9. Case Study 2: A Salary Transfer Management System

In this chapter, I give another example to illustrate the use of the downloadable architecture and the architecture transformation process. Additionally, I hope the example can provide evidence to support the feasibility of such architecture and process.

9.1 About the System

This is a simple two-tier WinBIS of a commercial bank in Taiwan. It is free to use for corporate customers, allowing corporate customers to make their payrolls and salary transfer request forms. The front-end client program of the system is written in VB 6.0. The back-end database of the system is an Access MDB file.

The client program provides three major functions: the company data management, the employee data management, and the payroll making. From the form perspective, the client program is composed of many forms that can be broken down into six categories by their purpose: splash form, main form, about form, function-specific primary form, function-specific

secondary form, and function-specific design-time-only form. Additionally, each function is implemented as a function-specific primary form, zero or more function-specific secondary forms, and zero or more function-specific design-time-only forms.

Although the system is simple, it possesses all the characteristics of a WinBIS. Moreover, keeping the example simple will help you understand the downloadable architecture and the transformation process.

9.2 Improving the Deployability of the System

I work through the architecture transformation process to transform the client program into a program warehouse.

First, I make a home page, a menu page, and a message page for the client program. The home page split up the browser window into three frames. The menu page is loaded into the left frame; the message page into the top-right frame; while the end-user selected package carrier is loaded into the bottom-right frame.

Next, I make an ActiveX component (with VB 6.0), an INF file, a component package, a package carrier, and DLL packages for each function of the client program.

Detailed accounts of the processes involved in making three ActiveX components are given below.
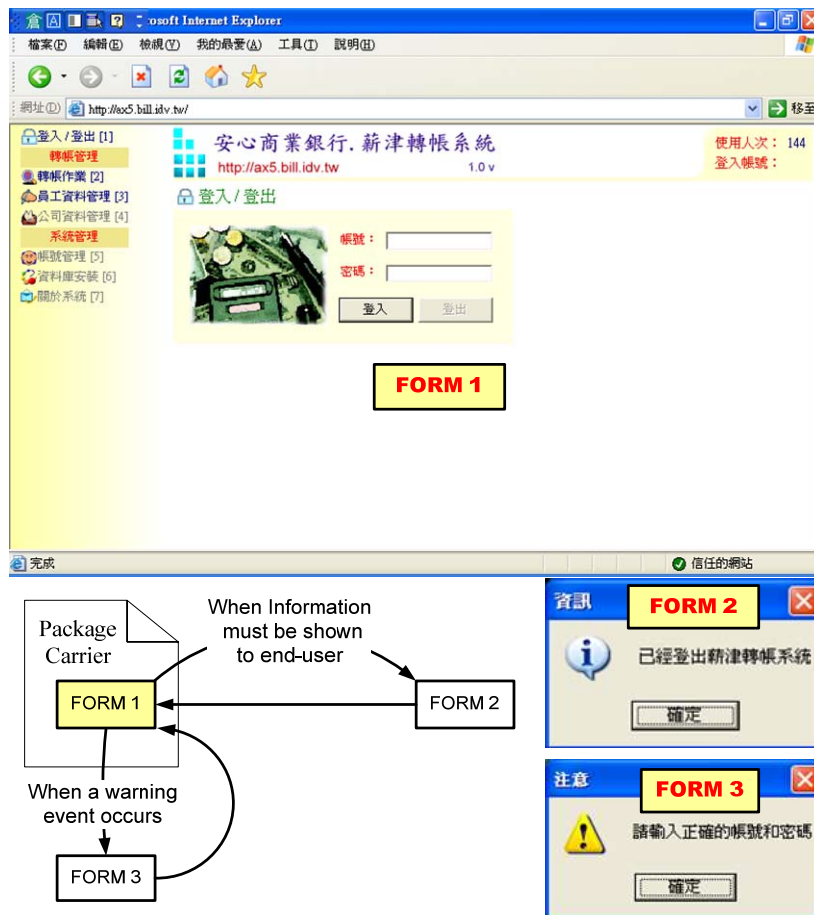
9.2.1 The Log In/Out ActiveX Component

The Log In/Out function allows an end-user to login or logout of the system. In the old system, this function is implemented as four forms: the log in/out form (primary form), the warning form, the information form, and the code module form. The log in/out form is custom-made; the warning form and the information form are made with existing dialog subroutines; the code module form is a design-time-only form. In the new downloadable system, this function is implemented as an ActiveX component, which is composed of an embedded form, two pop-up forms, and a design-time-only form (see Figure 15).

To create the ActiveX component, I first create a new ActiveX component project. Subsequently, I open the log in/out form, and copy and paste all its components and code into the embedded form (except the VB auto-generated code). I modify the global variable related code in response to the change from global variable to session cookie. I then write code to refresh the message page. Following this, I attach the code module form to the project. I then specify the file version of the ActiveX component.

Finally, I compile and link the project to produce the ActiveX component.

The size of the package carrier is 1.57 KB; the size of the ActiveX component's package is 22.70 KB; the total size of eleven dependent DLLs' packages is 1561.58 KB. Hence, an end-user will download 1585.58 KB code, when he/she first uses this function, if I cannot pre-install the DLLs on his/her machine.
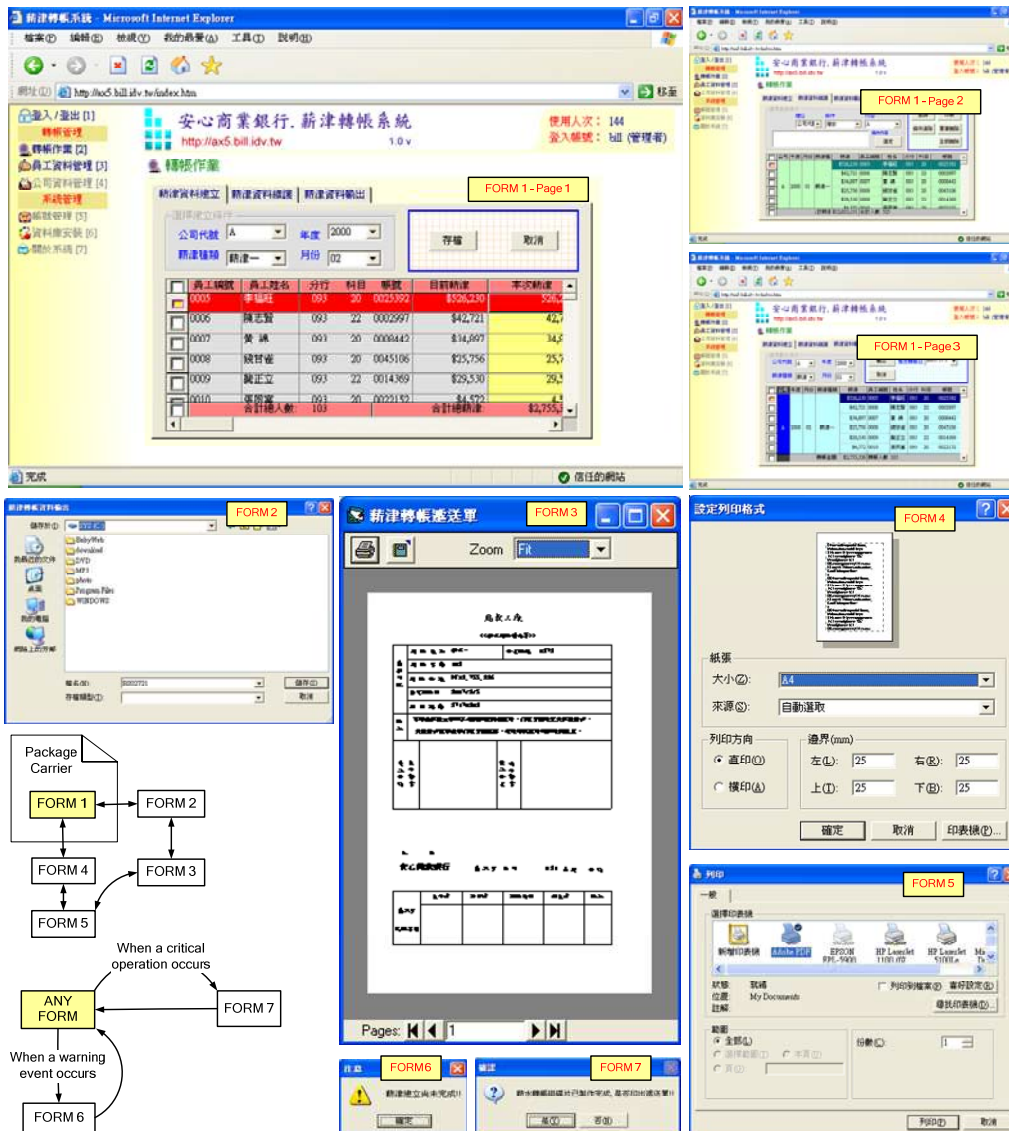

Note that the design-time-only form is not shown in this figure

Figure 15. The Log In/Out ActiveX Component of the Downloadable Salary Transfer Management System

9.2.2 The Payroll Making ActiveX Component

The Payroll Making function allows an end-user to make a payroll and a salary transfer request form. In the old system, this function is implemented as eleven forms: the primary form, the save file form, the print preview form, the print setup form, the print form, the warning form, the confirmation form, the data report form, the data environment form, and the two code module forms. The primary form is custom-made; the save file form is made with an existing dialog component; the data report form, the data environment form, and the two code module forms are design-time-only forms; the remainder are made with existing dialog subroutines. In the new downloadable system, this function is implemented as an ActiveX component, which is composed of an embedded form, six pop-up forms, and four design-time-only forms (see Figure 16).

To create the ActiveX component, I first create a new ActiveX component project. Subsequently, I open the primary form, and copy and paste all its components and code into the embedded form (except the VB auto-generated code). I then write code to check if the end-user is logged in (using session cookies), and if not, to disable the ActiveX component. Following this, I attach the four design-time-only forms to the project. I then specify the file version of the ActiveX component and finally, I compile and link the project to produce the ActiveX component.

Figure 16. The Payroll Making ActiveX Component of the Downloadable Salary Transfer Management System

The size of the package carrier is 2.10 KB; the size of the ActiveX component's package is 53.55 KB; the total size of twenty dependent DLLs' packages is 3255.59 KB. The Log In/Out function must be performed
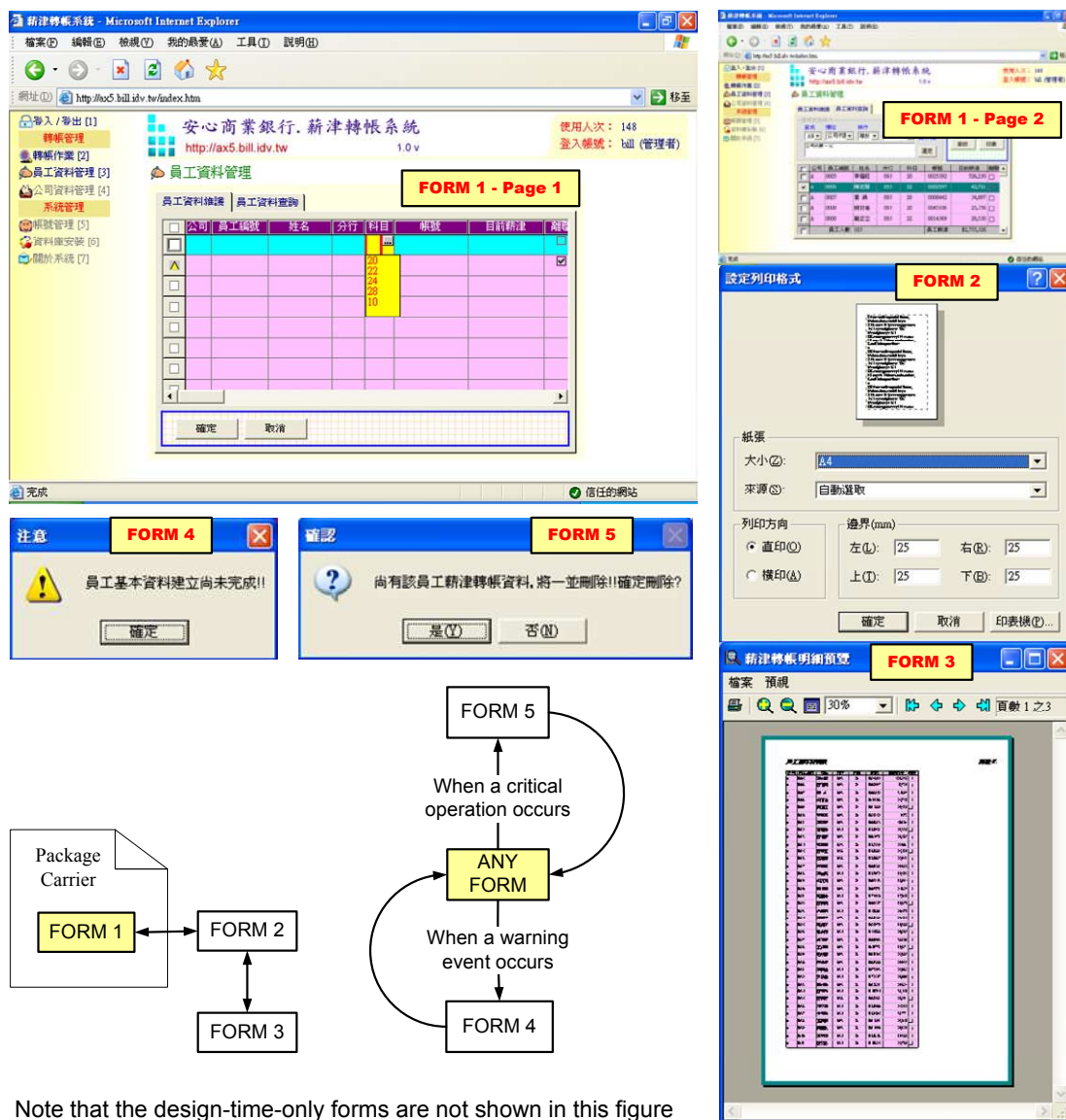
before this function. Hence, an end-user will download 1694.01 KB code, when he/she first uses this function, if I cannot pre-install the DLLs on his/her machine.

9.2.3 The Employee Data Management ActiveX Component

The Employee Management function allows an end-user to insert, delete, modify, and retrieve employee data. In the old system, this function is implemented as eight forms: the primary form, the print setup form, the print preview form, the warning form, the confirmation form, the data environment form, and the two code module forms. The primary form is custom-made; the data environment form and the two code module forms are design-time-only forms; the remainder are made with existing dialog subroutines. In the new downloadable system, this function is implemented as an ActiveX component, which is composed of an embedded form, four pop-up forms, and three design-time-only forms (see Figure 17).

To create the ActiveX component, I first create a new ActiveX component project. I then open the primary form, and copy and paste all its components and code into the embedded form (except the VB auto-generated code). Subsequently, I write code to check if the end-user is logged in (using session cookies), and if not, to disable the ActiveX component. Following this, I attach

the three design-time-only forms to the project. I then specify the file version

of the ActiveX component and finally, I compile and link the project to produce

the ActiveX component.

Figure 17. The Employee Data Management ActiveX Component of
the Downloadable Salary Transfer Management System

The size of the package carrier is 2.10 KB; the size of the ActiveX component's package is 33.77 KB; the total size of nineteen dependent DLLs' packages is 3130.10 KB. The Log In/Out function must be performed before this function. Hence, an end-user will download 1568.52 KB code, when he/she first uses this function, if I cannot pre-install the DLLs on his/her machine.