

**SWE312: Software Requirements Engineering**  
**1<sup>st</sup> Semester 1438-1439 H**

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## **Project**

### **Payroll Management System**

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As the head of Information Technology at Acme, Inc., you are tasked with building a new payroll system to replace the existing system which is hopelessly out of date. Acme needs a new system to allow employees to record timecard information electronically and automatically generate paychecks based on the number of hours worked and total amount of sales (for commissioned employees).

The new system will be state of the art and will have a Windows-based desktop interface to allow employees to enter timecard information, enter purchase orders, change employee preferences (such as payment method), and create various reports. The system will run on individual employee desktops throughout the entire company. For reasons of security and auditing, employees can only access and edit their own timecards and purchase orders.

The system will retain information on all employees in the company (Acme currently has around 5,000 employees worldwide). The system must pay each employee the correct amount, on time, by the method that they specify (see possible payment methods described later). Acme, for cost reasons, does not want to replace one of their legacy databases, the Project Management Database, which contains all information regarding projects and charge numbers. The new system must work with the existing Project Management Database, which is a DB2 database running on an IBM mainframe. The Payroll System will access, but not update, information stored in the Project Management Database.

Some employees (hourly employee) work by the hour, and they are paid an hourly rate. They submit timecards that record the date and number of hours worked for a particular charge number. If someone works for more than 8 hours, Acme pays them 1.5 times their normal rate for those extra hours. Hourly workers are paid every Friday.

Salaried employees are paid a flat salary. Even though they are paid a flat salary, they submit timecards that record the date and hours worked. This is so the system can keep track of the hours worked against particular charge numbers. They are paid on the last working day of the month.

Employees can only make changes to the timecard for the current pay period and before the timecard has been submitted. The system retrieves and displays the current timecard for the employee. If a timecard does not exist for the employee for the current pay period, the system creates a new one. The start and end dates of the timecard are set by the system and cannot be changed by the employee. If the timecards submitted, the system makes the timecard read-only.

Commissioned employees and some salaried employees receive a commission based on their sales. They must be able to maintain purchase orders, which includes adding, changing, and deleting purchase orders. They submit purchase orders that reflect the date and amount of the sale. It should also contain customer point of contact and customer billing address. The commission rate is determined for each employee, and is one of 10%, 15%, 25%, or 35%.

One of the most requested features of the new system is employee reporting. Employees will be able to query the system for number of hours worked, totals of all hours billed to a project (i.e., charge number), total pay received year-to-date, remaining vacation time, etc.

Employees can choose their method of payment. They can have their paychecks mailed to the postal address of their choice, or they can request direct deposit and have their paycheck deposited into a bank account of their choosing. The employee may also choose to pick their paychecks up at the office.

The Payroll Administrator maintains employee information. The Payroll Administrator is responsible for adding new employees, deleting employees and changing all employee information such as name, address, social security number, and payment classification (hourly, salaried, commissioned), standard tax deductions and other deductions, as well as running administrative reports. The Payroll Administrator can be able to create either a total hours worked report or pay year-to-date report. In order to create these reports, the administrator must be able to select the report type, employee name and begin and end dates for the report.

The payroll application will run automatically every Friday and on the last working day of the month. It will pay the appropriate employees on those days. The system calculates the pay using entered timecards, purchase orders, employee information and all legal deductions. The system will be told what date the employees are to be paid, so it will generate payments for records from the last time the employee was paid to the specified date. The new system is being designed so that the payroll will always be generated automatically, and there will be no need for any manual intervention.

The main system must be running 98% of the time. It is imperative that the system be up and running during the times the payroll is run (every Friday and the last working day of the month).

The system shall support up to 2000 simultaneous users against the central database at any given time, and up to 500 simultaneous users against the local servers at any one time.

The system should prevent employees from changing any timecards other than their own. Additionally, for security reasons, only the Payroll Administrator is allowed to change any employee information with the exception of the payment delivery method.

The system shall interface with existing bank systems via an electronic transaction.

## **Payroll System Glossary**

### **1. Introduction**

This document is used to define terminology specific to the problem domain, explaining terms, which may be unfamiliar to the reader of the use-case descriptions or other project documents. Often, this document can be used as an informal *data dictionary*, capturing data definitions so that use-case descriptions and other project documents can focus on what the system must do with the information.

### **2. Definitions**

The glossary contains the working definitions for the key concepts in the Payroll System.

### **3. Bank System**

Any bank(s) to which direct deposit transactions are sent.

### **4. Employee**

A person that works for the company that owns and operates the payroll system (Acme, Inc.)

### **5. Payroll Administrator**

The person responsible for maintaining employees and employee information in the system.

### **6. Project Management Database**

The legacy database that contains all information regarding projects and charge numbers.

**7. System Clock**

The internal system clock that keeps track of time. The internal clock will automatically run the payroll at the appropriate times.

**8. Pay Period**

The amount of time over which an employee is paid.

**9. Paycheck**

A record of how much an employee was paid during a specified Pay Period.

**10. Payment Method**

How the employee is paid, either pick-up, mail, or direct deposit.

**11. Timecard**

A record of hours worked by the employee during a specified pay period.

**12. Purchase Order**

A record of a sale made by an employee.

**13. Salaried Employee**

An employee that receives a salary.

**14. Commissioned Employee**

An employee that receives a salary plus commissions.

**15. Hourly Employee**

An employee that is paid by the hour.