LAB 01: A LC-3 Machine Language Program

Your Mission:

Write a program in LC-3 machine language that rotates a given value of 16-bits by 2 bits to the left and finish your REPORT.

Note that when you rotate a bit pattern n bits to the left, it is just like a left shift except that top n bits before the shift end up as the bottom n bits.

Details:

1. The initial bit pattern is in memory location **x3100**
2. The rotate amount is stored in memory location **x3101**.
3. Using those values, your program should perform the left rotation and store the result in memory location **x3102**.
4. Your program should start at memory location **x3000**.

Example:

If the memory location **x3100** contains the bit pattern **1101000100001000** and memory location **x3101** contains the value **0000000000000010** (decimal 2), then your program needs to rotate **the bit pattern** by 2 bits to the left and store the bit pattern **0100010000100011** in memory location **x3102**.

Notes and Suggestions:

1. The first line of your program must specify the memory address of the first instruction of your program.
2. The LC-3 simulator will place your program starting at that address.
3. In this programming lab assignment, your program should start at **x3000**. To do this, the first line of your programs should be the bit pattern 0011000000000000.

Additional Requirements:

If you don't comply with these requirements, the lab may be counted as an invalid work.

1. The report shall contain at least 3 parts: How do you work out the algorithm? How do you write the program? And how do you design your own test cases to ensure the program works fine?
2. Save your report in pdf format and name it such as **report.pdf**.
3. Your program must be saved in binary form and renamed to **program.bin**
4. Put all above in a directory named after your student number and pack it **(e.g. PB07210340_张海博_LAB01.zip).**