

## Домашнее задание

### 1. Структура базы данных

```
CREATE TABLE Seats
(
    PlaneId INT NOT NULL,
    SeatNo INT NOT NULL,

    PRIMARY KEY (PlaneId, SeatNo)
);

CREATE TABLE Flights
(
    FlightId INT NOT NULL,
    FlightTime TIMESTAMP NOT NULL,
    PlaneId INT NOT NULL,

    PRIMARY KEY (FlightId)
);

CREATE TABLE Booking
(
    UserId INT NOT NULL,
    FlightId INT NOT NULL,

    SeatNo INT NOT NULL,
    BookingTime TIMESTAMP NOT NULL,
    Paid BOOL NOT NULL,

    PRIMARY KEY (FlightId, SeatNo)
);

CREATE TABLE Accounts
(
    UserId INT NOT NULL,
    Pass INT NOT NULL,

    PRIMARY KEY (UserId)
);
```

*Вспомогательные функции и представления.*

```
--Доступные для заказа рейсы
CREATE VIEW AavailableFlights AS
    SELECT FlightId, PlaneId, FlightTime FROM Flights
    WHERE FlightTime - now() > INTERVAL '2 hour';

--Забронированные места по рейсам
CREATE VIEW BookedSeats AS
    SELECT FlightId, SeatNo FROM AavailableFlights NATURAL JOIN Booking
    WHERE Paid OR (
        now() - BookingTime < INTERVAL '1 day' AND
        FlightTime - now() > INTERVAL '1 day'
    );

CREATE FUNCTION auth(usrId INT, pwd INT) RETURNS BOOLEAN AS $func$
BEGIN
    PERFORM * FROM Accounts WHERE UserId = usrId AND Pass = pwd;
    RETURN FOUND;
END;
$func$ LANGUAGE plpgsql;
```

```

CREATE FUNCTION FreeSeats(fId INT) RETURNS
TABLE(seat INT) AS $func$
BEGIN
    RETURN QUERY SELECT SeatNo FROM
        (SELECT FlightId, SeatNo FROM AvailableFlights NATURAL JOIN Seats WHERE AvailableFlights.FlightId = fId) AS F
        WHERE (FlightId, SeatNo) NOT IN (SELECT * FROM BookedSeats);
END;
$func$ LANGUAGE plpgsql;

```

```

CREATE FUNCTION Reserve(usrId INT, pwd INT, fId INT, seat INT) RETURNS BOOLEAN AS $func$
BEGIN
    INSERT INTO Booking(UserId, FlightId, SeatNo, BookingTime, Paid)
    SELECT usrId, fId, seat, now(), FALSE WHERE seat IN (SELECT * FROM FreeSeats(fId)) AND auth(usrId, pwd);
    RETURN FOUND;
END;
$func$ LANGUAGE plpgsql;

```

```

CREATE FUNCTION ExtendReservation(usrId INT, pwd INT, fId INT, seat INT) RETURNS BOOLEAN AS $func$
BEGIN
    UPDATE Booking SET BookingTime = now()
    WHERE FlightId = fId AND SeatNo = seat AND UserId = usrId AND auth(usrId, pwd)
    AND (fId, seat) IN (SELECT * FROM BookedSeats);
    RETURN FOUND;
END;
$func$ LANGUAGE plpgsql;

```

```

CREATE FUNCTION BuyFree(usrId INT, fId INT, seat INT) RETURNS BOOLEAN AS $func$
BEGIN
    INSERT INTO Booking(UserId, FlightId, SeatNo, BookingTime, Paid)
    SELECT usrId, fId, seat, now(), TRUE WHERE seat IN (SELECT * FROM FreeSeats(fId));
    RETURN FOUND;
END;
$func$ LANGUAGE plpgsql;

```

```

CREATE FUNCTION BuyReserved(usrId INT, pwd INT, fId INT, seat INT) RETURNS BOOLEAN AS $func$
BEGIN
    UPDATE Booking SET Paid = TRUE
    WHERE FlightId = fId AND SeatNo = seat AND UserId = usrId AND auth(usrId, pwd)
    AND (fId, seat) IN (SELECT * FROM BookedSeats);
    RETURN FOUND;
END;
$func$ LANGUAGE plpgsql;

```