# **Sample Project Chapter 1 - The ART Gallery**

## Purpose of the Sample Project

The sample project sections included for many of the chapters of this book are intended to provide models for applying the concepts covered in the chapters. The project is a continuing example that illustrates a practical application of database design and implementation techniques. This website contains several student projects. Students should choose at least one of the projects and work on its development as they progress through the book. The sample project shows how each step can be done. The student should read the sample and apply the steps to the chosen project.

* **General Description**

The Art Gallery accepts original artworks by living contemporary artists to be sold on a commission basis. It currently offers work from about 100 artists, and sells approximately 1000 pieces each year. The average selling price is several thousand dollars. There are about 5000 customers who have purchased pieces from the gallery. The sales staff consists of the gallery owner, Alan Hughes, and 4 sales associates. Their activities are supported by an office staff of 2 people.

* **Basic Operations**

When an artist wishes to sell works, he or she contacts the gallery. Alan Hughes, the owner, visits the artist's studio and selects the works to be sold through the gallery. If the artist is well known to the gallery, this visit may be eliminated, and the works may be accepted automatically. An artist may submit one or several pieces for sale at a time. The artist, working with Alan, identifies an asking price for each work. The sales staff try to sell the work at that price, or as close to that price as possible. Customers may negotiate with salespeople, so that the actual selling price may be below the asking price. If it is below the asking price, the final selling price must be approved by the artist. The commission charged by the gallery is 10% of the selling price. The gallery splits the commission with the salesperson who makes the sale. Any salesperson can sell any work in the gallery. However, customers work with a single salesperson when they buy each piece, so that the salesperson's portion of the commission for a single piece goes to only one salesperson.

The gallery promotes the works by holding showings featuring various pieces. The showings are advertised in newspapers and other media, and potential customers are sent personal invitations. A showing is actually a reception that provides an opportunity for the public to see the pieces and to meet the artist or artists whose works are featured. A “one-man show” features works by a single artist, while a themed show features works by multiple artists centered on a single theme, such as “Mediterranean Seascapes”. Works of art that have been featured at a showing remain on display until they are sold or returned to the artists. A piece may be purchased at the showing or at any time afterward. Occasionally, a work may be purchased from the gallery prior to the show and included in the exhibit, marked as "Sold", to provide the public with a better view of the artist's work. Not all works are promoted through showings. Some are simply displayed in the gallery. If a work has been at the gallery for six months without being sold, Alan contacts the artist and returns the work, unless both agree to continue displaying the work for an additional period of time.

At present, all data relating to artists, unsold works, shows, sales, and customers is kept in paper files. A description card is made up for each work currently on exhibit, and placed on the wall or floor stand next to the piece. A copy of the card is also placed in a file. The card lists the artist’s name, title of the work, year created, type, medium, style, size, and asking price. Each work is an original, one-of-a-kind, piece produced by a single artist. No two artists have the same name. The title of the work must be unique to the artist, but may not be totally unique to the gallery. For example, many artists may have works such as "Composition Number 5", but no artist has two works with that title. No prints or reproductions are sold at the gallery. An artist can produce several works in the same year. The type refers to the type of work, which may be painting, sculpture, collage, and so forth. The medium refers to the materials used in the work, such as oil, watercolor, acrylic, marble, mixed, etc. A piece using more than one medium is categorized as mixed. The style means the style of the work, which may be contemporary, impressionist, folk, etc. The size is expressed in units appropriate for the work; for example, for a painting, the size would be the number of inches in width and height, while a sculpture would have three dimensions.

When a purchase is made, a receipt is made out for the buyer, a payment check and stub are made out for the artist, the commission is allocated between the gallery and the salesperson, and all paper files are updated individually.

* **Information Needs**

In addition to the data about artists, artworks, shows, sales, and customers currently kept in paper files, there are other information needs. For income tax purposes, the gallery is required to report the amount of sales for each artist each year, a task that is very time-consuming at present. Alan realizes that a database could provide more information than is available now from the paper files. He also wants to capture data not currently stored. He would like to keep track of customers who have made purchases and information about the amount of their purchases last year and so far this year. He would like to be able to send mailings to potential customers, and to record their preferences. In addition, he foresees that the gallery may begin to accept works owned by collectors as well as works directly from artists. The database design should include the possibility that the owner is not the artist.

* **Project Steps**
  + Step 1.1 - Write out the format of every input document that provides information to be stored in the database.
  + Step 1.2 - Write out the format of every routine report to be produced using the database. Do not make any assumptions about how records actually appear in the database, or what programming may be involved in producing the report.
  + Step 1.3 - Describe or sketch the input and output screens for routine transactions to be performed using the database. Assume the data from the input documents is already stored in some unknown form, and do not include transactions that simply insert new records, update existing records, or delete existing records.
  + Step 1.4 - Write out an initial list of assumptions for the project.

Note: In real life, these steps would be preceded by meetings and interviews with the users of the present system and of the proposed system to determine their data needs and preferences. We will assume that these meetings have taken place and that the information that follows has been developed from them. Note that we are not making any assumptions about the internal structure of the database at this point. The reports and forms we design are based on user needs, not on the database file structures.

* + Step 1.1 - Format of input documents.

The following forms are used to provide information.

**1. Artist Information Form**. When Alan interviews an artist, he collects contact information and data about the artist’s usual works, as shown on the form in Figure S.1. To allow for the possibility that in future Alan’s associates may do the interviews, the interviewer’s name is listed.

Date of Interview \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name of Interviewer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Artist Last Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Artist First Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Street \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ State \_\_ Zip \_\_\_\_\_

Telephone: Area Code \_\_\_ Number \_\_\_\_\_\_\_\_

Social Security Number \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Usual Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Usual Medium \_\_\_\_\_\_\_\_\_\_\_

Usual Style \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Figure S.1** Artist Information Form

**2. Collector Information Form**. When the gallery begins to offer works owned by people other than the artist, these collectors will also be interviewed. They may own one or many artworks, and their collections may or may not have works that are predominately by a single artist or of a single type, style, or medium. The form shown in Figure S.2 will be filled out by the interviewer.

Date of Interview \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name of Interviewer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Collector Last Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ First Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Street \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ State \_\_ Zip \_\_\_\_\_

Telephone: Area Code \_\_\_ Number \_\_\_\_\_\_\_\_

Social Security Number \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If the collection is predominately by one artist, or has a distinguishing type, medium, or style, fill in this section.

Artist Last Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Artist First Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Collection Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Collection Medium \_\_\_\_\_\_\_\_\_\_\_

Collection Style \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Figure S.2** Collector Information Form

**3. Artwork Information Form**. For each artwork to be considered, the interviewer fills in the basic information needed for the description card, as shown in Figure S.3. If the piece is chosen to be offered for sale by the gallery, the date listed and the asking price are filled in.

Artist Last Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Artist First Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Title \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Year Completed \_\_\_\_\_\_\_\_

Type \_\_\_\_\_\_\_\_\_\_

Medium \_\_\_\_\_\_\_\_\_\_

Style \_\_\_\_\_\_\_\_\_\_\_

Size \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If owned by someone other than the artist, please complete this section with the owner information:

Owner Last Name \_\_\_\_\_\_\_\_\_\_\_\_ Owner First Name \_\_\_\_\_\_\_\_\_\_

Street \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ State \_\_ Zip\_\_\_\_\_

Telephone: Area code \_\_\_ Number \_\_\_\_\_\_\_\_\_

Owner Social Security Number \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If the piece is chosen to be offered by the gallery, please complete this section.

Date Listed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Asking Price \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Figure S.3** Artwork Information Form

**4. Sale Invoice** When a work is sold, the sales associate fills out the form shown in Figure S.4. Currently, a copy is given to the buyer, and the original is placed in the files. The unique invoice number is preprinted on the form. When the database is created, the invoice will be produced by the system.

Invoice Number 99999

Title of Artwork \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Artist: Last Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ First Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Owner: Last Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_ First Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Street \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ State \_\_ Zip\_\_\_\_\_

Telephone: Area code \_\_\_ Number \_\_\_\_\_\_\_\_\_

Buyer: Last Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ First Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Street \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ State \_\_ Zip \_\_\_\_\_

Telephone: Area Code \_\_\_ Number \_\_\_\_\_\_\_\_

Price \_\_\_\_\_\_\_\_\_\_\_\_\_\_Tax \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Total Paid \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Salesperson Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_

**Figure S.4** Sale Invoice

**5. Mailing List Form** The form shown in Figure S.5 is left in various locations for potential customers to sign up for a mailing list.

Date \_\_\_\_\_\_\_\_\_\_\_\_

Last Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ First Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Street \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ State \_\_ Zip \_\_\_\_\_

Telephone: Area Code \_\_\_ Number \_\_\_\_\_\_\_\_

Please indicate preferences (if any) below:

Preferred Artist \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Preferred Style (e.g. contemporary, impressionist, folk) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Preferred Type (e.g. painting, sculpture, collage) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Preferred Medium (e.g oil, watercolor, marble, mixed) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Figure S.5** Mailing List Form

* + Step 1.2 Format of routine reports

The following reports are either currently produced or would be produced by the new system.

**6. Active Artists Summary Report** The report shown in Figure S.6 lists summary data about all active artists, including the total amount of each one’s sales for last year and this year.

Date of Report: mm/dd/yyyy

Artist Name Address Phone Type Medium Style Sales Last Year Sales YTD

XXXXX XXXXX XXX XXX XXXX XXXXX XXXXX XXXXX 999999.99 999999.99

XXXXX XXXXX XXX XXX XXXX XXXXX XXXXX XXXXX 999999.99 999999.99

…

XXXXX XXXXX XXX XXX XXXX XXXXX XXXXX XXXXX 999999.99 999999.99

**Figure S.6** Active Artists Summary Report

**7. Individual Artist Sales Report** The report shown in Figure S.7 would be generated for a period starting with whatever date is selected (e.g. January first of the current year) and ending with another selected date (e.g. today's date). It lists all the works of that artist that the gallery has received from the listing date specified to the date of the report. The status of the work can be sold, returned, or for sale. If the work was sold, the date sold and selling price are listed. If the work was returned, the return date is listed. If the work is for sale as of the date of the report, the asking price is listed. The total amount of sales of the artist’s works during the period is displayed. The total value of asking prices of the artist’s works currently for sale is also given. By choosing dates that cover the entire year, the total sales data on this report can also be used for the end-of-year tax reporting required by the government.

Date of Report: mm/dd/yyyy

Artist Last Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ First Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address: Street \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State \_\_Zip\_\_\_\_\_

Telephone: Area Code\_\_\_\_\_Number \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Report for Works beginning with Date Listed of mm/dd/yyyy

Works Sold:

Title Date Listed Type Medium Style Year Asking Price Sell Price Date Sold

XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX yyyy 9999.99 9999.99 mm/dd/yyyy

XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX yyyy 9999.99 9999.99 mm/dd/yyyy

…

XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX yyyy 9999.99 9999.99 mm/dd/yyyy

\_\_\_\_\_\_\_

Total of Sales: 999999.99

Works Returned:

Title Date Listed Type Medium Style Year Asking Price Date Returned

XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX 9999 9999.99 mm/dd/yyyy

XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX 9999 9999.99 mm/dd/yyyy

…

XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX 9999 9999.99 mm/dd/yyyy

Works for Sale:

Title Date Listed Type Medium Style Year Asking Price

XXXXX 99/99/9999 XXXXX XXXXX XXXXX 9999 9999.99

XXXXX 99/99/9999 XXXXX XXXXX XXXXX 9999 9999.99

…

XXXXX 99/99/9999 XXXXX XXXXX XXXXX 9999 9999.99

\_\_\_\_\_

Total of Asking Prices 999999.99

**Figure S.7** Individual Artist Sales Report

**8. Collectors Summary Report.**  The Art Gallery plans to begin selling works owned by collectors, in addition to works owned by the artist who created them. When works owned by people other than the artist are made available, the report shown in Figure S.8 will be needed.

Date of Report: mm/dd/yyyy

Pref Pref Pref Pref

CollectorName Address Phone Artist Type Medium Style Sales Last Year Sales YTD

XXXXX XXXXX XXX XXX XXXX XXXXX XXXXX XXXXX XXXXX 999999.99 999999.99

XXXXX XXXXX XXX XXX XXXX XXXXX XXXXX XXXXX XXXXX 999999.99 999999.99

…

XXXXX XXXXX XXX XXX XXXX XXXXX XXXXX XXXXX XXXXX 999999.99 999999.99

**Figure S.8** Collectors Summary Report

**9. Individual Collector Sales Report**. This report, shown in Figure S.9, is similar to the one for individual artists. It will be needed when the gallery begins to sell works owned by collectors. It gives information about works the collector has offered for sale through the gallery. It lists all works sold, works returned, and works for sale for that collector for the period specified. The total sales for each collector is sent to the government for tax reporting purposes at the end of the year.

Date of Report: mm/dd/yyyy

Collector Last Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ First Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address: Street \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State \_\_Zip\_\_\_\_\_

Telephone: Area Code\_\_\_\_\_Number \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Report for Works beginning with Date Listed of mm/dd/yyyy

Works Sold:

Title Artist Date Listed Type Medium Style Year Asking Price Sell Price Date Sold

XXXXX XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX yyyy 9999.99 9999.99 mm/dd/yyyy

XXXXX XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX yyyy 9999.99 9999.99 mm/dd/yyyy

…

XXXXX XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX yyyy 9999.99 9999.99 mm/dd/yyyy

\_\_\_\_\_\_\_

Total of Sales: 999999.99

Works Returned:

Title Artist Date Listed Type Medium Style Year Asking Price Date Returned

XXXXX XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX 9999 9999.99 mm/dd/yyyy

XXXXX XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX 9999 9999.99 mm/dd/yyyy

…

XXXXX XXXXX mm/dd/yyyy XXXXX XXXXX XXXXX 9999 9999.99 mm/dd/yyyy

Works for Sale:

Title Artist Date Listed Type Medium Style Year Asking Price

XXXXX XXXXX 99/99/9999 XXXXX XXXXX XXXXX 9999 9999.99

XXXXX XXXXX 99/99/9999 XXXXX XXXXX XXXXX 9999 9999.99

…

XXXXX XXXXX 99/99/9999 XXXXX XXXXX XXXXX 9999 9999.99

\_\_\_\_\_

Total of Asking Prices 999999.99

**Figure S.9** Individual Collector Sales Report

**10. Works for Sale** This report lists data about each work that is currently offered for sale in the gallery. The date of the showing to promote the work, if any, is given. The total of all asking prices is given. It is shown in Figure S.10.

Date of Report \_\_\_\_\_\_\_\_\_\_

Title Artist Type Medium Style Owner's name Asking Price Date Shown Date Listed

XXXX XXXX XXXX XXXX XXXX XXXX 9999.99 mm/dd/yyyy mm/dd/yyyy

XXXX XXXX XXXX XXXX XXXX XXXX 9999.99 mm/dd/yyyy mm/dd/yyyy

…

XXXX XXXX XXXX XXXX XXXX XXXX 9999.99 mm/dd/yyyy mm/dd/yyyy

\_\_\_\_\_\_\_\_

Total Asking Prices 99999.99

**Figure S.10** Works for Sale

**11. Sales This Week** This report, shown in Figure S.11, lists data about all sales of works during the current week. It is divided by salesperson, showing each of the works that salesperson has sold this week, and his or her total sales. At the end, it gives the grand total of all sales for the week.

Week Ending mm/dd/yyyy

Salesperson Artist Title Owner Buyer Sale Date Selling Price Comm

XXXX

XXX XXX XXX XXX mm/dd 9999.99 999.99

XXX XXX XXX mm/dd 9999.99 999.99

…

XXX XXX XXX XXX mm/dd 9999.99 999.99

TOTAL 9999.99 999.99

XXXX

XXX XXX XXX XXX mm/dd 9999.99 999.99

XXX XXX XXX XXX mm/dd 9999.99 999.99

…

XXX XXX XXX XXX mm/dd 9999.99 999.99

TOTAL 9999.99 999.99

…

XXXX

XXX XXX XXX XXX mm/dd 9999.99 999.99

XXX XXX XXX mm/dd 9999.99 999.99

…

XXX XXX XXX XXX mm/dd 9999.99 999.99

TOTAL 9999.99 999.99

Total of all Sales for Week 99999.99

**Figure S.11** Sales This Week

**12. Buyer Sales Report** The buyer sales report is shown in Figure S.12. The report shows buyers in alphabetical order by last name. Works purchased this year are listed by date of purchase.

Date mm/dd/yyyy

Last Name First Name Address Phone Total Purchases Last Year

XXXX XXXX XXXX XXXX 9999.99

Purchases This Year

Date Purchased Artist Title Asking Price Selling Price

mm/dd/yyyy XXX XXX 9999.99 9999.99 mm/dd/yyyy XXX XXX 9999.99 9999.99

…

mm/dd/yyyy XXX XXX 9999.99 9999.99

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Total Purchases This Year 9999.99 9999.99

XXXX XXXX XXXX XXXX 9999.99

Purchases This Year

Date Purchased Artist Title Asking Price Selling Price

mm/dd/yyyy XXX XXX 9999.99 9999.99 mm/dd/yyyy XXX XXX 9999.99 9999.99

…

mm/dd/yyyy XXX XXX 9999.99 9999.99

---------- ----------

Total Purchases This Year 9999.99 9999.99

…

…

…

XXXX XXXX XXXX XXXX 9999.99

Purchases This Year

Date Purchased Artist Title Asking Price Selling Price

mm/dd/yyyy XXX XXX 9999.99 9999.99 mm/dd/yyyy XXX XXX 9999.99 9999.99

…

mm/dd/yyyy XXX XXX 9999.99 9999.99

---------- ----------

Total Purchases This Year 9999.99 9999.99

**Figure S.12** Buyers Sales Report

**13. Preferred Customer Report** Alan would like to target potential customers as well as current ones, by keeping information about all those who attend showings, or whose names are gathered from the potential customer information form. For each present and potential customer, he would like to keep identifying data and information about the customer's preferences, such as the name of a preferred artist, type, medium, and style for each customer. He hopes to increase sales and hold down costs by using this information to make up targeted invitation lists for showings of works that match customer preferences. For example, he would like to be able to get a report such as the one shown in Figure S.13. This report could be run for the artist or artists being featured in a show. It lists potential customers whose stated preferences list the same artist, type, medium, or style as the works shown.

Date of Report: dd/mm/yyyy

Artist Title Type Medium Style Cust Name Address Pref Artist Pref Type Pref Medium Pref Style

XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX

XXX XXX XXX XXX XXX XXX

…

XXX XXX XXX XXX XXX XXX

…

XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX

XXX XXX XXX XXX XXX XXX

…

XXX XXX XXX XXX XXX XXX

XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX

XXX XXX XXX XXX XXX XXX

…

XXX XXX XXX XXX XXX XXX

…

XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX

XXX XXX XXX XXX XXX XXX

…

XXX XXX XXX XXX XXX XXX

…

**Figure S.13** Preferred Customer Report

**14. Salesperson Performance Report** The report shown in Figure S.14 would be generated for a period starting with whatever date is selected (e.g. January first of the current year) and ending with another selected date (e.g. today's date). It provides an individual listing of each of the works sold by that person during the period, as well as his or her total sales for the period. Typically, it would be run once a month, to evaluate each salesperson’s performance.

Report Starting Date mm/dd/yyyy Report Ending Date mm/dd/yyyy

Salesperson SocSecNo Artist Title Asking Price Selling Price Date Sold

Name Add

XXX XXX 999-99-9999 XXX XXX 9999.99 9999.99 mm/dd/yyyy

XXX 9999.99 9999.99 mm/dd/yyyy

…

XXX XXX 9999.99 9999.99 mm/dd/yyyy

Total Sales for Period 9999.99

Total Commission for Period: 9999.99

XXX XXX 999-99-9999 XXX XXX 9999.99 9999.99 mm/dd/yyyy

XXX 9999.99 9999.99 mm/dd/yyyy

…

XXX XXX 9999.99 9999.99 mm/dd/yyyy

Total Sales for Period 9999.99

Total Commission for Period: 9999.99

…

**Figure S.14** Salesperson Performance Report

**15.** **Aged Artworks Report** This report shown in Figure S.15, is generated at the end of each month. It lists the works of art that have been for sale in the gallery for six months or more. Alan uses it to contact the artist or collector to determine whether the works should be returned, or remain for sale for an additional period of time.

Report Date mm/dd/yyyy

Owner Name Owner Telephone Artist Name Title Date Listed Asking Price

XXX XXX XXX XXXX XXX XXX mm/dd/yyyy 9999.99

XXX mm/dd/yyyy 9999.99

…

XXX XXX mm/dd/yyyy 9999.99

XXX XXX XXX XXXX XXX XXX mm/dd/yyyy 9999.99

XXX XXX mm/dd/yyyy 9999.99

…

XXX XXX mm/dd/yyyy 9999.99

…

XXX XXX XXX XXXX XXX XXX mm/dd/yyyy 9999.99

XXX mm/dd/yyyy 9999.99

…

XXX XXX mm/dd/yyyy 9999.99

**Figure S.15** Aged Artworks Report

**16. Owner Payment Stub** When an artwork is sold, a check is sent to the owner for 90% of the selling price. The stub that accompanies the check is shown in Figure S.16.

Date dd/mm/yyyy

Owner Name XXXXXXXXXX

Owner Address XXXXXXXXXXXXXXX

XXXXXXXXXX

Owner Social Security Number XXX XXX XXXX

Artist Name XXXX Title XXXX

Type XXXX Medium XXXX Style XXXX Size XXXXX

Salesperson XXXX

Selling Price 9999.99 Tax 9999.99 Total Amount of Sale 9999.99

Amount Remitted to Owner 9999.99

**Figure S.16** Payment Stub

**17. Art Show Details** For each show, this report provides information about the dates, featured artist or theme, and works shown. It appears in Figure S.17.

Date of Report: dd/mm/yyyy

Title of Show\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Opening Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Closing Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Featured Artist\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or Theme \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Works Included:

Artist Title Asking Price Status (*sold* or *for sale*)

XXX XXX 9999.99 XXX

XXX 9999.99 XXX

…

XXX XXX 9999.99 XXX

XXX 9999.99 XXX

…

…

XXX XXX 9999.99 XXX

XXX 9999.99 XXX

…

**Figure S.17** Art Show Report

* + Step 1.3 Sketch of screens for routine transactions

For all transactions, the user is prompted to choose from a menu of possible transactions, and is provided with instructions for filling in the information needed. The screen displays the results, which may also be printed out. We assume there are transactions to take input from all the input forms shown earlier, and to produce the reports shown. The following are examples of transactions that may also be performed.

**15. Finding an artwork to suit a customer**

The user enters any or all of the following: the artist name, the type, the medium, the style preferred. The screen displays a list of the title, artist, type, medium, style, and price of all the unsold works that fit the categories specified.

**16. Finding the history of a particular artwork**

The user enters the name of the artist and the title of the work, and the screen displays all the information about the work itself, including the year completed, type, medium, style, size, asking price, date listed, dates it appeared in shows, date returned (if any), and if sold, the sales information.

* + Step 1.4 Initial list of assumptions for The Art Gallery project

1. Artist names are unique, but customer names and collector names are not.
2. For privacy reasons, only people who may receive payments from the gallery are asked to provide their social security numbers, because these payments have to be reported for income tax purposes. Therefore, the gallery keeps social security numbers for salespersons, collectors, and artists, but not for buyers or potential customers
3. An artist may have many works for sale in the gallery.
4. Each work is an original, one-of-a-kind piece. No prints or reproductions are sold.
5. Two works of art may have the same title, but the combination of title and artist name is unique.
6. A work of art can be owned either by the artist who created it or by another person, referred to here as a collector.
7. Even if the work of art is owned by a collector, it is important to keep information about the artist who created it, since that is a factor in determining its value.
8. A work of art is sold by the gallery only once. The gallery does not resell its own works.
9. A work of art may appear in more than one show. Some works do not appear in any show.
10. Payment for all sales is made immediately and in full at the time of purchase. Payment may be by credit, cash, or check. The owner is paid the balance and the salesperson is paid the commission at the end of the week.
11. The database does not include payroll information, except for the commission to be paid to salespeople for sales of artwork.
12. There are lists of valid values for type, style, and medium of artworks. Each has a value “other” for works that do not fit existing values.
13. Information about works not selected to be listed by the gallery is discarded.
14. Lists of artists, collectors, buyers, and potential customers are evaluated periodically to determine whether they should be dropped.