Assignment 02 – Exploring the "Run-time Execution Stack" (Due: Saturday March 5, 2016)

Part I

For this assignment you are to annotate the given document, `FactorialStackCodeAndIllustration.docx`, similarly to as shown in the file, `FactorialStack2008.pdf`. The main point here is for you to perceive the connections between the C source code, the corresponding Intel AT&T Syntax Assembly Language (32-bit architecture) source code and the output produced by the `DumpS` subprogram.

Part II

For part II of this assignment you are to develop two C source program files (similar to `FactorialFM.c` and `FactorialFR.c`) that perform the task of determining the "greatest common divisor" using the Euclidian Algorithm (as explained at https://en.wikipedia.org/wiki/Greatest_common_divisor). Thus,

$$\gcd(a, 0) = a$$
$$\gcd(a, b) = \gcd(b, a \bmod b)$$

You are to instrument these components using the given `DumpS` subprogram (file `DumpS32.s`, and produce an annotated MS Word document file, `GCDStackCodeAndIllustration.docx`, similar to the file given in Part I for these components. The following commands would be the ones employed:

```
cc –m32 GCDRM.c –S
cc –m32 GCDRF.c –S
cc –m32 GCDRM.c GCDRF.c DumpS32.s –o GCDRM
GCDRM
```

Creates the corresponding Intel AT&T Syntax Assembly Language (32-bit)

Builds the executable GCDRM from the components

The goal of this assignment is for you to gain some further first-hand experience programming in C and for you to personally recognize, appreciate and understand the role the run-time execution stack plays in the execution of programs.

You are to use the "submission form" provided for Assignment 02 on the Course Web Site (CWS) to submit your work on this assignment. Specifically, you are to submit each of the following:
- Your revised version of `FactorialStackCodeAndIllustration.docx`
- The C source code files `GCDRM.c` and `GCDRF.c`
- The MS Word document file, `GCDStackCodeAndIllustration.docx`.

This source program files you submit are expected to be appropriately and usefully commented. In particular, there must be a comment block at the beginning of `GCDRM.c` that (a) indicates that it is a solution to Assignment 2 in CMPS 250 for Spring 2016, (b) identifies the person who developed the program and is submitting it, (c) acknowledges all persons (by their full names) who collaborated with the submitter in completing this assignment (or state that you worked alone), and (d) point out any flaws or deficiencies in the program of which you are aware.

Similarly, I ask that you use the page headers and footers in MS Word to identify the document and the author.

Good luck,
P.M.J.