Project

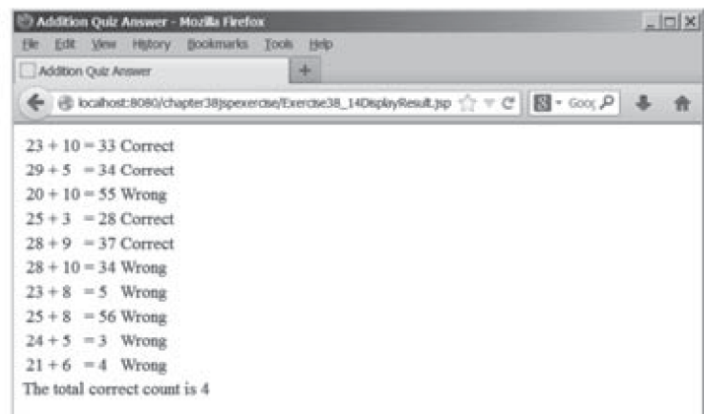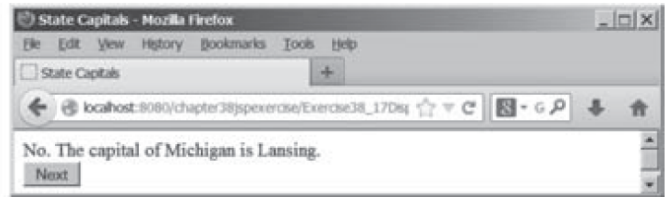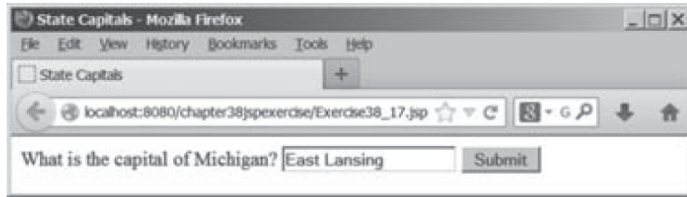**This is an individual assignment. Group work is not allowed.**

Create your solution as an IntelliJ project. Submit your zipped project and a short (5 minutes max) video showing off your project. You can submit the link in Blackboard to your video in YouTube. There a two problems #1 uses JSP and #2 uses parallel programming.

1. Create a JSP application for an elementary age child that helps with basic skills. When the main web page is launch it should prompt the user to select:

    a) Addition Quiz
    b) Subtraction Quiz
    c) Multiplication Quiz
    d) The Squares from 1 thru 10 quiz
    e) State Capital Quiz (The javabook database has the table statecapital. There are only 5 entries. Use this table as a proof of concept or add more states/capitals to make it interesting.) You must use the javabook statecapital database for this page.

    Have your application display the solution and whether correct or incorrect. If all the answers were correct, display a visual "trophy" or reward. Sample screen shots:

2. Parallel Programming: Declare a two dimensional array of integers that is 10000x10000. Populate each cell of the two-dimensional array with a random number, between 1 and 9000000, inclusively. Either use ThreadPool or ForkJoinPool in your solution. If you choose ThreadPool, use a cached pool. s

   Use parallel programming to discover and then display:
   a) the largest value in the two-dimensional array
   b) the smallest value in the two-dimensional array
   c) the sum of all the values in the two-dimensional array. (Don't forget about class BigInteger if your sum should be bigger than what a long can hold. (similar to the problem you worked on in HW2).
   d) Also, solve the problem sequentially, time both solutions and display results. This is similar to ParallelMergeSort.java, where we did both parallel and sequential solutions.

   Hint: One possible approach would be to divide, or fork, problem by row of the array.