# CASE 24 Wright Brothers' Airport Shuttle Service

**Database Case** **Difficulty Rating:** ★★★★

**SKILLS CHECK**
**You should review the following areas:**

**DATABASE SKILLS**

- ✓ **Aggregate Function**
- ✓ **AutoLookup Query**
- ✓ **Calculated Control**
- ✓ **Calculated Field**
- ✓ **Combo Box**
- ✓ **Filter By Form**
- ✓ **Form Design**
- ✓ **LookUp Wizard**
- ✓ **Parameter Query**
- ✓ **Relationship**
- ✓ **Report Design**
- ✓ **Select Query**
- ✓ **Table Design**

## CASE BACKGROUND

The Wright Brothers' Airport Shuttle Service provides economical off-airport parking and an airport shuttle service for its customers. Basil and Sage Wright, recognizing the advantage of offering these services to their customers, opened their off-airport parking and shuttle service two months ago. Since that time, they have watched demand for their business steadily increase. Basil Wright, overwhelmed with paperwork, began developing a simple reservation database. The intent of the database is to track current parking space reservations. As of today, Basil Wright has been unable to complete the database and has requested your help.

## CASE SCENARIO

As a frequent traveler, Basil Wright recognizes the need for economical, off-airport parking. When an opportunity presented itself last year, Basil Wright and his brother, Sage Wright, purchased ten acres of land near the International Airport. The brothers have since converted a portion of their newly acquired land into a parking facility and provide a shuttle

service for travelers. While Sage Wright is responsible for shuttling travelers to and from the airport, Basil Wright manages the business's daily paperwork activities.

Wright Brothers' Airport Shuttle Service offers valet parking, providing 200 covered valet parking spaces and 250 uncovered valet parking spaces. Covered parking is $12.00 per day, and uncovered parking is $10.50 per day.

When a customer arrives, he turns his car over to a parking attendant. The customer then walks into the office, provides necessary information to another attendant, requests covered or uncovered parking, receives a claim ticket, and then boards an airport shuttle. When a vehicle is checked in, the attendant uses a list of available parking spaces to determine where the car is to be parked. The vehicle is assigned a parking location, and a claim tag is hung from the vehicle's rearview mirror. When the valet parking customer returns, he calls the shuttle service, provides his claim ticket number, and then catches the next available shuttle to the parking facility. When he arrives at the parking facility, the parking attendant locates the customer's record by ticket number. The customer then pays his parking fees, picks up his car and leaves.

Basil Wright began building a database for the parking and shuttle service last month. However, the parking facility's popularity keeps Mr. Wright very busy with its daily operations, so he has been unable to complete the database. You are Mr. Wright's good friend, so you volunteer to continue working with the database. Initially, you will modify the database to track the company's current parking reservations.

Mr. Wright gives you a current reservation list and a copy of the incomplete database. After examining these items, you notice that the reservation list was created using a spreadsheet application and that the list contains basic, current reservation information. As the reservation list is in an electronic format, you can copy and paste the list's contents into the Parking table, once the table is created.

The current database contains several tables, including Airline, Car, Model, and Rate tables. These tables are populated with data. These tables require very little, if any, modifications. However, you realize that a Parking table is necessary, as well as a Parking Reservation form, Daily Check-In and Tentative Check-Out reports, a relationship between the Car and Model tables, and several queries. Mr. Wright stresses that the database should be simple in its design. He also mentions that he does not need to keep information about his past customers, previously parked vehicles, or past reservations.

## Storage Specifications

As mentioned previously, Mr. Wright began working on the parking facility's database last month. However, his busy schedule prohibits him from completing the database. He gives you the incomplete database and requests that you continue working on its development. Mr. Wright has already designed and populated the Airline, Car, Model, and Rate tables. You must now design and populate the Parking table.

Table 1 shows the Parking table's structure. As mentioned above, the data to populate this table is stored in an electronic file. Once you have designed the table, you can copy and paste the data into the appropriate fields.

Since the ticket number serves as the primary key, the attendant will enter a unique number for each ticket. You can assume that the ticket number is obtained from a preprinted claim ticket. To facilitate data entry, the Car Make, Car Model, Airline Abbreviation, and Rate Code values are obtained from a list of values. During table design, use the LookUp Wizard to create a list of values for each of these fields. As Mr. Wright does not wish to keep historical information on his customers, information about customers who have claimed their vehicles will be deleted from the database. However, you are not required to develop a delete query for this exercise.

A relationship between the Car and Model tables is required. You should look for a common column between the two tables for which you are establishing a relationship. For instance, the Car and Model tables both have a MakeID column. You can use this field to establish a relationship between the two tables. Keep in mind that the columns are not required to have the same name, although in this instance they do.

**Table 1: Parking Table Structure**

| Field Name | Data Type | Field Description | Field Size | Comments |
|---|---|---|---|---|
| **Ticket Number** | Number | Stores the claim ticket number. This number is unique. | Long Integer | Serves as primary key. |
| **Customer Last Name** | Text | Stores the customer's last name. | 50 | Is required. |
| **Customer First Name** | Text | Stores the customer's first name. | 50 | Is required. |
| **Check-In Date** | Date/Time | Stores the date the vehicle is checked in. | | Is required. |
| **Check-Out Date** | Date/Time | Stores the actual date the vehicle is picked up. Can differ from tentative return date. | | |
| **Tag Number** | Text | Stores the vehicle's tag number. | 10 | Is required. |
| **Tag State** | Text | Identifies the state where the car is registered. | 2 | Use a default value of "OK." |
| **Parking Location** | Text | Identifies where the vehicle is parked. | 5 | Is required. |
| **MakeID** | Number | Identifies the vehicle's make. | Long Integer | Is required. |
| **ModelID** | Number | Identifies the vehicle's model. | Long Integer | |

| | | | | |
|---|---|---|---|---|
| **Tentative Return Date** | Date/Time | Is the expected return date. | | |
| **AAB** | Text | Is the airline code. | 3 | |
| **Rate Code** | Text | Identifies the designated rate code for the vehicle. | 3 | Is required. |
| **Comments** | Memo | Used by the parking attendant to enter additional comments about the vehicle. | | |

## Input Specifications

Figure 1 provides a sketch of the Parking Reservation form you will build. Although you are free to modify the form's design, the form must have a professional appearance and capture the data shown in Figure 1.

As the parking attendant completes the form, you would like him to select a rate code and then have the Rate and Description fields automatically filled in. To accomplish this, you construct an AutoLookup query that uses data from both the Parking and Rate tables. When constructing this query, add all the fields from the Parking table. From the Rate table, add the Rate and Description fields.

As you used the LookUp Wizard to create the Airline, Car Make, Car Model, and Rate Code fields in the Parking table, you realize that dropdown lists for these fields automatically appear on the Parking Reservation form. Using dropdown lists for these fields facilitates data entry, and you like this idea.

As you study the Current Charges field, you realize that Current Charges is a calculated field that works with date values. If a customer drops off his car on January 1 and picks the car up on January 2, he should pay for two days of parking, so your Current Charges formula should reflect this fact.

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**Figure 1: Parking Reservation Form**

**Wright Brothers' Airport Shuttle Service**

**Parking Reservation Form**

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**Ticket No:**
**Customer Last Name:**
**Customer First Name:**
**Airline:**

**Check-In Date:**
**Tentative Return Date:**
**Check-Out Date:**

**Car Make:**
**Car Model:**
**Tag:**
**Tag State:**

**Parking Location:**

**Rate Code:** **Rate Description:**

**Rate:**
**Current Charges:**

**Comments:**

## Information Specifications

At the end of each day, Mr. Wright prepares two reports, a Daily Check-In Report and a Tentative Check-Out Report. The Daily Check-In Report lists each vehicle that was checked in that day. The Tentative Check-Out Report identifies vehicles scheduled for pickup the next day. Figures 2 and 3 provide sketches of these reports. Although you are free to work with the design of these reports, each report must provide the information shown in its sketch and have a professional appearance.

As mentioned above, the Daily Check-In Report identifies vehicles that have been dropped off that day. You decide to base this report on a parameter query. By using a parameter query, the end user is asked to supply a date. The Daily Check-In Report also specifies how many parking spaces were required for each type of valet parking. A grand total is provided at the end of the report. To enhance readability, the report contents are sorted by the rate description. As part of the report's header, you should include a report title, the current date, and a picture. You should locate an appropriate picture to include.

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**Figure 2: Daily Check-In Report**

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### Daily Check-In Report
**(Current Date)**

| Covered/ Uncovered | Parking Location | Customer Last Name | Customer First Name | Ticket Number | Tag Number | Car Make | Car Model | Tentative Check-Out Date |
|---|---|---|---|---|---|---|---|---|
| Covered | C1 | Bennett | Brooke | 144 | B7987 | Mitsubishi | Montero | 1/5/2009 |
| | C3 | Lansing | Larry | 146 | D4756 | Lexus | ES250 | 1/7/2009 |
| | | | | . | | | | |
| | | | | . | | | | |
| | | | | . | | | | |
| | | | | **Category Subtotal:** | | | | |
| Uncovered | U5 | Farmer | David | 145 | IMOK4 | Ford | Expo | 1/4/2009 |
| | U7 | Yu | Samantha | 148 | IM47 | Mazda | Miata | 1/15/2009 |
| | | | | . | | | | |
| | | | | . | | | | |
| | | | | . | | | | |
| | | | | **Category Subtotal:** | | | | |
| | | | | **Total Vehicles Checked In:** | | | | |

At the end of each day, Mr. Wright prints a Tentative Check-Out Report. This report identifies the vehicles tentatively scheduled for pickup the next day. Mr. Wright wants this report sorted by rate code. He also wants to know how many vehicles are tentatively scheduled for pick up. Since the report is printed for a particular day, you will construct a parameter query. The parameter query requests the user to provide a specific date, and then a report is generated based on this date. This parameter query is similar to the one you constructed above. Figure 3 shows a sketch for the Tentative Check-Out Report.

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**Figure 3: Tentative Check-Out Report**

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### Tentative Check-Out Report
**(Current Date)**

| Parking Location | Customer Last Name | Customer First Name | Ticket Number | Tag Number | Car Make | Car Model |
|---|---|---|---|---|---|---|
| C1 | Adams | Audrey | 144 | B7987 | Mitsubishi | Expo |
| C3 | Lansing | Larry | 146 | D4756 | Lexus | ES250 |
| | | | . | | | |
| | | | . | | | |
| | | | . | | | |
| U5 | Farmer | David | 145 | IMOK4 | Ford | Expo |
| U7 | Yu | Samantha | 148 | IM47 | Mazda | Miata |
| | | | . | | | |
| | | | . | | | |
| | | | . | | | |

**Total Vehicles Scheduled for Pick Up:**

Mr. Wright needs answers for the following questions. Build queries to help Mr. Wright answer these questions. If you choose, you may generate reports based on these queries. Also, base your answers on the data that are currently in the database. (Do not worry about whether a customer's record should have been deleted.)

1. What is the average length of stay for vehicles? What are the average earnings?

2. How many cars are utilizing covered parking? Uncovered?

3. How many cars were checked in today? Checked out? (Use 12/31/2008 as the current date.)

4. Which airline is used most frequently?

5. For 12/31/2008, what percentage of covered valet parking spaces is used? What percentage of uncovered valet parking spaces is used?

6. Assume the brothers want to increase their rates for uncovered parking to $12 and for covered parking to $16 per day. How will this increase impact their overall revenue?

7. Which airlines are the Wright Brothers' Airport Shuttle Service customers using on January 22, 2009? The results should identify the airline and provide a customer count for the airline.

8. To date, what are the total earnings for the shuttle service? How much revenue has been generated by covered valet parking? Uncovered valet parking?

9. How much revenue has already been received for the month of January?

## Implementation Concerns

In order to build the portion of the database described in the case scenario, you will build a table, a form, two reports, and several queries, including select, parameter, and AutoLookup queries. Several of the queries require you to sort, specify criteria, create expressions, and use data from two or more tables. Keep in mind that the form and reports are based on queries, so you should construct your queries before building the form and reports.

In order to design the reports, you base the reports on queries, specify sort orders, and work with report headers, footers, and page headers. To enhance the appearance of the form and reports, you should locate a picture to insert in the form or report header. The form and reports require calculated controls.

You will establish a relationship between the Car and Model tables. You should establish this relationship before designing your queries.



## Test Your Design

After creating the table, form, queries, and reports, you should test your database design. Perform the following transactions.

1. The following customers have dropped off their cars. Enter this information into the database. You do not need to enter data into the Check-Out Date and Comments fields, so these fields are not shown in the following table.

| Ticket Number | Customer Last Name | Customer First Name | Car Make ID | Car Model | Tag No | Tag State | Parking Location | Check-In Date | Tentative Return Date | AAB | Rate Code |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400 | Jester | Eleanor | Mitsubishi | Montero | E7T89 | OK | U21 | Enter Current Date | Scheduled to return 1 week from current date. | AA | 1 |
| 401 | Pellegrino | Allan | GMC | Envoy | YT090 | OK | U22 | Enter Current Date | Scheduled to return 2 weeks from current date. | WN | 1 |
| 402 | Ho | Chen | Cadillac | Escalade | KYRJT | TX | C14 | Enter Current Date | Scheduled to return the next day. | AA | 2 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 403 | Yeh | Ling | Infiniti | G20 | HI9864 | TX | C19 | Enter Current Date | Scheduled to return the next day. | CO | 2 |
| 404 | Polito | Ralph | Jeep | Grand Cherokee | KL76H | KS | C20 | Enter Current Date | Scheduled to return 4 days from current date. | WN | 2 |
| 405 | Arnett | Benny | Buick | LeSabre | TR3345 | KS | C21 | Enter Current Date | Scheduled to return 1 week from current date. | DL | 1 |

2. The following customers have claimed their cars.

| Ticket Number | Customer Last Name | Customer First Name | Check-Out Date |
|---|---|---|---|
| 9 | Wodraska | Lester | January 3, 2009 |
| 10 | Longfellow | Tabitha | January 3, 2009 |

3. Locate ticket number 20. What are the customer's current charges? Which airline did she use?

## CASE DELIVERABLES

In order to satisfactorily complete this case, you should make the necessary modifications to the database and then prepare both written and oral presentations. Unless otherwise specified, submit the following deliverables to your professor.

1. A written report discussing any assumptions you have made about the case and the key elements of the case. Additionally, what features did you add to make the database more functional? User friendly? (Please note that these assumptions cannot violate any of the requirements specified above and must be approved by your professor.)

2. A printout of each form.

3. A printout of each report. For the Tentative Check-Out Report, use January 3, 2009, as the current date. For the Check-In Report, use January 22, 2009, as the current date.

4. An electronic, working copy of your database that meets the criteria mentioned in the case scenario and specifications sections.

5. Results for each query. (A memo to your instructor discussing these results should also be provided.)

6. As mentioned above, you should prepare an oral presentation. (Your instructor will establish the time allocated for your presentation.) You should use a presentation package and discuss the key features of your database. Also, discuss how this database is beneficial for Mr. Wright. What modifications would make this database more beneficial for Mr. Wright?