Integration Project

Example based on

* <http://web.cse.ohio-state.edu/~bair.41/616/Project/Example_Document/Req_Doc_Example.html>

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# Introduction

## Purpose of Document

This is a Requirements Specification document for a new human resources data system for Company X. Company X is a placeholder for any company that might employ both salaried and hourly employees. The new system will provide support for employee management and payroll reporting. This document describes the scope, objectives and goal of the new system. In addition to describing non-functional requirements, this document models the functional requirements with use cases, interaction diagrams, and class models. This document is intended to direct the design and implementation of the target system within a database management system (DBMS).

## Project Summary

|  |  |
| --- | --- |
| **Project Name:** | Company X HR/Payroll System |
| **Project Manager:** | Professor Larry Clement |
| **Project Analysts:** | EGR325-A Students,  EGR325-B Students |
| **Responsible Users:** | Imogene I. Ives, President of Company X Benjamin B. Baker, Vice-President of Human Resources & Payroll |

## Background

Company X does something profitable.

Company X does not currently have a system to manage employees and payroll related activities. A new system is needed to automate these two functions.

Imogene I. Ives, President of Company X has requested that an analysis be done with a view to creating a system that can be used to manage employees and generate both periodic and annual payroll reports.

## Project Scope

The scope of this project is a data system that supports employee management and payroll report generation for Company X. The user interface(s) are not within the scope of this project.

## System Purpose

### Users

Those who will primarily benefit from the new system and those who will be affected by the new system include

Human Resources Administrators:

Upon implementation of the new system, HR administrators will be able to enter new employees and manage existing employess (along with their dependents).

Payroll System Administrators:

Upon implementation of the new system, Payroll administrators will be able to generate reports for each pay period and summary reports for year end activities.

Managers:

Upon implementation of the new system, Managers will be able to submit approved time sheets that will be used to generate the pay period and annual payroll reports.

### Location

The system will be available to Human Resources and Payroll administrators at the home office of Company X.

### Responsibilities

The primary responsibilities of the new system:

* provide human resources administrators the ability to manage employees
* provide payroll administrators the ability to generate reports for each pay period
* provide payroll administrators the ability to generate year end reports
* provide a repository for approved time sheets for hourly workers

Other desired features of the new system:

* ???

The system will not be responsible for other HR or payroll activities. A separate system will be used for hourly workers to clock in and clock out.

### Need

This system is needed in order to reduce the overhead costs needed to manage the human resources and payroll divisions of Company X.

## Overview of Document

The rest of this document gives the detailed specifications for the new data system. It is organized as follows:

* Section 2: Functional Objectives  
  Each objective gives a desired behavior for the system, a business justification, and a measure to determine if the final system has successfully met the objective. These objectives are organized by priority. In order for the new system to be considered successful, all high priority objectives must be met.
* Section 3: Non-Functional Objectives  
  This section is organized by category. Each objective specifies a technical requirement or constraint on the overall characteristics of the system. Each objective is measurable.
* Section 4: Context Model  
  This section gives a text description of the goal of the system, and a pictorial description of the scope of the system in a context (information flow) diagram. Those entities outside the system that interact with the system are described.
* Section 5: Use Case Model  
  The specific behavioral requirements of the system are detailed in a series of use cases. Each use case accomplishes a business task and shows the interaction between the system and some outside actor. Each use case is described with both text and an interaction diagram. An interface prototype is also shown. The system use case diagram depicts the interactions between all use cases and system actors.
* Section 6: Logical Design  
  The final data system will be defined using an ER diagram containing the set of relations along with summaries for all programmable tasks that are required to implement the system.
* Section 7: An appendix containing a variety of supporting documents
  + data dictionary – defining terms specific to this project
  + conceptual model – Enhanced Entity Relationship (EER) model
  + pseudo code – summaries for programming tasks

# Functional Objectives

## High Priority

### Add new Employee

Provide the ability to add a new employee to the system. When adding a new employee the following data should be provided:

* Type: Hourly or Salaried
* Hourly Rate or Annual Salary
* List of Dependents (Spouse + Children)
* Selected Health Plan
  + It is ASSUMED that all available health plans will be preloaded by an external supporting system
* Assign employee to a supervisor
* Social Security Number
* Start date for company employment

### Edit Employee

* Provide the ability to change an employee’s supervisor. A history of an employee’s supervisor should be kept.
* Provide the ability to update a new employee’s family details any time a new child is added
* Provide the ability to update selected health plan during open enrollment in November
* Provide the ability to change an employee’s annual salary or hourly rate. Changes to salary or hourly rate should only happen at the beginning of a new month so that monthly reports can assume that the salary or rate are constant for the pay period. A history of employee’s salary / hourly rate should be kept.
* Provide the ability to enter an EndDate for current employment term
* Provide the ability to enter a NEW StartDate for an employee that was previously employed

### Approve Time Sheet

Provide supervisors with the ability to pull up time sheets for all employees they supervise for review. Supervisors should be able to edit the hours worked prior to approval. Provide the ability for supervisors to approve time sheets.

### Generate Monthy Payroll Report

During the first week of each month calculate and STORE monthly pay for the previous month for each employee.

* Monthly pay for HOURLY employees is determined per the following formula.
  + Total Pay = Approved hours \* Hourly Rate
  + Tax Withheld =- 0.20 \* Total Pay
  + Health Plan Deduction = Cost of Selected Health Plan for Employee + Cost of Selected Health Plan for Dependent \* # of Dependents During Pay Period
  + Net Pay = Total Pay – Tax Withheld – Health Plan Deduction
* Montly pay for SALARIED employees is determined per the following formula
  + Total Pay = Annual Salary / 12
  + Tax Withheld =- 0.20 \* Total Pay
  + Health Plan Deduction = Cost of Selected Health Plan for Employee + Cost of Selected Health Plan for Dependent \* # of Dependents During Pay Period
  + Net Pay = Total Pay – Tax Withheld – Health Plan Deduction

Monthly report should include the following for all employees: Employee ID, Total Pay, Tax Withheld, Health Plan Deduction, and Net Pay.

### Generate Annual Tax Report

During the first two weeks of January calculate and STORE an annual tax summary for each employee.

* Annual tax report values are determined by the following formula
  + Total Annual Pay = sum of total pay for each pay period the employee was paid in the previous year
  + Total Tax Withheld = sum of total tax withhel for each pay period
  + Total Health Plan Deductions = sum of total health plan deductions for each pay period
  + Total Net Pay = sum of net pay for each pay period

The annual report should include the following for all employees: Employee ID, Total Annual Pay, Total Tax Withheld, Total Health Plan Deductions, and Total Net Pay.

## Medium Priority

### Edit Employee (convert from hourly to salaried or vice versa)

Provide the ability to move an employee from hourly to salaried or salaried to hourly.

### Missing Supervisor Report

Provide a report noting which employees do NOT have a current supervisor. This could happen if the employee was not initially assigned a supervisor OR if the supervisor left the company and the employee was not reassigned.

## Low Priority

No low priority tasks have been identified at this time.

# Non-Functional Objectives

## Reliability

## Usability

## Performance

## Security

## Supportability

## Online user Documentation and Help

## Purchased Components

## Interfaces

# The Context Model

## Goal Statement

## Context Diagram (Information FLow Diagram)

## System Externals

# The Use Case Model

## System Use Case Diagram

## Use Case Descriptions (for selected cases)

Notes:

* For all use cases, the system will assume that the authentication and authorization are handled by the interface collecting data (not part of this system).

### Add Employee

|  |  |
| --- | --- |
| Use Case Name: | Add Employee |
| Use Case Persona: | Human Resources Administrator |
| Summary: | This use case allows a human resources administrator to add a new employee to the system. |
| Basic Flow: | 1. Administrator opens form to add new employee (form is EXTERNAL to this system)    1. Enter Employee Name (Title, First, Middle, Last, Suffix)    2. Enter Employee SSN    3. Enter Employee Type (Salaried or Hourly)    4. Enter Employee Start Date    5. Enter Employee Annual Salary or Hourly Rate (depends upon employee type)    6. Add Employee Dependents       1. Dependent name       2. Dependent SSN       3. Dependent type (spouse or child)    7. Enter Employee Health Plan Choice 2. Submit all data from populated form 3. Validate data    1. All required fields defined    2. Confirm employee is NEW (i.e., SSN does not already exist in system)    3. Confirm that start date is > current date 4. Insert Employee (Employee ID assigned) |
| Alternative Flows: | Step 3b:   * If employee is NOT new then administrator is informed that employee already exists and existing employee ID is provided. * Administrator shifts to the Edit Employee use case. |
| Extension Points: | New Employee Data Entry Form |
| Preconditions: | * Employee type and salary/hourly rate has been defined. * Employee has provided all personal information (including a list of all dependents and health plan choice). |
| Postconditions: | Employee can clock in (if hourly) and will be included in payroll reports issued after start date. |
| Business Rules: | * All employees and dependents are fundamentally identified using their social security number (SSN) to avoid entering the same employee (or dependent) into the system more than one time. * Employees must choose from available health plans. * Salaried employees have an annual salary. * Hourly employees have an hourly rate. * Employees cannot be both hourly and salaried at the same time. * Employees can be converted from hourly to salaried using the Edit Employee use case.   + Effective date of conversion MUST be the first day of the month (new pay period) |

### Payroll Administrator

# Logical Design

# Appendix

## Data Dictionary

### Employee

|  |  |  |
| --- | --- | --- |
| Attribute type | SQL data type | Description |
| First Name | CHAR(N) | Variable-length name of up to 30 characters representing employee’s legal first name. Ex: John, Jonathan, etc. REQUIRED |
| Middle Name | CHAR(N) | Variable-length name of up to 30 characters representing employee’s legal middle name (may be NULL or initial only). |
| Last Name | CHAR(N) | Variable-length name of up to 30 characters representing employee’s legal last (or family) name. REQUIRED |
| Suffix | CHAR(N) | Variable-length suffix of up to 10 characters representing employee’s legal suffix (may be NULL or initial only). Ex: Jr., Sr., III, etc. |
| Title | CHAR(N) | Variable-title of up to 10 characters representing employee’s preferred title (may be NULL or initial only). Ex: Mr., Mrs., Ms., Dr., etc. |
| SSN | Integer | Social Security Number. Store as integer (no hyphens). REQUIRED |
| StartDate | Date | Year, month, and day (time not required) that employee started working for the company. REQUIRED |
| Annual Salary | Decimal(11,2) | Annual salary for salaried employees. REQUIRED for salaried employees. |
| Hourly Rate | Decimal(11,2) | Hourly rate for hourly employees. REQUIRED for hourly employees. |