CSc3350 Software Development
Group Team Project
Fall 2024

Data Devs

Company Z Employee Management System

Software Design Document

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Date: (04/28/2024)

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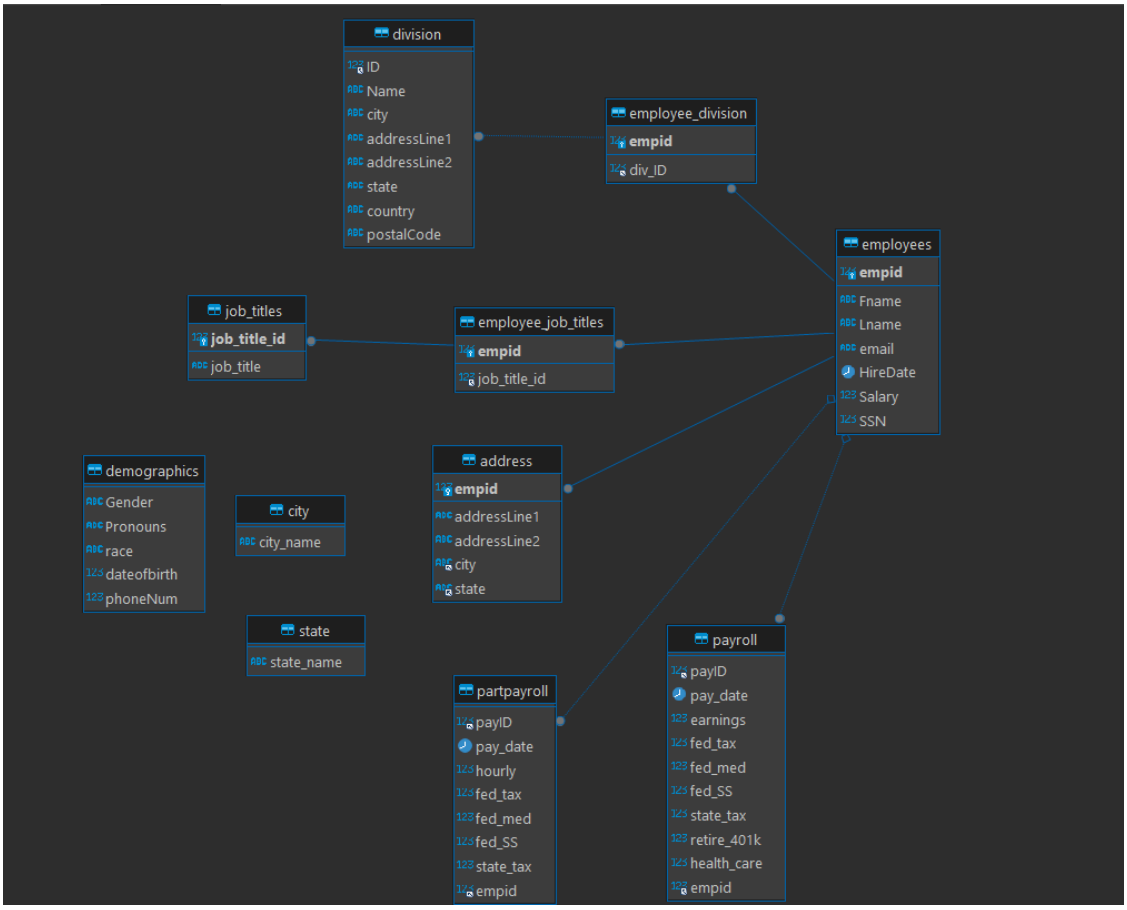
1.0 INTRODUCTION

1.1 Purpose

This document outlines the architecture and design of Company Z's Employee Management System through several diagrams and test cases. The intended audience is for Company Z employees in charge of managing their employee's information. The Employee Management System allows users to edit by updating, editing, or deleting employee information and to bring up reports via search or pre-set report commands.

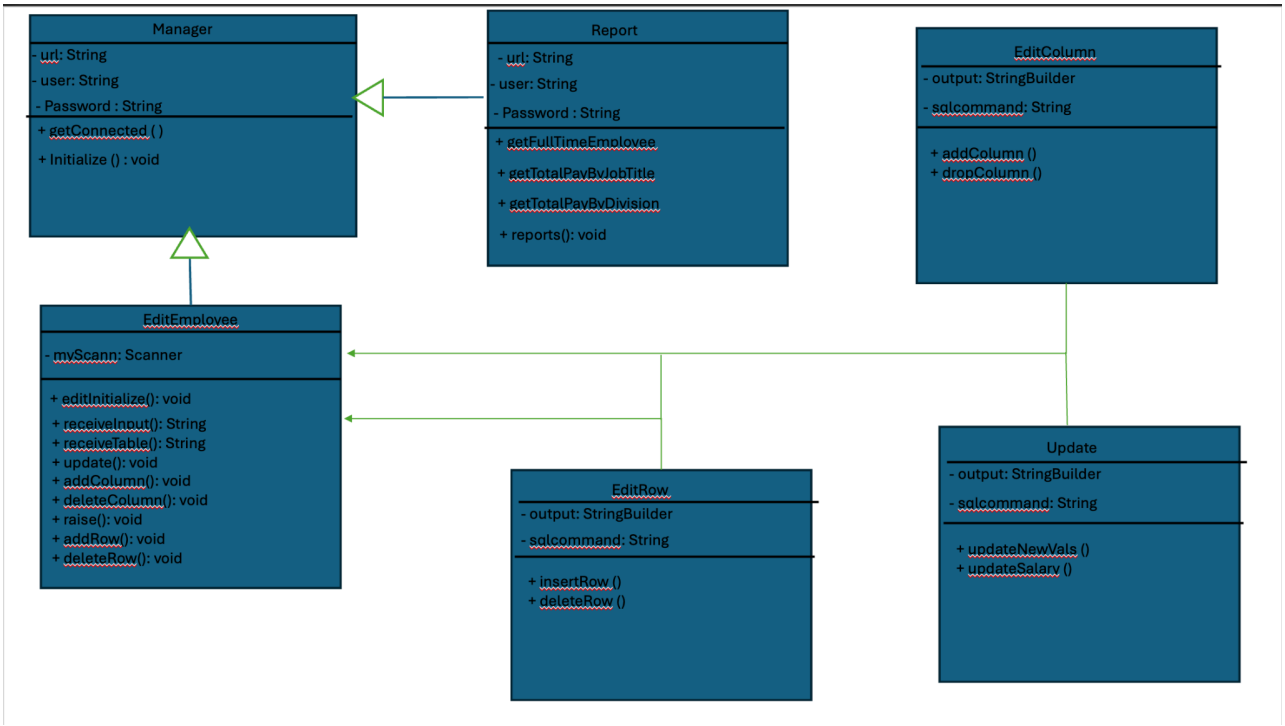
2.0 DATABASE SCHEMA DIAGRAM

a) Use your existing employeeData (Lab7) tables and create additional tables:
   i) Address of employee
   ii) Person's demographic items: (Gender, pronouns, identified race, DOB, SSN, etc.)
b) Modify current payroll to have health cost of 0.002% of base salary
c) Create a part-time employee payroll table to track hourly wage and taxes, but no 401K or health care cost



3.0 JAVA CLASS DIAGRAM

a) Add new java classes to gather (get inputs) and store this employee information in a dynamic data structure (we used ArrayList<> in Lab5 for students)
b) A new superclass for 'general-employee' and new classes for full-time and part-time (full time employees get 401K and slight amount for health care: 0.002% of salary)
c) Or you can get fancy and create abstract classes and super classes
d) Other classes, interfaces, abstract classes as you see needed



4.0 TEST CASES

A) Test Case: Update Employee Data

Usage Story:

As a user of the Company Z Management System, I want to efficiently update employee data to maintain database accuracy.

Pass Test Case:

Usage Scenario:

1. User selects the option to update existing information.
2. User chooses the "employees" table.

3. User specifies the "Fname" column to update.
4. User provides the new value "John" for the "Fname" column.
5. User sets the row condition "empid = 1".

Input:

- System prompts user: "What would you like to do? To edit your database, type 'e', and to search or bring up reports, type 'r'. Press 'q' to quit."
- User enters: "e"
- System prompts user: "How would you like to edit your database? Type 'u' for update existing information, 'ac' for adding a column, 'dc' for deleting a column, 'ar' for adding a row, 'dr' for deleting a row, 'r' for giving employee raises, and 'q' at any time to go back."
- User enters: "u"
- System prompts user: "What table would you like to update?"
- User enters: "employees"
- System prompts user: "What column(s) would you like to update? Separate column names with spaces."
- User enters: "Fname"
- System prompts user: "What row value(s) would you like set your column(s) to? Separate names with spaces and surround non-numeric values with single quotes."
- User enters: "John"
- System prompts user: "What row conditions would you like to set? Press enter to apply to all rows."
- User enters: "empid = 1"

Output:

- System outputs: "Updated successfully! Press 'm' to return to the edit menu or 'q' to quit."

Fail Test Case:

Usage Scenario:

1. User selects the option to update existing information.
2. User chooses the "employees" table.
3. User specifies the misspelled "Lnameedsf" column to update.
4. User provides the new value "John" for the misspelled "Lnameedsf" column.
5. User sets the row condition "empid = 1".

Input:

- System prompts user: "What would you like to do? To edit your database, type 'e', and to search or bring up reports, type 'r'. Press 'q' to quit."
- User enters: "e"
- System prompts user: "How would you like to edit your database? Type 'u' for update existing information, 'ac' for adding a column, 'dc' for deleting a column, 'ar' for adding a row, 'dr' for deleting a row, 'r' for giving employee raises, and 'q' at any time to go back."
- User enters: "u"
- System prompts user: "What table would you like to update?"
- User enters: "employees"
- System prompts user: "What column(s) would you like to update? Separate column names with spaces."
- User enters: "Lnameedsf"
- System prompts user: "What row value(s) would you like set your column(s) to? Separate names with spaces and surround non-numeric values with single quotes."

- User enters: "John"
- System prompts user: "What row conditions would you like to set? Press enter to apply to all rows."
- User enters: "empid = 1"

Output:

- System outputs: "ERROR: Unknown column 'Lnameedsf' in 'field list'"

B) Test Case: Search and Generate Employee Reports

Usage Story:

As a user of the Company Z Management System, I want to generate reports on employee information and pay statements to gain insights into payroll data.

Pass Test Case:

Usage Scenario:

1. User selects the option to search or bring up reports.
2. User chooses the option to view full-time employee information with pay statement history.
3. User enters the employee name "Snoopy".
4. System successfully generates the report, displaying all relevant employee records along with pay statement history.

Input:

- System prompts user: "What would you like to do? To edit your database, type 'e', and to search or bring up reports, type 'r'. Press 'q' to quit."
- User enters: "r"
- System prompts user: "Enter your choice:
  - 1) Full-time employee information with pay statement history
  - 2) Total pay for month by job title
  - 3) Total pay for month by division"
- User enters: "1"
- System prompts user: "Enter Employee Name or EMPID or SSN:"
- User enters: "Snoopy"

Output:

- System displays all employee records along with pay statement history:

First Name	Last Name	Email	Job Title	EmpID	Hiredate	Salary	SSN	PAY DATE	Earnings	PAY ID
Employee Data]										

Fail Test Case:

Usage Scenario:

1. User selects the option to search or bring up reports.
2. User chooses the option to view full-time employee information with pay statement history.
3. User enters incorrect or unsupported information for the employee search.

4. System fails to generate the report due to invalid input.

Input:

- System prompts user: "What would you like to do? To edit your database, type 'e', and to search or bring up reports, type 'r'. Press 'q' to quit."
- User enters: "r"
- System prompts user: "Enter your choice:
    - 1) Full-time employee information with pay statement history
    - 2) Total pay for month by job title
    - 3) Total pay for month by division"
- User enters: "1"
- System prompts user: "Enter Employee Name or EMPID or SSN:"
- User enters: "12345"

Output:

- System outputs: "ERROR: Employee not found. Please enter a valid employee name, EMPID, or SSN."

C) Test Case: Update salary and hourly wages for all employees less than a particular amount

Usage Story:

As a user of the Company Z Management System, I want to provide raises to full-time employees within a specified salary range to ensure fair compensation and motivation.

Pass Test Case:

Usage Scenario:

1. User selects the option to give employee raises.
2. User specifies full-time employees for the raise application.
3. User sets the salary range for applying the raise.
4. User provides the percentage of the raise.
5. System successfully applies the raise to full-time employees within the specified salary range.

Input:

- System prompts user: "How would you like to edit your database? Type 'u' for update existing information, 'ac' for adding a column, 'dc' for deleting a column, 'ar' for adding a row, 'dr' for deleting a row, 'r' for giving employee raises, and 'q' at any time to go back."
- User enters: "r"
- System prompts user: "Would you like to apply the raise for the full-time or part-time employees? Type 'f' for full-time and 'p' for part time."
- User enters: "f"
- System prompts user: "What range will the raise be applied to? Enter the lower number"
- User enters: "10000"
- System prompts user: "Now enter the higher number"
- User enters: "25000"
- System prompts user: "What percentage is the raise?"
- User enters: "8"

Output:

- System outputs: “Updated successfully! Press 'm' to return to the edit menu or 'q' to quit."

Fail Test Case:

Usage Scenario:

1. User selects the option to give employee raises.
2. User specifies full-time employees for the raise application.
3. User sets the salary range for applying the raise.
4. User provides an invalid percentage format for the raise, including alphabetical characters.
5. System fails to apply the raise due to the invalid percentage input format.

Input:

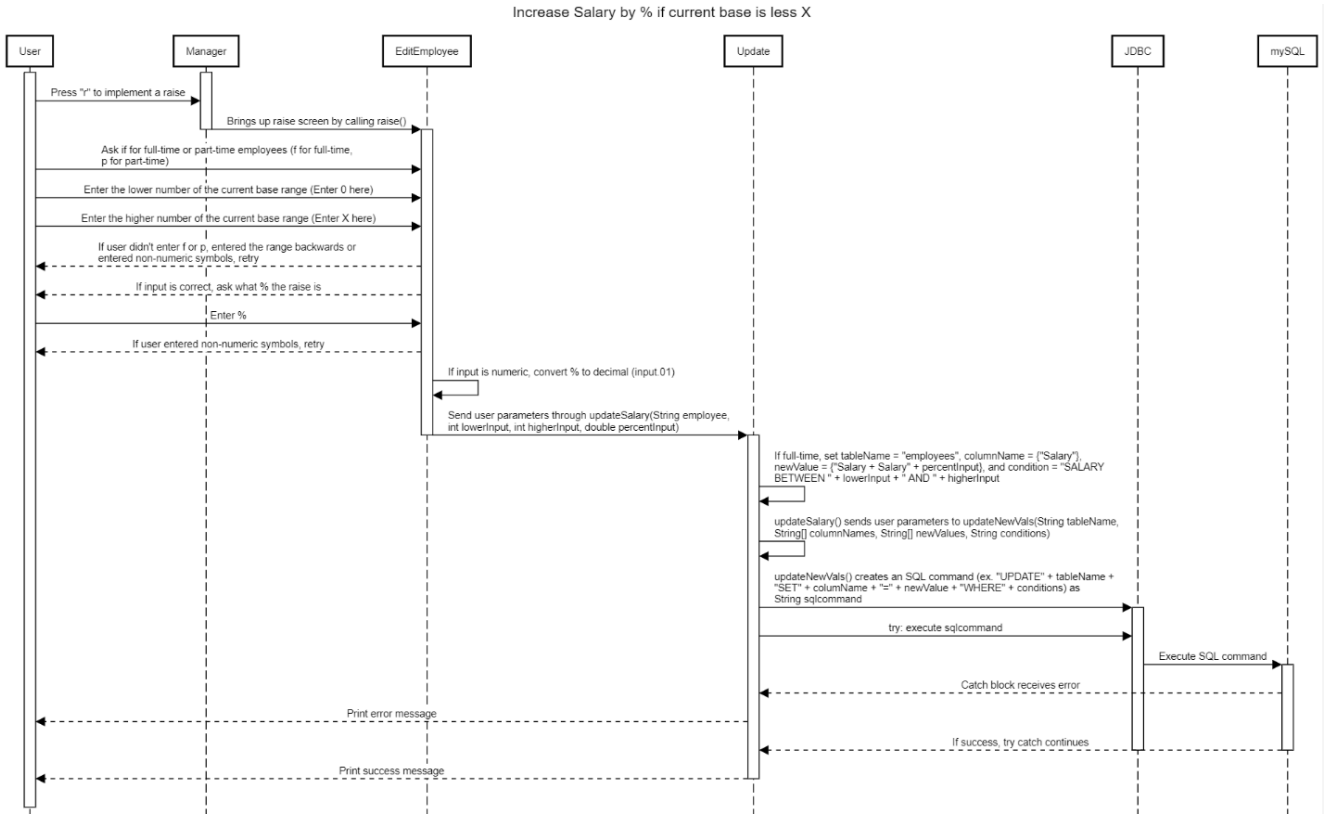
- System prompts user: "How would you like to edit your database? Type 'u' for update existing information, 'ac' for adding a column, 'dc' for deleting a column, 'ar' for adding a row, 'dr' for deleting a row, 'r' for giving employee raises, and 'q' at any time to go back."
- User enters: "r"
- System prompts user: "Would you like to apply the raise for the full-time or part-time employees? Type 'f' for full-time and 'p' for part time."
- User enters: "f"
- System prompts user: "What range will the raise be applied to? Enter the lower number"
- User enters: "10000"
- System prompts user: "Now enter the higher number"
- User enters: "25000"
- System prompts user: "What percentage is the raise?"
- User enters: "%abc"

Output:

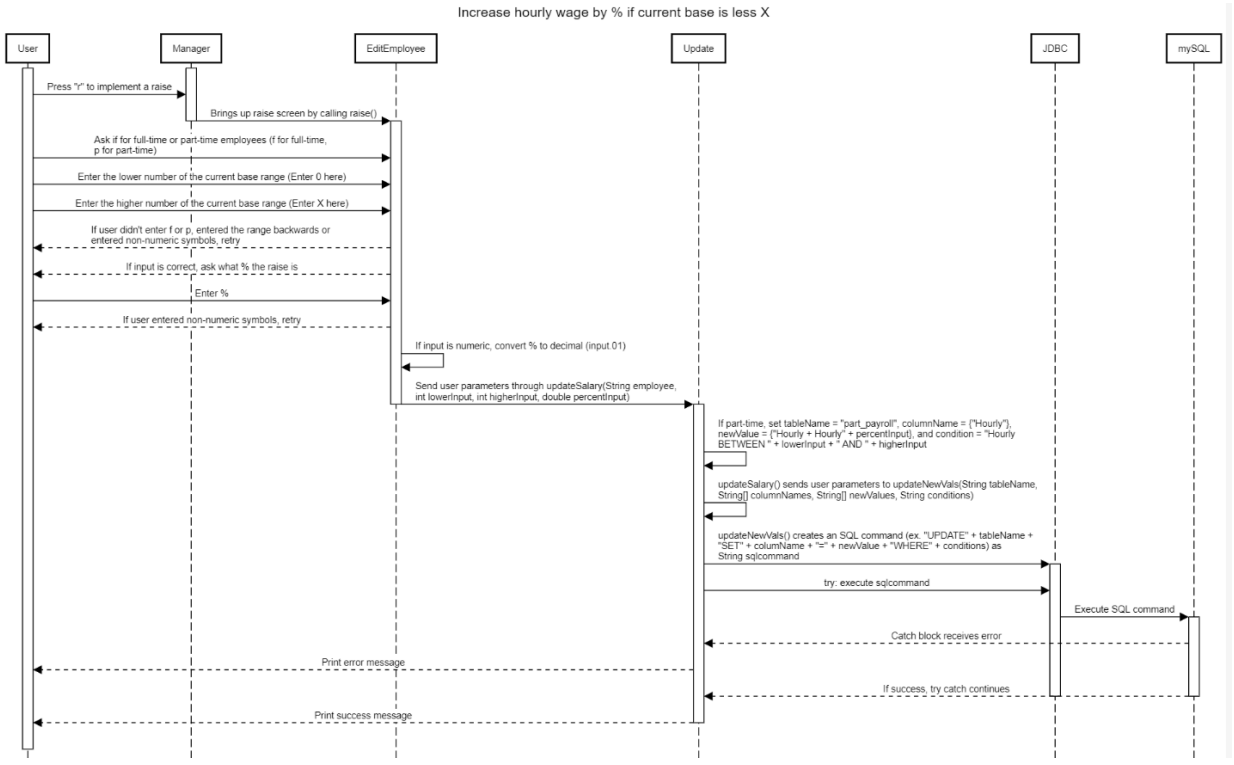
- System outputs: "ERROR: Please enter a valid integer with no alphabetical inputs."

5.0 SEQUENCE DIAGRAMS

a) Increase salary by % if current base is less than a given amount



b) Increase hourly wage by % if current hourly amount is less than a given amount



c) Add new employee to employeeData database

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