Rational Software

Payroll System Identify Design Elements Solution

Version 2003

Revision History

Date	Issue	Description	Author
9/01/2000	V2000	Generated for beta	Shawn Siemers
10/02/2000	V2000	Final release	Shawn Siemers
01/14/2003	V2003	Final Release	Alex Kutsick

Table of Contents

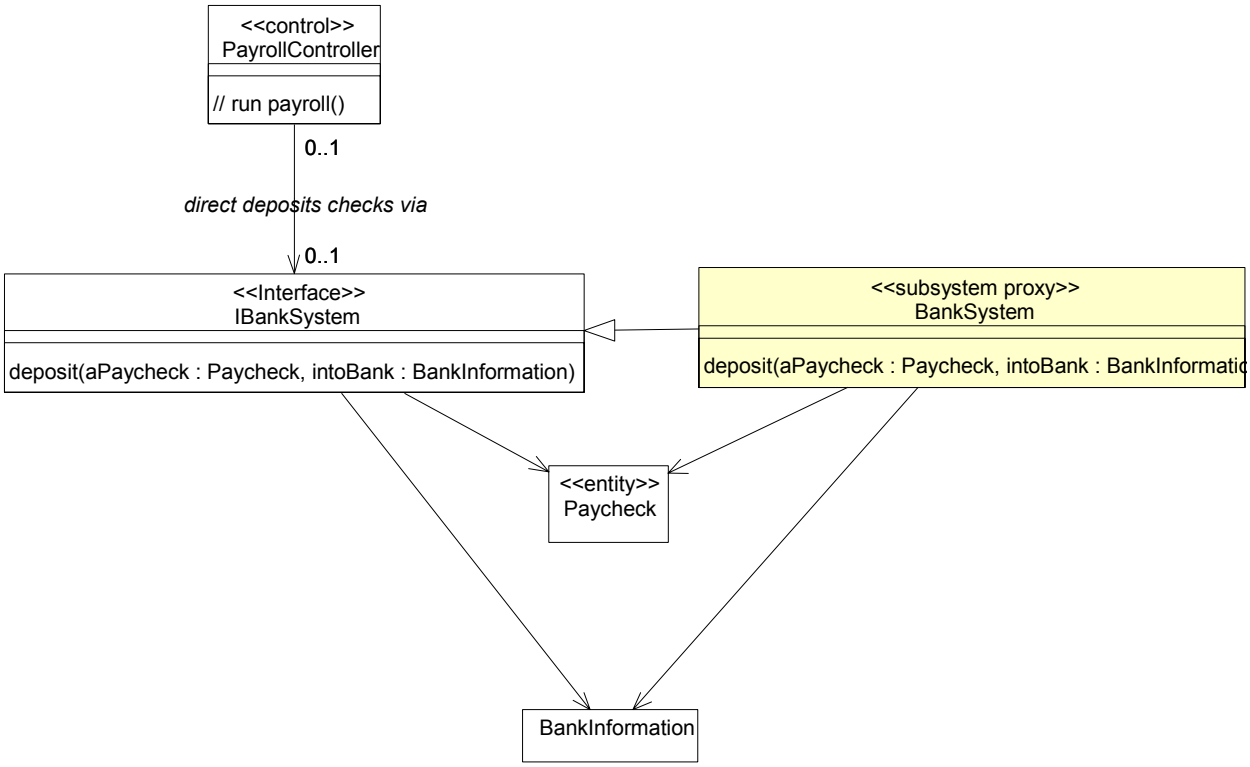
1. Exercise: Identify Design Elements 5
   1.1 Subsystem Context Diagrams 5
      1.1.1 BankSystem Subsystem 5
      1.1.2 PrintService Subsystem 6
      1.1.3 ProjectManagementDatabase Subsystem 7
   1.2 Analysis-Class-to-Design-Element Map 8
   1.3 Design-Element-to-Owning-Package Map 8
   1.4 Architectural Layers and Their Dependencies 9
      1.4.1 Layer Descriptions 9
   1.5 Packages and Their Dependencies 10
      1.5.1 Package Descriptions 10

Payroll System Identify Design Elements Solution

1. Exercise: Identify Design Elements

1.1 Subsystem Context Diagrams

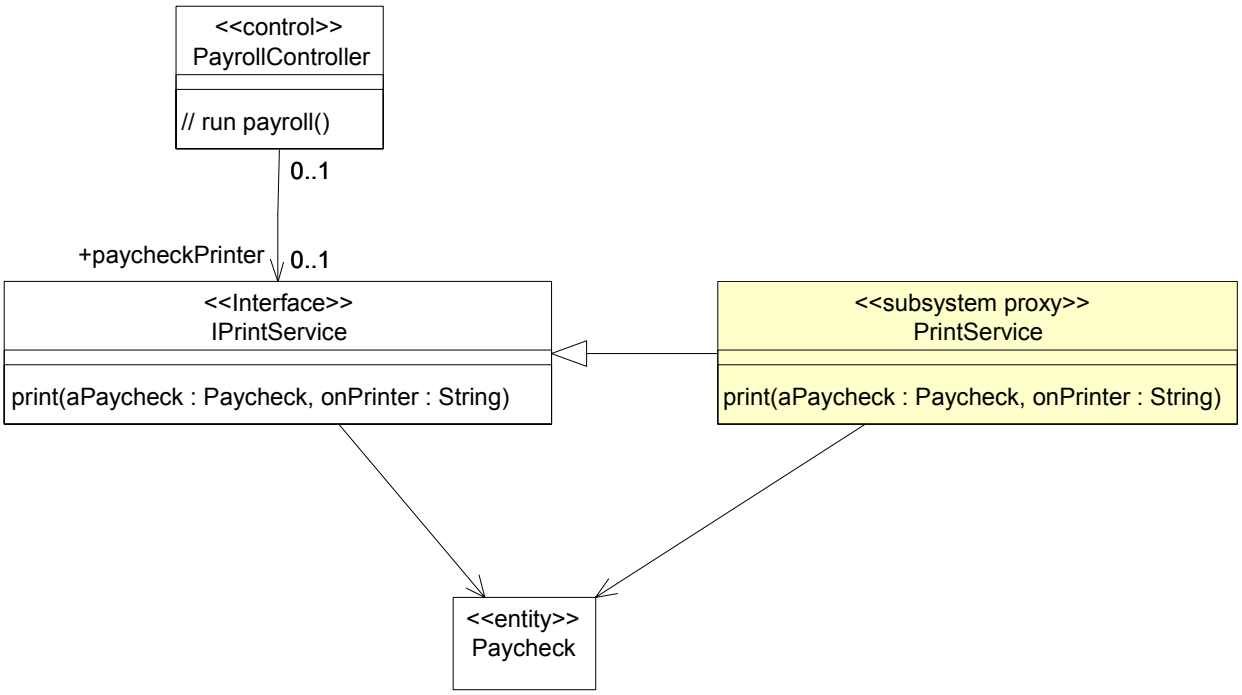
1.1.1 BankSystem Subsystem



1.1.1.1 Subsystem Interface Descriptions

IBankSystem: Encapsulates communication with all external bank systems.
deposit: Deposit the specified paycheck into the specified bank.

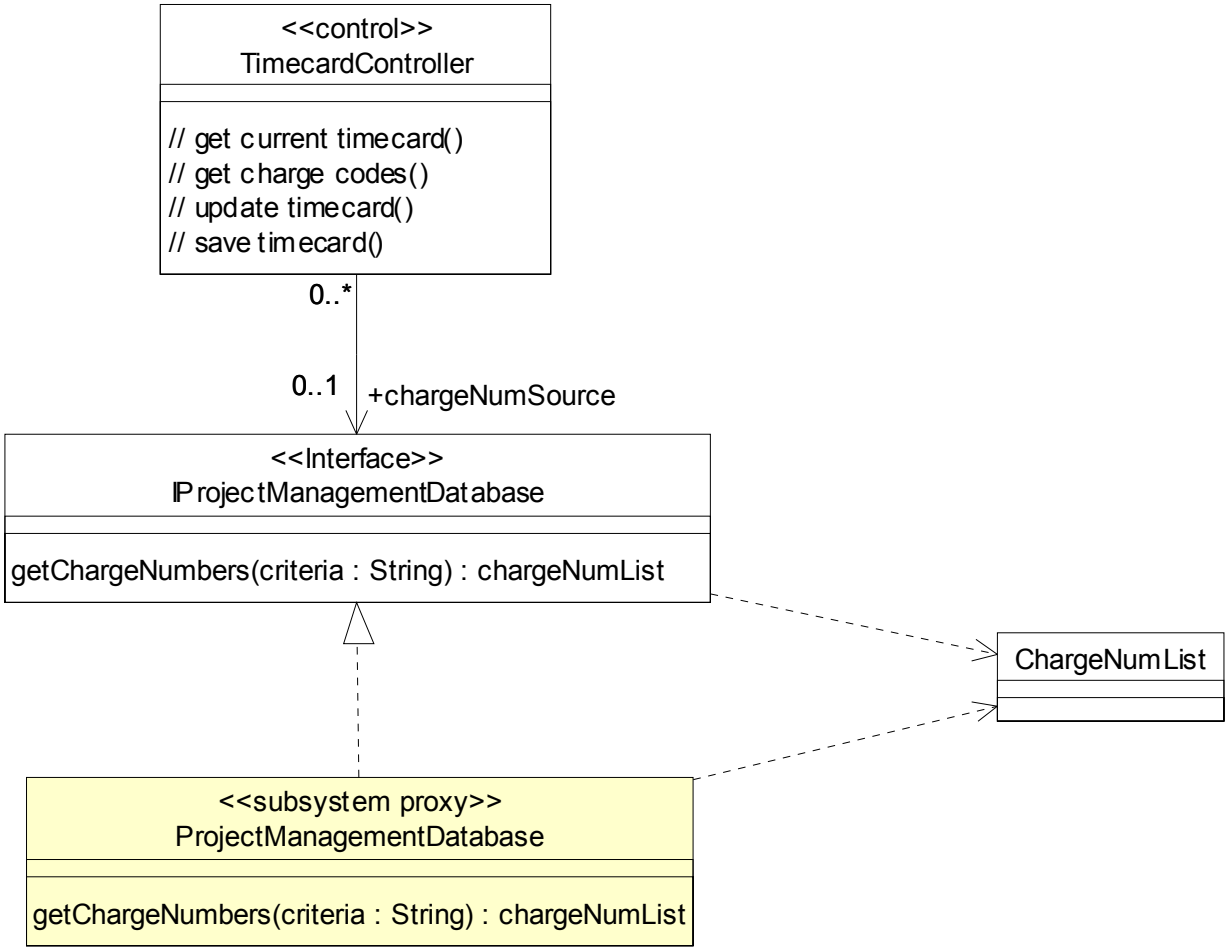
1.1.2 PrintService Subsystem



1.1.2.1 Subsystem Interface Descriptions

IPrintService: Encapsulates communication with all printers.
print: Print the given Paycheck on the specified printer.

1.1.3 ProjectManagementDatabase Subsystem



1.1.3.1 Subsystem Interface Descriptions

IProjectManagementDatabase: Encapsulates communication with the legacy Project Management Database that contains information on project charge numbers.

getChargeNumbers: Retrieve the available charge numbers.

1.2 Analysis-Class-to-Design-Element Map

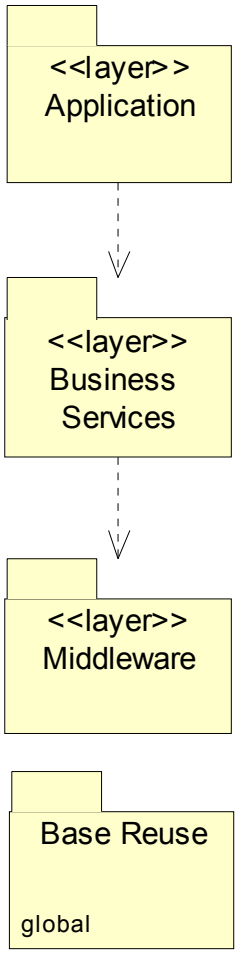
Analysis Class	Design Element
LoginForm	LoginForm
MaintainTimecardForm	MainEmployeeForm TimecardForm
	MainApplicationForm
TimecardController	TimecardController
SystemClockInterface	SystemClockInterface
PayrollController	PayrollController
Paycheck	Paycheck
HourlyEmployee	HourlyEmployee
Timecard	Timecard
PurchaseOrder	PurchaseOrder
CommissionedEmployee	CommissionedEmployee
SalariedEmployee	SalariedEmployee
Employee	Employee
BankSystem	BankSystem subsystem
	IBankSystem interface
PrinterInterface	IPrintService interface
	PrintService subsystem
ProjectManagementDatabase	ProjectManagementDatabase subsystem
	IProjectManagementDatabase interface

1.3 Design-Element-to-Owning-Package Map

Design Element	"Owning" Package
LoginForm	Middleware::Security:GUI Framework
MainEmployeeForm TimecardForm	Applications::Employee Activities
MainApplicationForm	Middleware::Security:GUI Framework
TimecardController	Applications::Employee Activities
SystemClockInterface	Applications::Payroll
PayrollController	Applications::Payroll
Paycheck	Business Services::Payroll Artifacts
HourlyEmployee	Business Services::Payroll Artifacts
Timecard	Business Services::Payroll Artifacts
PurchaseOrder	Business Services::Payroll Artifacts
CommissionedEmployee	Business Services::Payroll Artifacts
SalariedEmployee	Business Services::Payroll Artifacts
Employee	Business Services::Payroll Artifacts
BankSystem subsystem	Business Services
IBankSystem interface	Business Services::External System Interfaces
IPrintService interface	Business Services::External System Interfaces
PrintService subsystem	Business Services
ProjectManagementDatabase subsystem	Business Services
IProjectManagementDatabase interface	Business Services::External System Interfaces

1.4 Architectural Layers and Their Dependencies

Main



1.4.1 Layer Descriptions

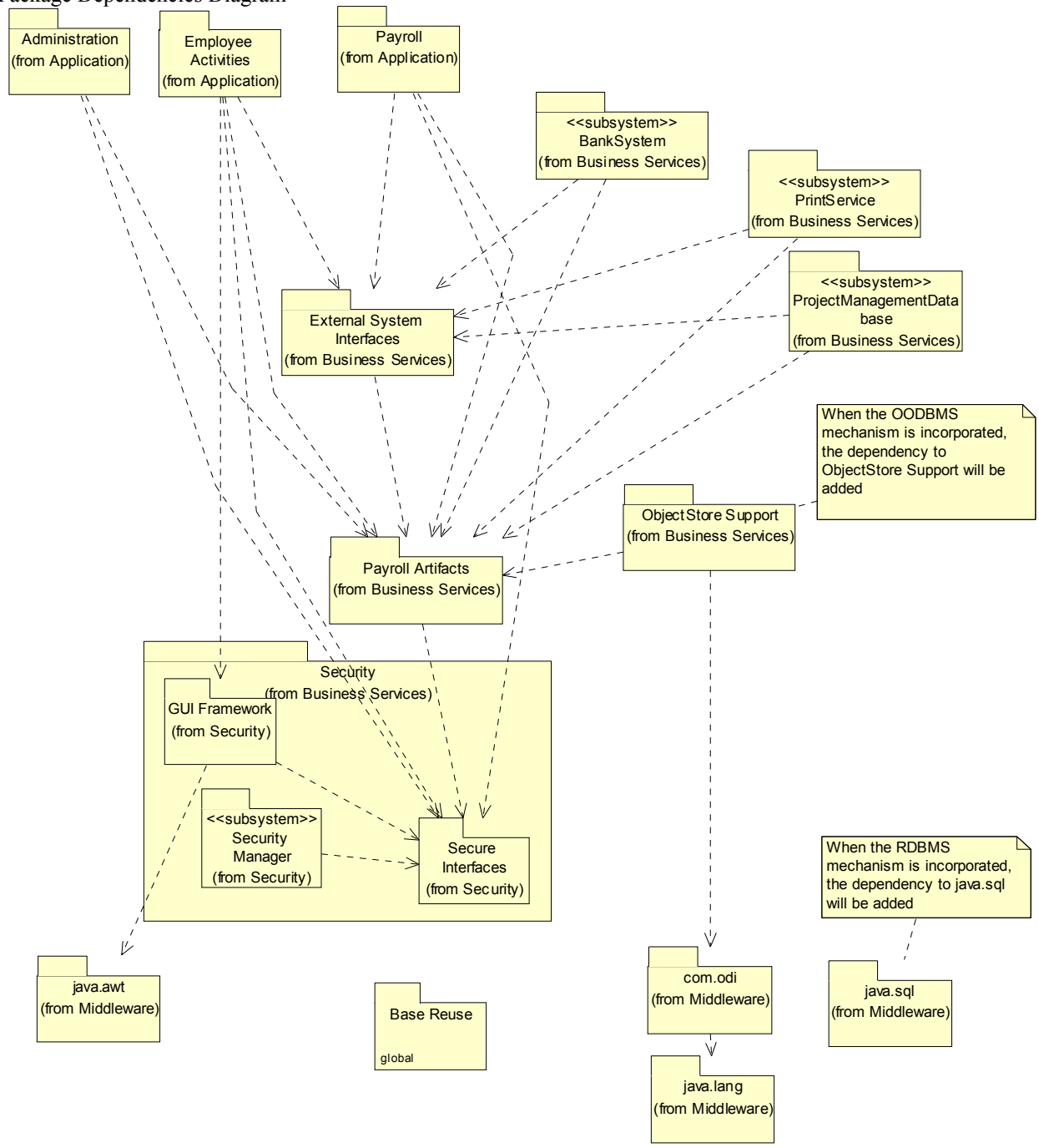
Application : The Application layer contains application-specific design elements.

Business Services : The Business Services layer contains business-specific elements that are used in several applications.

Middleware : Provides utilities and platform-independent services.

1.5 Packages and Their Dependencies

Package Dependencies Diagram



1.5.1 Package Descriptions

Administration : Contains the design elements that support the Payroll Administrator's applications.

BankSystem Subsystem: Encapsulates communication with all external bank systems.

Base Reuse : Basic reusable design elements.

com.odi : The com.odi package contains the design elements that support the OODBMS persistency mechanism. The name of the package in the model reflects the naming convention for 3rd party Java software. The convention is to use the reverse of the domain name, so if Rational had a Java package called "util" they'd call it "com.rational.util". This com.odi has nothing to do with Microsoft COM/DCOM; they are totally separate. There is nothing COM/DCOM related when using CORBA, RMI, or ObjectStore.

Employee Activities : Contains the design elements that support the Employee's applications.

External System Interfaces : Contains the interfaces that support access to external systems. This is so that the external system interface classes can be version controlled independently from the subsystems that realize them.

GUI Framework : This package comprises a whole framework for user interface management.

It has a ViewHandler that manages the opening and closing of windows, plus window-to-window communication so that windows do not need to depend directly upon each other.

This framework is security-aware, it has a login window that will create a server-resident user context object. The ViewHandler class manages a handle to the user context object.

The ViewHandler also starts up the controller classes for each use case manager.

java.awt : The java.awt package contains the basic GUI design elements for java.

java.lang : The package contains some basic java design elements.

java.sql : The package that contains the design elements that support RDBMS persistency.

ObjectStore Support : Contains the business-specific design elements that support the OODBMS persistency mechanism. This includes the DBManager. The DBManager class must contain operations for every OODBMS persistent class.

Payroll : Contains the design elements that support the execution of the payroll processing.

Payroll Artifacts : Contains the core payroll abstractions.

PrintService Subsystem: Provides utilities to produce hard-copy.

ProjectManagementDatabase Subsystem: Encapsulates the interface to the legacy database containing information regarding projects and charge numbers.

Secure Interfaces : Contains the interfaces that provide clients access to security services.

Security : Contains design elements that implement the security mechanism.

Security Manager Subsystem: Provides the implementation for the core security services.