS NOT NULL AND") \*/

NUMROWS = 0

)

THEN

raise\_application\_error(

-20007,

'Cannot update Flight because Airline does not exist.'

);

END IF;

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Plane R/2 Flight on child update restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00000000", PARENT\_OWNER="", PARENT\_TABLE="Plane"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/2", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_2", FK\_COLUMNS="Name\_plane" \*/

SELECT count(\*) INTO NUMROWS

FROM Plane

WHERE

/\* %JoinFKPK(:%New,Plane," = "," AND") \*/

:new.Name\_plane = Plane.Name\_plane;

IF (

/\* %NotnullFK(:%New," IS NOT NULL AND") \*/

NUMROWS = 0

)

THEN

raise\_application\_error(

-20007,

'Cannot update Flight because Plane does not exist.'

);

END IF;

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Plane R/3 Flight on child update restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00000000", PARENT\_OWNER="", PARENT\_TABLE="Plane"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/3", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_3", FK\_COLUMNS="Name\_plane" \*/

SELECT count(\*) INTO NUMROWS

FROM Plane

WHERE

/\* %JoinFKPK(:%New,Plane," = "," AND") \*/

:new.Name\_plane = Plane.Name\_plane;

IF (

/\* %NotnullFK(:%New," IS NOT NULL AND") \*/

NUMROWS = 0

)

THEN

raise\_application\_error(

-20007,

'Cannot update Flight because Plane does not exist.'

);

END IF;

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Airport R/4 Flight on child update restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00000000", PARENT\_OWNER="", PARENT\_TABLE="Airport"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/4", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_4", FK\_COLUMNS="Name\_airport" \*/

SELECT count(\*) INTO NUMROWS

FROM Airport

WHERE

/\* %JoinFKPK(:%New,Airport," = "," AND") \*/

:new.Name\_airport = Airport.Name\_airport;

IF (

/\* %NotnullFK(:%New," IS NOT NULL AND") \*/

NUMROWS = 0

)

THEN

raise\_application\_error(

-20007,

'Cannot update Flight because Airport does not exist.'

);

END IF;

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

END;

/

CREATE TRIGGER tD\_Plane AFTER DELETE ON Plane for each row

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

-- DELETE trigger on Plane

DECLARE NUMROWS INTEGER;

BEGIN

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Plane R/2 Flight on parent delete restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="0001c204", PARENT\_OWNER="", PARENT\_TABLE="Plane"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/2", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_2", FK\_COLUMNS="Name\_plane" \*/

SELECT count(\*) INTO NUMROWS

FROM Flight

WHERE

/\* %JoinFKPK(Flight,:%Old," = "," AND") \*/

Flight.Name\_plane = :old.Name\_plane;

IF (NUMROWS > 0)

THEN

raise\_application\_error(

-20001,

'Cannot delete Plane because Flight exists.'

);

END IF;

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Plane R/3 Flight on parent delete restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00000000", PARENT\_OWNER="", PARENT\_TABLE="Plane"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/3", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_3", FK\_COLUMNS="Name\_plane" \*/

SELECT count(\*) INTO NUMROWS

FROM Flight

WHERE

/\* %JoinFKPK(Flight,:%Old," = "," AND") \*/

Flight.Name\_plane = :old.Name\_plane;

IF (NUMROWS > 0)

THEN

raise\_application\_error(

-20001,

'Cannot delete Plane because Flight exists.'

);

END IF;

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

END;

/

CREATE TRIGGER tU\_Plane AFTER UPDATE ON Plane for each row

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

-- UPDATE trigger on Plane

DECLARE NUMROWS INTEGER;

BEGIN

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Plane R/2 Flight on parent update restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="000212cb", PARENT\_OWNER="", PARENT\_TABLE="Plane"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/2", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_2", FK\_COLUMNS="Name\_plane" \*/

IF

/\* %JoinPKPK(:%Old,:%New," <> "," OR ") \*/

Plane.Name\_plane <> Plane.Name\_plane

THEN

SELECT count(\*) INTO NUMROWS

FROM Flight

WHERE

/\* %JoinFKPK(Flight,:%Old," = "," AND") \*/

Flight.Name\_plane = :old.Name\_plane;

IF (NUMROWS > 0)

THEN

raise\_application\_error(

-20005,

'Cannot update Plane because Flight exists.'

);

END IF;

END IF;

/\* ERwin Builtin 27 сентября 2020 г. 3:42:55 \*/

/\* Plane R/3 Flight on parent update restrict \*/

/\* ERWIN\_RELATION:CHECKSUM="00000000", PARENT\_OWNER="", PARENT\_TABLE="Plane"

CHILD\_OWNER="", CHILD\_TABLE="Flight"

P2C\_VERB\_PHRASE="R/3", C2P\_VERB\_PHRASE="",

FK\_CONSTRAINT="R\_3", FK\_COLUMNS="Name\_plane" \*/

IF

/\* %JoinPKPK(:%Old,:%New," <> "," OR ") \*/

Plane.Name\_plane <> Plane.Name\_plane

THEN

SELECT count(\*) INTO NUMROWS

FROM Flight

WHERE

/\* %JoinFKPK(Flight,:%Old," = "," AND") \*/

Flight.Name\_plane = :old.Name\_plane;

IF (NUMROWS > 0)

THEN

raise\_application\_error(

-20005,

'Cannot update Plane because Flight exists.'

);

END IF;

END IF;

-- ERwin Builtin 27 сентября 2020 г. 3:42:55

END;

/