

Федеральное государственное бюджетное образовательное  
учреждение высшего образования  
«Московский государственный технический университет имени Н.Э. Баумана  
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(МГТУ им. Н.Э. Баумана)

ФАКУЛЬТЕТ	<u>Информатика и системы управления</u>
КАФЕДРА	<u>Компьютерные системы и сети</u>
ГРУППА	<u>ИУ6-34</u>
ДИСЦИПЛИНА	<u>Базы данных</u>

**Отчёт по лабораторной работе №4**  
**Доработка приложения в среде ORACLE/APEX**

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## Пересадки

В списке выбора рейсов изменен формат отображения рейса, а также добавлена возможность выбора составного маршрута (несколько последовательных рейсов).

Обновленный код вывода списка рейсов.

```
SELECT FROM_C.NAME || '(' || FROM_A.CODE || ')' -> '(' || TO_A.CODE || ')' || TO_C.NAME D,
FLIGHT_CODE R
FROM
FLIGHT F,
AIRPORT FROM_A,
AIRPORT TO_A,
CITY FROM_C,
CITY TO_C
WHERE
    FROM_A.CITY = :FROM_CITY
    AND TO_A.CITY = :TO_CITY
    AND FLOOR(F.FLYING_DATE - TO_DATE(:FORWARD_DATE)) = 0
    AND F.TAKEOFF_AIRPORT = FROM_A.CODE
    AND F.LANDING_AIRPORT = TO_A.CODE
    AND FROM_A.CITY = FROM_C.ID
    AND TO_A.CITY = TO_C.ID
UNION
SELECT CITY_1.NAME || '(' || AIR_1.CODE || ')' -> '
    || CITY_2.NAME || '(' || AIR_2.CODE || ')' -> '
    || CITY_3.NAME || '(' || AIR_3.CODE || ')' D, (F_1.FLIGHT_CODE || '|' ||
F_2.FLIGHT_CODE) R
FROM
FLIGHT F_1,
FLIGHT F_2,
AIRPORT AIR_1,
AIRPORT AIR_2,
AIRPORT AIR_3,
CITY CITY_1,
CITY CITY_2,
CITY CITY_3
WHERE
    AIR_1.CITY = :FROM_CITY
    AND AIR_3.CITY = :TO_CITY
    AND AIR_1.CITY = CITY_1.ID
    AND AIR_2.CITY = CITY_2.ID
    AND AIR_3.CITY = CITY_3.ID
    AND FLOOR(F_1.FLYING_DATE - TO_DATE(:FORWARD_DATE)) = 0
    AND F_1.TAKEOFF_AIRPORT = AIR_1.CODE
    AND F_1.LANDING_AIRPORT = AIR_2.CODE
    AND F_2.TAKEOFF_AIRPORT = AIR_2.CODE
    AND F_2.LANDING_AIRPORT = AIR_3.CODE
UNION
SELECT CITY_1.NAME || '(' || AIR_1.CODE || ')' -> '
    || CITY_2.NAME || '(' || AIR_2.CODE || ')' -> '
    || CITY_3.NAME || '(' || AIR_3.CODE || ')' -> '
    || CITY_4.NAME || '(' || AIR_4.CODE || ')' D, (F_1.FLIGHT_CODE || '|' || F_2.FLIGHT_CODE
|| '|' || F_3.FLIGHT_CODE) R
FROM
FLIGHT F_1,
FLIGHT F_2,
FLIGHT F_3,
AIRPORT AIR_1,
AIRPORT AIR_2,
AIRPORT AIR_3,
AIRPORT AIR_4,
CITY CITY_1,
CITY CITY_2,
CITY CITY_3,
CITY CITY_4
WHERE
    AIR_1.CITY = :FROM_CITY
    AND AIR_4.CITY = :TO_CITY
    AND AIR_1.CITY = CITY_1.ID
```

```

AND AIR_2.CITY = CITY_2.ID
AND AIR_3.CITY = CITY_3.ID
AND AIR_4.CITY = CITY_4.ID
AND CITY_2.ID != :TO_CITY
AND CITY_3.ID != :FROM_CITY
AND FLOOR(F_1.FLYING_DATE - TO_DATE(:FORWARD_DATE)) = 0
AND F_1.TAKEOFF_AIRPORT = AIR_1.CODE
AND F_1.LANDING_AIRPORT = AIR_2.CODE
AND F_2.TAKEOFF_AIRPORT = AIR_2.CODE
AND F_2.LANDING_AIRPORT = AIR_3.CODE
AND F_3.TAKEOFF_AIRPORT = AIR_3.CODE
AND F_3.LANDING_AIRPORT = AIR_4.CODE

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Moscow (DME) -> (JFK)New York

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Moscow (SVO) -> Palo Alto (LOP) -> New York (JFK)

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При выборе одного из маршрутов, вызывается рекурсивная хранимая процедура, которая создаёт необходимое количество билетов.

```

create or replace PROCEDURE
CREATE_TICKETS(CLIENT_ID NUMBER, FLIGHT_CODES VARCHAR2)
AS
    NOW_FLIGHT_CODE VARCHAR2(30) := 'NULL';
BEGIN
    IF (INSTR(FLIGHT_CODES, '|' ) != 0) THEN
        NOW_FLIGHT_CODE := SUBSTR(FLIGHT_CODES, 1, INSTR(FLIGHT_CODES, '|' ) - 1);
        CREATE_TICKETS(
            CLIENT_ID,
            SUBSTR(FLIGHT_CODES, INSTR(FLIGHT_CODES, '|' ) + 1, LENGTH(FLIGHT_CODES)-
INSTR(FLIGHT_CODES, '|' ))
        );
    ELSE
        NOW_FLIGHT_CODE := FLIGHT_CODES;
    END IF;
    IF(NOW_FLIGHT_CODE != 'NULL') THEN
        INSERT INTO TICKET("CLIENT", ORDERING_DATE, "FROM", "TO", "FLYING_DATE",
FLIGHT_CODE)
        VALUES(
            CLIENT_ID,
            CURRENT_DATE,
            (SELECT CITY FROM AIRPORT WHERE CODE = (SELECT TAKEOFF_AIRPORT FROM FLIGHT
WHERE FLIGHT_CODE = NOW_FLIGHT_CODE)),
            (SELECT CITY FROM AIRPORT WHERE CODE = (SELECT LANDING_AIRPORT FROM FLIGHT
WHERE FLIGHT_CODE = NOW_FLIGHT_CODE)),
            (SELECT FLYING_DATE FROM FLIGHT WHERE FLIGHT_CODE = NOW_FLIGHT_CODE),
            NOW_FLIGHT_CODE
        );
    END IF;
END CREATE_TICKETS;

```

# Маршрутная квитанция

Изменён формат вывода информации обо всех путешествиях клиента. Теперь используется более подробный вывод информации с помощью элемента Interactive report со следующим кодом заполнения:

```
SELECT ('MR(S) ' || CL."NAME" || CL."SURNAME") "Passenger",
       FC."NAME" "Departure city",
       TKOFF."NAME" || '(' || TKOFF.CODE || ')' "Take-off airport",
       LNDING."NAME" || '(' || LNDING.CODE || ')' "Landing airport",
       TC."NAME" "Destination",
       TI.ORDERING_DATE "Ordering date",
       TI.FLYING_DATE "Flying date",
       TI.FLIGHT_CODE "Flight code",
       FL.TAKEOFF_TIME "Take-off time",
       FL.LANDING_TIME "Landing time"
FROM
    TICKET TI,
    CITY FC,
    CITY TC,
    CLIENT CL,
    FLIGHT FL,
    AIRPORT TKOFF,
    AIRPORT LNDING
WHERE
    TI.CLIENT = :CHOOSE_CLIENT AND
    TI.FLIGHT_CODE = FL.FLIGHT_CODE AND
    TKOFF.CODE = FL.TAKEOFF_AIRPORT AND
    LNDING.CODE = FL.LANDING_AIRPORT AND
    TI."FROM" = FC.ID AND
    TI."TO" = TC.ID AND
    TI.CLIENT = CL.ID
```

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AivaLases

Log Out

Home

User's tickets

Choose client Artem Zakirov

Q

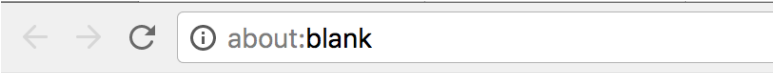
Go

Actions

Departure city	Take-off airport	Landing airport	Destination	Ordering date	Flying date	Flight code	Take-off time	Landing time	Passenger
Moscow	Domodedovo International Airport (DME)	Heathrow Airport (LHR)	London	Saturday, 02 December, 2017	Monday, 04 July, 2016	AA3492	04-JUL 17:48:00	04-JUL 21:48:00	MR(S) Artem Zakirov
Vladikavkaz	Beslan Airport (OGZ)	Domodedovo International Airport (DME)	Moscow	Saturday, 02 December, 2017	Monday, 04 July, 2016	AA3572	04-JUL 19:08:00	04-JUL 23:08:00	MR(S) Artem Zakirov
London	Heathrow Airport (LHR)	San Jose International Airport (SJC)	San Hose	Saturday, 02 December, 2017	Monday, 04 July, 2016	DL3763	04-JUL 02:19:00	04-JUL 06:19:00	MR(S) Artem Zakirov

1 - 3

При нажатии на одно из полей данной таблицы открывается новая вкладка браузера, в которой приведена подробная информация (маршрутная квитанция) о билете, которую удобно распечатать.



## Route receipt

Passenger: MR(S) Artem Zakirov

Departure city: Moscow

Take-off airport: Domodedovo International Airport (DME)

Landing airport: Heathrow Airport (LHR)

Destination: London

Ordering date: Saturday, 02 December, 2017

Flying date: Monday, 04 July, 2016

Flight code: AA3492

Take-off time: 04-JUL-2016 17.48.00.000000

Landing time: 04-JUL-2016 21.48.00.000000

```
1 reportWindow = window.open("");
2 reportWindow.document.writeln('<h2> Route receipt </h2>');
3 headers = document.getElementsByClassName('a-GV-headerLabel');
4 selected = document.getElementsByClassName('a-GV-row is-readonly is-selected')[0];
5 for(var i = 0; i < 10; i++){
6     ...reportWindow.document.writeln('<p>${headers[i].innerText}: ${selected.children[i].innerText}</p>');
7 }
```

**Заключение:** Добавлена возможность создания маршрутов с пересадками, изменён формат вывода маршрутной квитанции.