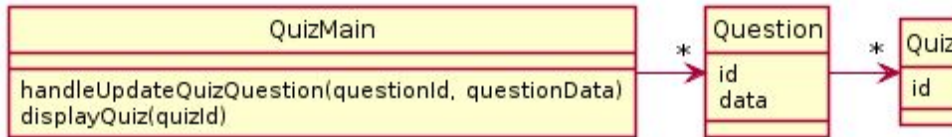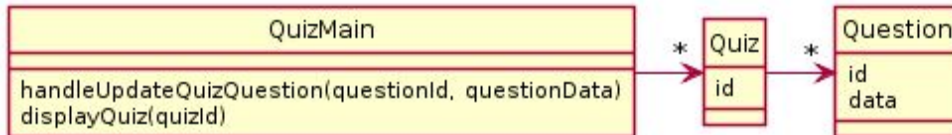**Design Problems, Part 1   Name: _____ CM: _____**

In an online quiz system, teachers write quizzes and students take them. The same quiz question can appear in multiple quizzes. If a teacher updates a quiz question, it's important that all quizzes reflect that change.

Solution A

QuizMain
handleUpdateQuizQuestion(questionId, questionData) displayQuiz(quizId)

* → | Question |
| --- |
| id
data |

* → | Quiz |
| --- |
| id |

Solution B

QuizMain
handleUpdateQuizQuestion(questionId, questionData) displayQuiz(quizId)

* → | Quiz |
| --- |
| id |

* → | Question |
| --- |
| id
data |

Both of these designs have problems. Explain the problems with each one (note the item in the OO Principles you are referring to with your problems), then propose a new design of your own that works correctly.
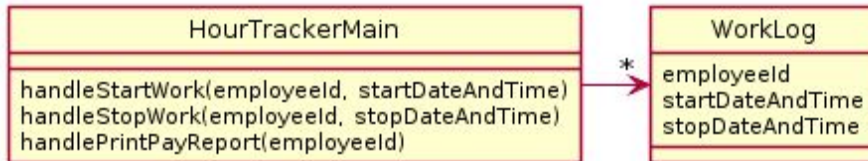
Problems With A
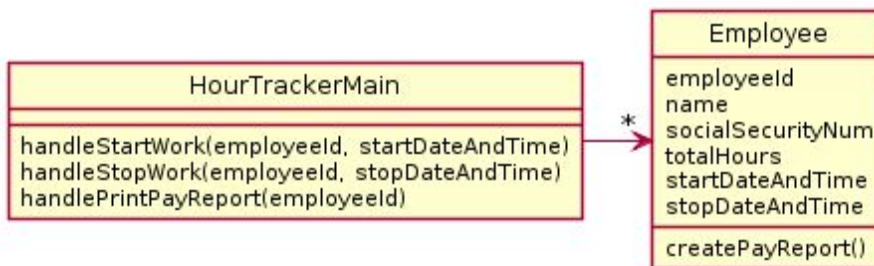
Problems With B

Solution

A system tracks employee hours at a particular company. Every time any employee starts work and stops work, the system must log it so the employee can be paid correctly and so management knows who was working when. The system must also print out a weekly pay report for each employee which includes total hours, the employee's name, social security number, and employee id.

Solution A

HourTrackerMain
handleStartWork(employeeId, startDateAndTime) handleStopWork(employeeId, stopDateAndTime) handlePrintPayReport(employeeId)

* →

WorkLog
employeeId startDateAndTime stopDateAndTime

Solution B

Employee
employeeId name socialSecurityNum totalHours startDateAndTime stopDateAndTime
createPayReport()

HourTrackerMain
handleStartWork(employeeId, startDateAndTime) handleStopWork(employeeId, stopDateAndTime) handlePrintPayReport(employeeId)

* →

Both of these designs have problems. Explain the problems with each one (note the item in the OO Principles you are referring to with your problems), then propose a new design of your own that works correctly.

Problems with A

Problems with B

Solution: