MATLAB Programming NCTU Fall 2017 Assignment#2 due 2017/11/16

In this assignment, you will try a little more on string processing and the use of local functions. The purpose is to process a string that represents operations (additions and subtractions) on fractions and/or integers. An example string is:

```
1/5 + 2/5 + 4 - 3/2 - 5 + 1/2
```

The overall output should be a string of the resulting fraction. For the string above, the result is `-7/5`.

Consider carefully how you parse and store these numbers. A simple approach is to represent each fraction as a two-element vector. An integer is just a fraction whose denominator is one.

Your program should have a "main" function that takes this string as input. However, you should put all the actual processing in separate local functions. The "main" function then just calls these local functions to finish the task. There should be at least these local functions:

- **`parse`**: Process the string and output the fractions and operations in your representation.
- **`add`**: Add two fractions and output the resulting fraction (in your representation).
- **`subtract`**: Subtract one fraction from another, and output the resulting fraction (in your representation).
- **`simplify`**: Reduce a fraction to its most simplified form; for example, `12/16` should become `3/4`. You will need the **`my_gcd`** function below.
- **`my_gcd`**: Implement the Euclidean Algorithm here to compute the gcd (greatest common divisor). (Note: MATLAB now provides the functions **`gcd`** and **`lcm`**. However, for the sake of training, you are not allowed to use them or any related functions.)

Submission: Submit your code (m file) through e3. Name your file **`P2_#######.m`**, where the **`#######`** represents your student ID. There will be a three-day grace period after the due date, during which there will be a 10%/day deduction for your grade.

A "copy detection" will be applied to your submissions, and those found to have copied assignments will receive zero points for the assignment.

Your code should include sufficient comments. This will be part of the grade. Include your name and ID at the top of your code.

There will be demo session with the TAs (date/time to be announced later).