Valley Vineyards Case Project

INTRODUCTION

In 2008, Rob and Gail Woods left behind careers in law and accounting, respectively, to pursue their dream of growing grapes and making specialty wines for export. They both had traveled extensively and wished to pursue an export business for wines and complementary products. They moved to Grand Junction in Colorado and purchased 25 acres of grape-growing land and a small winery and house. They called their new venture Valley Vineyards and released their first wine for sale in late 2009. They have been successful enough to gradually expand their land holdings and to increase the quantity and variety of the wines they sell.

In fact, the expansion of their business has led the Woods to consider automating the record keeping of their business with a packaged software application. They have been using a combination of excel and a legacy vineyard management system. They have also evaluated packaged ERP’s for the wine industry. One of these systems, VinoTEC, holds promise, but is quite expensive and comes out of Spain.

There are many limitations to their existing infrastructure, including the ability to run queries and custom reports. After a review of the ERP applications for small wineries they concluded that several of the packages could be tailored to fit their needs as a winery, but they need a good data and process model to proceed. They have invited several software or database consulting companies, including yours, to evaluate their business needs and to propose an automated solution to the record keeping challenge. The results of the preliminary investigation recently conducted by an analyst from your company are presented below.

PERSONNEL

Valley Vineyards, Inc. (VVI) currently employs 16 full-time employees and 20 part-time employees with positions ranging from clerks to grape farmers to wine makers. Among the employees, supervisors have been appointed that oversee the work of other employees. Each supervised employee reports to only one supervisor. Each employee is assigned a unique employee identification number. In addition to the employee’s name, position, and ID number, the company also records each employee’s social security number, address, and phone.

VINEYARD HOLDINGS AND GRAPE VARIETIES

VVI’s vineyard sources its wine from ten plots of land in separate locations from two acres to twenty acres. Each vineyard has its own unique name, such as Rattlesnake Canyon, Red Fox, Theresa’s, etc. and is either owned by VVI or by an independent third party. Each is managed by a single employee. No employee manages more than one vineyard. The location and size, measured in acres, of each vineyard is recorded. Each vineyard is dedicated to the growing of a single grape variety per vintage year. However, over time a particular vineyard may be replanted to a different grape variety, depending on market demand for particular types of wine. The winery maintains a record of these plantings.

VVI currently grows six different grape varieties: Cabernet Sauvignon, Merlot, Zinfandel, Pinot Noir, Chardonnay, and Sauvignon Blanc. Information that is specific for each grape variety and must be recorded includes the juice conversion ratio, a measure of how much juice, on average, can be extracted from a given weight of a grape variety. The wine storage requirement, which is the type of storage container (typically either stainless steel tank or oak barrel) used to hold the juice while it ferments into wine, is also recorded for each grape variety, as is the wine aging requirement, which is the measure of how long the wine produced from the juice should be stored before bottling. Certain measures related to the grapes that vary with the specific vintage year harvest are also recorded including the vineyard the grapes come from, the total amount (weight) of grapes harvested, and the ripeness of the grapes (expressed in % sugar).

WINE PRODUCTS AND BOTTLES

Information on the wines created from the grapes must, of course, be recorded. Each wine produced is given a unique identification number in addition to its name. Other information recorded for each wine is its vintage year, category (e.g., dry red, dessert, etc.), and percent alcohol, a legal requirement. Also recorded is the employee in charge of making that wine. Wine makers may be responsible for more than one wine at a time.

The composition of a wine may be entirely from a single grape variety or may be a blend of more than one variety. The proportion of juice from each grape variety for each wine produced must be recorded. Several of the grape varieties are used in more than one blended wine. None of VVI wines are vineyard specified; that is, the wines are labeled by the grape varieties contained in the wines only, without reference to specific vineyard plots.

The wines are sold in case lots. The winery refers to these case lots as products. A product is a specific wine in a specific bottle size in a specific case quantity sold at a specific price. Each product type is given a unique product identification number. VVI does not sell partial cases, nor does it mix wines or bottle types in a single case.

The bottles used for the wines vary in capacity, shape, and glass color. Each bottle type is assigned a unique bottle identification code. VVI maintains an inventory count of how many of each bottle type is currently on hand in their warehouse. The winery prefers to keep at least a month’s worth of bottle inventory on hand. The usual cost per bottle is also recorded for each bottle type to aid in pricing the products and as a guide in calculating expected future bottle order costs.

The bottles must be purchased from outside glass vendors. Each of these vendors is assigned a unique identification number. In addition to this number, each vendor’s name, address, and phone are recorded. Also recorded, for each vendor, is the name of the principal contact (i.e., account representative) at the vendor that handles the VVI account.

Bottles are acquired from the vendors by placing orders. Some bottle types may be ordered from more than one vendor. Each order involves only a single vendor but may include more than one bottle type. Usually orders are filled completely by the vendors, but occasionally an order must be filled with multiple shipments, due to a back-order condition at the vendor. VVI maintains careful records of what quantities are ordered and what quantities are received, as well as when the bottles are ordered and when they are received, and the actual price charged for the bottles.

CUSTOMERS

VVI’s customers are mainly restaurants and wine shops around the world, but the winery also sells to distributors, restaurants, and individuals via a mail-order newsletter and website where allowed. All customers are assigned a unique customer identification number and this number is recorded along with their address and phone. Individual customers also have their first and last names recorded along with their date of birth, in order to demonstrate legal age. Restaurants and wine shops have their company name and tax identification number recorded.

All customers obtain their products from VVI by placing orders. Each order is assigned a unique order number, and the date the order is received is recorded along with the product or products ordered and the quantity or quantities desired. A shipment status of “pending” is assigned to an order until it is actually shipped, whereupon the status is then changed to “shipped”. Customer orders are always filled in a single shipment, as no back orders are possible. Once VVI is out of a given wine for a particular year, no more can be produced.

VVI also wishes to track the preferences of a customer that may go beyond products that they have purchased in the past. This would make it possible to “pre-sell” a certain wine.

CONCLUSION

The preceding information was obtained by an analyst representing your consulting firm through early discussions with Mr. and Mrs. Woods, and observations of the operations of the company. Further discussions with the Woods, as well as interviews with other VVI employees, have since been conducted along with a thorough analysis of the written records of the company. A couple of additional pertinent points have been determined, as follows:

• The database system initially desired by the Woods will not have to handle employee payroll, as this is handled by an external firm.

• No other inventory requirements exist for the system beyond those previously identified. Corks, labels, and packing boxes are acquired in large annual lots and are not a concern for the Woods to track with the database system.

The Woods are hopeful that a database system will help take some of the record keeping burdens off them so that they can spend more of their time involved with wine production and marketing.

Your job is to analyze the requirements of the business and develop a working prototype of a database application. You must develop a complete and robust conceptual data model, logical data model (normalization) and physical schema. The working prototype should include some test data, some test queries and reports.

This will be a team project and will include several deliverables. It does not matter what system you use to develop the prototype: MS Access, MySQL, or SQLServer.