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| **COMP 2120 – Computer Programming II**  Seminar #4 |

## Due Date: Beginning of your lab on October 9, 2012

**Problem:**

The results of a multiple question true-false exam are recorded in 2 arrays **in a client file**: a 1D array that holds the student numbers, and a 2D ***char*** array that holds the students answers to the exam. See the end of this document for an example.

A **class definition file** is to be written that will analyze this data in two ways:

1. **Determine a mark for each student.** Display the student number and the mark obtained in a neat 2 column display, with appropriate headings. Be sure to indicate what the mark is out of (ie 5 or 10 or whatever is appropriate). Create an output similar to this:

Student # Mark (out of ?) (put the appropriate number here)

1080 6

Etc.

1. **Determine the number of correct and incorrect answers for each question.** The output you produce should con­sist of the question number, the correct answer, number of correct re­sponses, number of incorrect responses. For example

Question Correct Number Number

Number Answer Correct Incorrect

1 T 3 7

etc

NOTES:

1. Write a class definition file that contains a series of methods to do all the required analysis (remember: one method = one task/service).
2. The class definition file will also contain instance variables for the data being analyzed (that is, an array containing the student numbers and a second array that holds the correct answers and the students’ answers. See #5 below). These instance variables will be initialized using a constructor.
3. Your application program should analyze at least 3 different true-false tests. Each test will have a different number of students and a different number of questions, and will be part of a different object (eg comp1130, comp1230, and comp2120 objects). (This is to verify that your class definition will work with any data set) One of the data sets is given below. You create the other 2 data sets.
4. The data sets described in #3 above should be stored in arrays, **in the application program**, which will be passed to a newly created object through the constructor (as mentioned earlier). The data sets may be created using initializer lists.
5. **The first row (row 0) of the true-false test data array will contain the answer key** (the correct answers to the test). The student’s answers start in row 1. (You may choose to put a 0 in row 0 of the id numbers array, so that the data matches up correctly).

Use the following sample data: (this must be one of your data sets)

FTFFTFFTFT ← the correct answers to the test (in first row of 2D array)

1080 FTTFTFTTFT ← the first student’s id number and answers to the test

1340 FTFTFTTTFF ← the second student’s id number and answers to the test

1341 FTTFTTTTTT

1401 TTFFTFFTTT

1462 TTFTTTFFTF

1463 TTTTTTTTTT

1464 FTFFFTFTFT

1512 TFTFTFTFTF

1618 TTTFFTTFTF

1619 FFFFFFFFFF

1687 TFTTFTTFTF

1700 FTFFTTFFFT

1712 FTFTFTFTFT

# 1837 TFTFTTFTFT

↑

these id numbers are stored in a 1D array.

**Assignment Submission:**

Submit a print-out of the class definition file, the client program’s source code and the output.

**A Note About Data Testing**

Choose data sets that test different scenarios. For example, the data set I supplied has more students than questions. You should create a data set that reverses that, ie has less students than questions, and possibly one with equal numbers of students and questions. Extreme case(s) would be only 1 student, and/or only one question, and that would be worth testing just to verify that your program works for that situation.

The output generated by the driver files should contain sufficient descriptions so that I can **EASILY** understand what output has been generated. **Marks will be lost if this is not the case.**

Your class files and client files should contain enough comments that I can understand what you are doing with your code. **If this is not the case you will lose marks.**

Assignment due date is Tuesday October 9, by the BEGINNING of the seminar. **If your assignment is not handed in by the beginning of the seminar, it is late and will receive a mark of ZERO.**

**Here’s the above data reformatted into initialization lists: Note that JCreator may generate error messages about the single quote (‘) when you copy and paste this data because Word and JCreator may use different codes for the single quote. If this happens use the Edit → Find and Replace menu in JCreator to fix the problem.**

{ {'F','T','F','F','T','F','F','T','F','T'},

{'F','T','T','F','T','F','T','T','F','T'},

{'F','T','F','T','F','T','T','T','F','F'},

{'F','T','T','F','T','T','T','T','T','T'},

{'T','T','F','F','T','F','F','T','T','T'},

{'T','T','F','T','T','T','F','F','T','F'},

{'T','T','T','T','T','T','T','T','T','T'},

{'F','T','F','F','F','T','F','T','F','T'},

{'T','F','T','F','T','F','T','F','T','F'},

{'T','T','T','F','F','T','T','F','T','F'},

{'F','F','F','F','F','F','F','F','F','F'},

{'T','F','T','T','F','T','T','F','T','F'},

{'F','T','F','F','T','T','F','F','F','T'},

{'F','T','F','T','F','T','F','T','F','T'},

{'T','F','T','F','T','T','F','T','F','T'} }

{ 1080, 1340, 1341, 1401, 1462, 1463, 1464, 1512, 1618, 1619, 1687, 1700, 1712, 1837 }