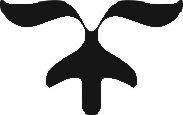


SDEV268 Group Project

Payroll Program Development Design and Planning



April 12, 2024

IVytech COllege

# Important Overview

As our company continues to expand, we have identified a need to streamline our payroll process due to the current manual system causing delays in meeting payroll deadlines. We understand that navigating the required calculations can be complex, but we are committed to addressing this challenge.

Introducing a new automated payroll system will eliminate errors in the payroll process and ensure timely paycheck distribution. This software will be tailored to meet our business needs and accounting workflow, ultimately saving time for our HR team. You have been selected as our designer and developer for our new program. Your responsibilities will involve showcasing competence in procedural and object-oriented programming principles, exploring recursion to understand different algorithms, creating programming, and testing software incorporating various design patterns. Please ensure your project incorporates security measures to protect the data being gathered. In your role as the developer, you will need to design user interfaces using JAVA, establish the necessary databases for the application, and establish the necessary connections between the interfaces and databases.

Enclosed are the business requirements for the payroll system prepared by the HR department. Each section contains prompts for you to confirm your comprehension or raise questions. A comprehensive listing of the review materials can be found under the Resources / Payroll Project. You have eight weeks to complete the project and have it ready for use.

Thank you for your commitment and hard work in developing and executing our new payroll software to improve our business operations.

Sincerely,   
Ralph Robertson

President

ABC Company

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# ABC Company – Payroll Project

A comprehensive plan must be established to begin the payroll program's development process. This plan should include tasks such as collecting hours worked, calculating taxes, designing the screens, determining the information to be captured, designing the database, and other relevant activities. It is crucial to review all input data and identify any inconsistencies carefully. For instance, if the standard work hours are 40 hours per week, submitting 80 hours would be considered unusual and should be addressed promptly.

A minimum of twelve employees should be designated for use in test cases. Your responsibilities will involve creating documentation to support the development plan and providing guidance to users after the application is completed. Additionally, you will be responsible for designing and developing the Java-based application.

All program files and documentation should be organized within GitHub. Your final submission will be a link to your GitHub repository, where the instructor will grade your project. Make sure you give your instructor access to your GitHub so there will not be an access issue when they go to grade the final submissions.

## **Required Documentation:**

The following documentation is required and should be stored within GitHub for your final submission.

* Develop a detailed plan outlining the steps you will use to create your program. This should include the number of menus, and screens required, database creation and the type of database you use in your project and what algorithms will be employed in the development project, providing a rationale for their selection.
* You will need to identify the types of actors that will use your application and produce UML diagrams for all actors involved in the application to clearly define their roles and responsibilities.
* Include a breakdown of tasks to be completed over the next eight weeks as part of the project plan.
* Prepare user-friendly documentation for the application to facilitate user understanding of its features and functionalities.
* Follow good program standards by storing and defining your variables establishing security and how you will be protecting the sensitive data entered in the payroll system.

## **Testing Procedures:**

* Establish a structured testing log to methodically test the application's various scenarios. Your testing log should be thoroughly checked to make sure there is validation in place to protect the user from making errors.
* Use the testing log to verify the accuracy of all calculations in the application, particularly in relation to employee payments and taxes. You should provide screenshots where you can show that your testing scenarios passed. For example, your screenshot should display error messages, etc.
* Create a minimum of 12 fabricated employee profiles within the application for testing and demonstration purposes.
* Your documentation posted in GitHub should contain your initial testing log and then a completed log to show your log was available before the testing began.

You can always peek ahead to see how you will be expanding your expertise each week by previewing upcoming topics and incorporating them into your plan.

## Security Measures and Security Menus

Security measures must be established for the application, including a mandatory login process for admin and employee access. Employees will receive automated login credentials based on their email address and date of birth. The admin login credentials should be set as HR0001 with a secure password. You should show proof that you applied security protocols in your documentation.

The main screen should feature the following options:

1. Login  
2. User ID and Password Entry  
3. User Type Selection (Admin or Employee)  
4. Exit Program

Once a user has successfully logged in:

- For Admin users:  
    - Employee demographics access  
    - Payroll information access / Calculate payroll  
    - Adding, editing, and deleting options available  
    - Employee search function  
    - Reporting  
    - Application information (version number)

- For Employee users:  
    - Hours worked entry functionality  
    - PTO (personal time off) option  
    - Paycheck calculation feature

As the project progresses, new steps and updates will be integrated into each module, enhancing, and refining the plan based on knowledge gained from previous and current courses.

## Employee Screen

* Only accessible by the admin login.
* Adding, editing, or deleting an employee record
* Fields that are required and should apply appropriate validation.
  + Employee ID
  + Department, Job Title
  + First Name, Last Name, Sur Name
  + Status (active or terminated)
  + Date of Birth (must be at least 18 years of age)
  + Gender (Male or Female)
  + Pay type (Salary or Hourly)
  + Company email
  + Address Line 1, Address Line 2
  + City, State, or Zip
  + Employee picture when available

## Salary Screen

* Only accessible by the admin login.
* Current information should be displayed on the screen to support any salary.
  + Department
  + Job Type Title
  + First Name and Last Name
  + Status
  + Date Hire
  + Salary Type
  + Base Salary
  + Medical (Single or Family Coverage)
  + # of Dependents

Make sure you include the appropriate validations and checks. Items listed are the minimum validations.

## Employee Time Entry Screen

* Add by the employee.
* Edit until the payroll has been submitted.
* Admin - can adjust based on issues with previous payrolls.
* If the employee's pay is salary,
  + The only entry will be to add PTO. Otherwise, they should automatically be paid 8 hours on Monday or Friday.
* If the employee's pay is hourly,
  + The employee should be able to enter the total number for the day.
  + the system should calculate overtime based on an 8-hour-a-day (anything over 8 hours should pay time and a half.
  + The system should be able to collect hours worked for 7 days (anytime on Saturday should pay time and a half.
* Medical is calculated at $50 for single coverage and $100 for family coverage.
* The employee is given a $45 stipend for each dependent.
* The screen should show the employee's medical, dependent stipend, taxes for state, federal, Medicare, and social security deduction amounts for both the employee and the employer.
* State tax, IN 3.15%
* Federal tax Employee 7.65%, Employer 7.65%
* Social Security tax Employee 6.2%, Employer 6.2%
* Medicare Employee 1.45%, Employer 1.45%

## Admin Options and Calculating Payroll

* Only accessible by the admin login
* Calculate the payroll.
  + Lock the work entry so there are no updates after the calculated payroll has been selected.
  + Calculate the gross payroll.
  + Calculate the net payroll.
  + Create a report for HR to sign off.
  + Create a file for the payroll department to see to the printer after sign-off.

*Hint: all deductions should be on a pretax basis, i.e., the medical should be deducted before calculating state, federal, or other taxes.*

Data Structures

## Data structures are vital for our operations and require solid integration between interfaces and databases. To facilitate a streamlined and effective payroll system, a reliable database containing comprehensive information on at least twelve employees is necessary. Your plan should carefully detail the structure and organization of the database to guarantee optimal functionality. The program should include arrays or lists for managing data entry, insertion, and deletion, demonstrating your proficiency in the techniques covered in the course. Showcase your dedication and skills as you develop this application.

## Your final submission should include:

Your final submission is expected to include all the components reviewed throughout this course and this document. All materials should be stored on your GitHub account neatly categorized and access should be provided to your instructor for evaluation and grading purposes. The project accounts for 50% of your grade in this course and should serve as a comprehensive portfolio that showcases your capabilities.

## Final Project Grading

The final project grade will be determined by assessing multiple components, strongly focusing on creating a functional application using the JAVA programming language. (500 points)

* Three hundred points will be awarded for meeting these criteria. Upon submission, the application will be evaluated based on adherence to documented requirements, successful execution and delivery of the final payroll file and report, and inclusion of the JAVA application, source code, and databases.
* One hundred points for the plan for the project, including the documentation of how you applied algorithms, programming standards, use of standard libraries, and security standards used.
* Fifty points will be awarded for successfully completing test cases and documenting their execution.
* Twenty-five points for the UML document depicting the actors’ use of the application.
* Twenty-five points for your user documentation and how the materials were stored on your GitHub account.