LAB 1

GREATEST COMMON DIVISOR

Your Mission:

Write a program in LC-3 assembly language and assemble it into LC-3 object file using an assembler. The program will be used to calculate the greatest common divisor of two positive numbers.

Details:

- Two positive 16-bit signed integers will be given in R0 and R1 register. And the output value should be put in R0.
- DO NOT access any part of memory other than x3000 – xFDFF.
- The program should be ended with HALT.
- R7 register should remain the same after the execution.

Examples:

	Before Execution	After Execution
R0	x0008	x0002
R1	x0006	x1234
R7	x2333	x2333

Scoring Criterion:

50% of score will depend on the correctness of your program. 25% of score will be scaled with the speed of your program. The last 25% is for your report.

“Speed” is calculated from the average instructions executed in several test cases. So, an AND instruction is considered as fast as an LDI instruction.

Additional Requirements:

WARNING: If you don’t comply with rule 2 - 4, the lab may be counted as an invalid work!

1. The report is recommended to contain: **I.** The space and time complexity of your algorithm. **II.** Optimizations used to speed up your program. **III.** How you handle negative and zero inputs.
2. Save your report in pdf format and name it with your student number in uppercase (e.g. PB17001001.pdf).
3. You should have the object file named “program.obj”, and the source code named “lab1.asm”.
4. Put all above in a directory named after your student number in uppercase and pack it using TAR with GZIP compression (e.g. tar cvzf PB17001001_张三_Lab1.tar.gz PB17001001/).

Better Pigeon Than Cheat!!!

WARNING: If you are found cheated in this lab, Your FINAL SCORE will be affected ENORMOUSLY!

All programs will be checked by SSDEEP (a fuzzy hashing) and some will also be checked manually.