IDS 494: Mobile App Development - Spring 2014

Homework Assignment #3

Assigned Date: February 27, 2014

Due Date: submit a compressed (zip) file of the assignment's project folder, including its files and subfolders, via Blackboard by 11:59pm on March 13, 2014. There will be a penalty of 20 points per day for turning in the assignment after the due date. I will not accept your submission after March 16, 2014.

Problem Statement

Read Chapter 6 (Flag Quiz Game App) and test run the app. Test the app by taking the 10-question quiz at least once. Using the menu, configure the game so that the quiz considers only the flags from countries of certain regions. Also, configure the game so that for each question, there are six (or nine) possible choice buttons. Trace the app's code and understand how the app works.

For this assignment, inspired by the Flag Quiz Game app, you are to create a Simple Arithmetic Game app intended for children who want to learn simple addition, subtraction, multiplication, and division. The general requirements for this app are as follows:

1. Similar to graphical user interface of the Flag Quiz Game app, the graphical user interface for this Simple Arithmetic Game app is as follows:
    a. Instead of displaying a flag, the Simple Arithmetic Game app displays a simple arithmetic problem. For example, using a TextView, display: 23 + 8 = ?
    b. Instead of displaying a country name, each choice button displays a number that represents a possible answer for the current question. Like in the Flag Quiz Game app, the button that carries the correct answer should be selected at random.
    c. Similar to the Flag Quiz Game app, if a user selects an incorrect answer, the app displays an incorrect message at the bottom of the screen and then disables the selected button. If a user selects a correct answer, the app displays a correct message at the bottom of the screen, confirming that it was the correct answer. After a delay of 500 milliseconds, the app then displays the next question.
    d. Each quiz has 10 questions. After a quiz is completed, ask the user whether or not s/he wants to continue with the next quiz.
2. Similar to the Flag Quiz Game app, using a menu, the user of the Simple Arithmetic Game app should be able to configure the number of choice buttons to 3, 6, or 9. Moreover, the user should be able to configure and select only one of these five possible options: Addition Problems, Subtraction Problems, Multiplication Problems, Division Problems, or a combination of Addition, Subtraction, Multiplication, and Division Problems.
3. Since the intended users of this app are children who want to learn simple arithmetic problems, the level of difficulty for this app should be as follows:
    a. Each question should contain only two operands (numbers) and one operator. For example, the following question is valid: 9 x 5 = ? However, the following is invalid: 9 x 5 x 2 = ?
    b. For each question in the addition and subtraction problems, each operand should be no more than 100.
    c. For each question in the multiplication problems, each operand should be no more than 25.
    d. For each question in the division problems, each correct answer in the division problems should be an integer (i.e., no fractions). Thus, 50 / 5 = ? is a valid question; however, 50 / 3 = ? is an invalid question. The numerator should be at most 625. Moreover, you might want to use a multiplication first and then display the answer of this multiplication as a numerator. For example, if you want to display 112 / 4 = ? as a question, your program would first perform the following calculation: 28 * 4 = 112. Your program then shows 112 as a numerator, divided by one of the two operands in this multiplication. In this case, your program randomly picks 4 to be displayed as the denominator.
4. Similar to the Flag Quiz Game app, the Simple Arithmetic Game app shows the relevant statistics during the quiz and after the quiz completion.