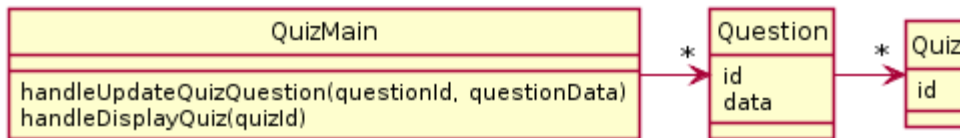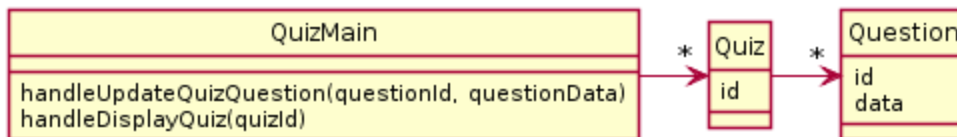**Design Problems, Part 1   Name: _____ CM: _____**

Online quizzer: Is an online quiz application for teachers who write quizzes and students who take them. The same quiz question can appear in multiple quizzes. If a teacher updates a quiz question, it is important that all quizzes immediately reflect that change.

Solution A

QuizMain
handleUpdateQuizQuestion(questionId, questionData)
handleDisplayQuiz(quizId)

* → | Question |
| --- |
| id |
| data |

* → | Quiz |
| --- |
| id |

Solution B

QuizMain
handleUpdateQuizQuestion(questionId, questionData)
handleDisplayQuiz(quizId)

* → | Quiz |
| --- |
| id |

* → | Question |
| --- |
| id |
| data |

Both of these designs have the worst kind of problem: **they don't function**.

Please identify the problems with each solution. You must provide two items for each solution: (1) The Principle Number for the problem (Principle 1a, 1b, or 1c); and (2) an explanation of how the solution violates that principle. Finally, you must provide a UML diagram that illustrates a new design of your own creation that works correctly.
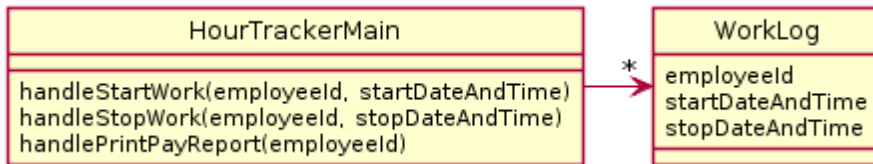
Problems with A
1) Principle:
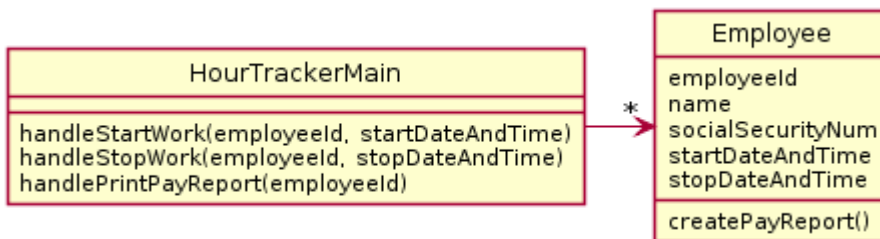2) Explanation:

Problems with B
1) Principle:
2) Explanation:

UML of Your Solution

Hour tracker: Is an application for tracking employee workhours at a particular company. Every time any employee starts and stops work, the system must log the start/stop time so that the employee will be paid correctly and so management knows who was working when. The app 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

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

*

Employee
employeeId name socialSecurityNum startDateAndTime stopDateAndTime
createPayReport()

Each of these 2 proposed solutions has a problem with functionality. One of them also violates an additional design principle that has discussed in class. Identify by number and explain the problems with each one, then propose a new design of your own that works correctly.

Problems with A
   1) Principle:
   2) Explanation:

Problems with B
   1) Principle:
   2) Explanation:

UML of Your Solution