CASE 26

Healthy Plant and Tree Nursery

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

✓ Calculated Field
✓ Chart (Microsoft Excel)
✓ Command Button
✓ Export Data to Microsoft Excel
✓ Export Report to HTML Document
✓ Filter (Microsoft Excel)
✓ Form Design

✓ Macro
✓ PivotTable
✓ Relationship
✓ Report Design
✓ Select Query
✓ Table Design
✓ Update Query

CASE BACKGROUND

Having operated in the sunny, southern Florida area for over 100 years, Healthy Plant and Tree Nursery is well known for raising quality plants and fruit trees, especially tropical varieties. The nursery's primary customers are local landscaping companies, home and garden stores, and individuals. All paperwork is manually performed, creating a headache for Juan Regaldo, the nursery's current owner. Mr. Regaldo also has problems keeping his store managers and customers informed about the nursery's available inventory and product prices. In an effort to correct the mounting paperwork and communication problems, Mr. Regaldo hires you to build an inventory database for the nursery. After an initial meeting with Mr. Regaldo, you determine that a Product table, Product form, Low-in-Stock report, Current Inventory List report for the Web, and several select queries are necessary. Mr. Regaldo is especially interested in using the nursery's data to support decision-making activities. As the nursery's data will soon be stored in electronic form, Mr. Regaldo requests the ability export data to Microsoft Excel and also to an HTML document.

CASE SCENARIO

Healthy Plant and Tree Nursery provides its customers with a wide selection of quality plants and trees, particularly tropical varieties. The nursery's inventory list includes many types of

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fruit trees, including mandarin orange, guava, and mango. Trees are sold in containers, and the containers range in size from 7 to 25 gallons. The nursery also sells quality exotic plants, including Glorisa Superba, Yucca, and Medinilla. All nursery plants are sold in pots, ranging in size from 6- to 12-inch containers. Plant and tree prices are based on type and container size.

Currently, Healthy Plant and Tree Nursery has two stores and a nursery. The nursery location has several greenhouses where plants and trees are raised. When a plant or tree is ready for sale, it is moved to a special distribution greenhouse where all plants and trees ready for immediate distribution and sale are stored. Each evening, each store's inventory is checked, and a replenishment order is placed with the nursery. A replenishment order is filled from the distribution warehouse's current inventory and is usually delivered to the store the next day.

Customers frequently call the stores, requesting current inventory and pricing information. To reduce the number of phone calls, Mr. Regaldo will make the distribution warehouse's current inventory and pricing information available online for his customers and store managers. Mr. Regaldo feels this change will improve the efficiency and performance of the nursery's operations. After reflecting on this requirement, you decide that a Current Inventory List report can be generated and then exported to an HTML document. The HTML document can be made available on the nursery's Web site.

Besides fielding phone calls from store managers and customers, one of the most time-consuming activities for Mr. Regaldo is keeping the nursery's inventory records up to date. Mr. Regaldo requests the ability to identify which plants and trees in the distribution greenhouse are currently low in stock. He uses this information to restock the distribution greenhouse from the nursery's other greenhouses. A Low-in-Stock report satisfies this information request.

In addition to easing the data maintenance burden, Mr. Regaldo wants the capability to analyze the nursery's data with Microsoft Excel. In particular, Mr. Regaldo wants to determine his top selling items, gross margins, and inventory costs. He also wants the ability to prepare charts for presentations and analysis. This information will help him develop better marketing, pricing, and inventory stocking strategies. Mr. Regaldo asks you if it is possible to export the inventory data to a spreadsheet application, such as Microsoft Excel, for further analysis. Although several methods for moving data from a database to a spreadsheet exist, you recommend using the Export to Excel spreadsheet command. You explain to Mr. Regaldo that once the data are moved to Microsoft Excel, he can use Microsoft Excel to further support his decision-making needs.

Initially, Mr. Regaldo needs an inventory database to track the plants and trees currently housed in the distribution greenhouse. Later, he will include plants and trees from the nursery's other greenhouses in the inventory database. In order to build this database, you will design and populate a Product table; design a Product form; create a Current Inventory List report, design a Low-in-Stock report; and create several select queries.

Storage Specifications

After reviewing Mr. Regaldo's information requirements, you decide the Nursery database requires a Product table. The Product table stores important inventory data about the plants and trees available for immediate sale and distribution. For each product, its product number, name, category, cost, selling price, container size, and quantity on hand are stored. Table 1 shows the Product table's structure. (Your instructor will provide you with the data necessary to populate the Product table.) As the product number is unique for each product record, you decide this field should serve as the primary key. The category field indicates whether the item is a plant or tree. As plants and trees are available in a variety of sizes, the container size field indicates the size of the pot or container. If the nursery item is a tree, its container size is measured in gallons. However, if the nursery item is a plant, its pot size is measured in inches.

Table 1: Product Table Structure

Field Name	Data Type	Field Description	Field Size	Comments
PNo	Number	Contains the product number Serves as the primary key.	Long Integer	Is required.
PName	Text	Contains the name of the product.	25	Is required.
PCategory	Text	Is a two-digit code, indicating the type of product. Currently is either a tropical plant or fruit tree. All characters should display in uppercase.	2	Is required.
ProductCost	Currency	Shows the product's cost.		Is required.
SellingPrice	Currency	Indicates the retail price of the product.		Is required.
ContainerSize	Number	Identifies the container size of the product.	Long Integer	Is required.
QOH	Number	Identifies the quantity on hand of a particular product that is ready for distribution.	Long Integer	Is required.

Input Specifications

In order to maintain the nursery's inventory, a Product form is necessary. Figure 1 shows a tentative sketch for this form. As you examine the sketch, you realize that the form's header includes the nursery's name and the form's name. You also decide to locate a suitable picture of a plant or tree to include. The form's body contains all the fields from the Product table, so you use the Form tool or Form Wizard to quickly build an initial Product form. Once

the tentative Product form is created, you edit the form in Design view, providing the form with a more professional appearance.

During a recent conversation with Mr. Regaldo, he mentioned the need to simplify record navigation and operations. To satisfy this requirement, you decide the Product form should include Add, Find, Save, and Print buttons. The Command Button Wizard simplifies the inclusion of these buttons on the Product form, so you use the Command Button Wizard to place these buttons on the form.

Figure 1: Product Form

Information Specifications

After studying your notes from a meeting with Mr. Regaldo, you decide that Low-in-Stock and Current Inventory List reports are necessary. The Low-in-Stock report identifies which of the distribution warehouse's plants and trees have less than 75 units on hand. Figure 2 provides a tentative sketch of the Low-in-Stock report. Mr. Regaldo wants the nursery's name, report title, and current date displayed in the report header. The report body lists the product's category, name, product number, container size, and quantity on hand. Mr. Regaldo wants the nursery items grouped in ascending order by category and then sorted in ascending order by product name. Although not shown in the sketch, Mr. Regaldo wants the page number printed in the report's page footer.

Mr. Regaldo will make his distribution warehouse's current inventory and product pricing available via the nursery's Web site. To accomplish this, he asks you to prepare a Current Inventory List report and then export the report to an HTML document. He will then post the report on the nursery's Web site. Figure 3 shows a tentative sketch of the Current Inventory List report. As the nursery's customers will also view this report, Mr. Regaldo does not want product costs included in the report.

Figure 2: Low-In-Stock Report

Healthy Plant and Tree Nursery
Low-in-Stock
(Current Date)

Category Name	Product Name	Product Number	Container Size	Quantity on Hand
FT	Alispice	30	10	72
	Alispice	5	15	48
TP	Glorisa Superba	22	6	9

Figure 3: Current Inventory List Page

Healthy Plant and Tree Nursery
Current Inventory List

Category Name	Product Name	Product Number	Container Size	Quantity on Hand	Selling Price
FT	Allspice	5	15	50	$79.42
FT	Allspice	30	10	75	$54.17
TP	Bonsai	6	24	159	$22.75
TP	Calathea	6	20	199	$15.75

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As Mr. Regaldo is familiar with spreadsheet applications, he asks if it is possible to export data from a database to a spreadsheet. He wants to use the spreadsheet's Filter command to analyze the nursery's data. Specifically, Mr. Regaldo wants to export the product's number, name, category, cost, selling price, container size, and quantity on hand to Microsoft Excel. In addition, he wants the gross margin and total inventory cost for each product included in the worksheet. As gross margin and total inventory cost are calculated fields, these data are not stored in the database. Although several methods for obtaining the gross margin and total inventory cost are available, you construct a select query that uses calculated fields to determine these values. Once the select query is constructed, you use the Export to Excel spreadsheet command to export the dynaset to a worksheet. Once the dynaset is exported to the worksheet, Mr. Regaldo can analyze the data using any of Microsoft Excel's features.

Mr. Regaldo needs answers to the following questions. Use Microsoft Excel's Filter command to answer these questions.

1. Which products have less than 20 units on hand?

2. What is the total cost of inventory? (You may find Microsoft Excel's Sum function beneficial.)

3. Which products have the highest gross margin? (Show the top ten.)

4. Which products have the lowest gross margin? (Show the lowest five.)

5. For which products does the nursery have more than 300 units on hand?

Implementation Concerns

To build the database according to Mr. Regaldo's specifications, you will design and populate a Product table; design a Product form and Low-in-Stock report; construct select queries; prepare and then export a Current Inventory List report to an HTML document, and analyze data using Microsoft Excel. Although you are free to work with the form and report designs, these objects must have a professional, consistent appearance.

Consider using the available form and report tools and wizards to create the initial form and reports. These objects can then be easily edited in Design view. After you have created the Current Inventory List report, you can use Microsoft Access's HTML Document command to export the report to an HTML document. (You may wish to use your system's online help feature to learn more about exporting Microsoft Access data.)

Although several methods for exporting data from a database to a spreadsheet application for further analysis exist, the Export to Excel spreadsheet command is a nice, easy tool to use. Before exporting the inventory data to Microsoft Excel, consider constructing a select query. The select query can retrieve the necessary data from the Product table and calculate the gross margin and inventory cost for each product. (You may wish to use your system's online help feature to review calculated fields.)

Test Your Design

After creating the table, form, report, HTML document, and queries, you should test your database design. Perform the following steps.

1. Insert the following five new products into the database.

PNo	PName	PCategory	PCost	SellingPrice	ContainerSize	QOH
41	Lemon	FT	$47.68	$65.95	10	155
42	Navel Orange	FT	$37.87	$55.25	10	102
43	Apricot	FT	$56.78	$79.95	10	274
44	Strelitzia	TP	$8.25	$18.95	10	487
45	Medinilla	TP	$8.25	$18.95	10	397

2. For each of the following nursery items, use the Product form to locate and then update its quantity on hand.

   The nursery's distribution warehouse now has 187 15-gallon lime trees (PNo = 2) on hand.

   The nursery's distribution warehouse now has 182 15-gallon cherry trees (PNo = 12) on hand.

   The nursery's distribution warehouse now has 12 6-inch Glorisa Superba (PNo = 22), plants on hand.

3. Using the Product form, locate the Croton plant record (PNo = 16). Print this record.

4. Using Microsoft Excel's Filter command, identify the ten nursery products that have the highest selling price. The products should be sorted in descending order by selling price.

5. Prepare a column chart showing the gross margin for each of the 15-gallon trees.

6. Mr. Regaldo wants to use a PivotTable to view the cost, selling price, and markup for each nursery product. He wants to filter the products based on product category.

7. Mr. Regaldo wants to increase the selling prices of his products by 15 percent. Use an update query to update the selling prices of his products.

CASE DELIVERABLES

In order to satisfactorily complete this case, you should build 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, report, HTML document, and PivotTable.

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

4. An electronic working copy of your spreadsheet that meets the criteria mentioned in the case scenario.

5. Printouts showing the results for the questions asked in the Information Specifications Section. (A memo to your instructor discussing these results should also be provided.)

6. A printout of the Products table.

7. Printouts showing the results for Test Your Design Section Steps 3, 4, 5, and 7. (A memo to your instructor discussing these results should also be provided.)

8. As previously mentioned, 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. Regaldo. What additional data could be stored in the database?

9. What other types of decisions might Mr. Regaldo use Microsoft Excel to answer? You should identify at least two additional types of decisions. In addition to the chart mentioned above, identify at least one other chart that Mr. Regaldo might use.

10. What other formats are available for exporting the Current Inventory List report? Would you recommend using one of these formats? Why? Why not?