

ECE 209 Sections 602, 603, and 604

Program 2

Due March 19, 2008

In this assignment you will complete a program to give a “quiz” on hexadecimal addition. The program will be called `quizzer`. You will run it by giving with a single argument, for example:

```
quizzer 15
```

Your program will call a provided routine to generate, in this case, 15 hexadecimal addition problems. This should be presented as follows:

```
8 + A =
```

The quizzed party (generally you) will be expected to answer the problems in hexadecimal and will be told if the answer is correct or incorrect. If any problems are missed, there will be another round of questions in which the missed problems are repeated. This continues to all problems are correctly answered. A sample run of the program, where the quizzed party's answers are shown in bold, is below:

```
bash-3.1$ quizzer 10
A + D = 17
Correct!
1 + C = d
Correct!
E + 9 = 17
Correct!
D + C = 19
Correct!
1 + F = 10
Correct!
3 + D = 12
Incorrect!
7 + 4 = A
Incorrect!
A + 9 = 19
Incorrect!
3 + 0 = 3
Correct!
2 + 4 = 6
Correct!
In this round: 10 attempted and 7 are correct

3 + D = 11
Incorrect!
7 + 4 = B
Correct!
A + 9 = 13
Correct!
In this round: 3 attempted and 2 are correct

3 + D = 10
Correct!
In this round: 1 attempted and 1 are correct
```

Start this assignment by copying the five files from the directory

`/afs/eos.ncsu.edu/lockers/workspace/ece/ece209/yoursection/common/prog2` into a directory called `prog2` that you create in your locker. (If you wish, you may also use `sftp` to copy these files to your “home” system.)

The five files that now have are (1) `Makefile`; (2) `quizzer.c`, a “driver” routine; (3) `rv255.c`, the routine that generates the random questions; (4), `rv255.h`, an include file with a single prototype; and (5), `hexQuiz.h`, another single-prototype include. You **must** not change any of these five files in writing this assignment. You should add only file, `hexQuiz.c`, which gives the hexadecimal quiz.

In `hexQuiz.c` you must follow the prototype defined in `hexQuiz.h`. You must implement a single routine `hexQuiz` which is called from `quizzer`. The single argument received by `hexQuiz` will be the number of hexadecimal addition tests that will be given to the quizzed party.

To generate the “random” tests, `hexQuiz` **must** call `rv255`. The prototype file `rv255.h` contains the information needed to call `rv255`. You must allocate (with `malloc`) a vector of integers before calling `rv255`. During the call, random integers between 0 and 255 will be placed in your vector. These random integers will have eight useful bits. Break them down into two four-bit hexadecimal digits to generate the questions for your quiz. For example, if the random integer is 209 (or `0xD1`), you should ask what `D + 1` equals. You must use `rv255` in generating your questions. Use of an externally defined routine is an important part of this assignment.

You only need to turn in your `hexQuiz.c` file for this assignment. You can leave `hexQuiz.c` in your locker or submit it via WolfWare.

You will need a few days to complete this assignment. I will regularly check the lockers to see what progress you are making. If I don't see anything for several days, I will certainly remind you of your delayed start should you ask a last-minute question about the assignment.