# Lab01

## Counting how many 1

**Your Job:** In this assignment, you are asked to write a program in LC-3 machine language that counts how many 1 are in the lower B bits of a given number A, and stores the output in memory.

## For Example：

Here are several examples:

| Number A | | Bit B | | Output | |
|---|---|---|---|---|---|
| 13 | in(x3100) | 3 | in(x3101) | x0002 | in(x3102) |
| 167 | in(x3100) | 6 | in(x3101) | x0004 | in(x3102) |
| 32767 | in(x3100) | 15 | in(x3101) | x000F | in(x3102) |

Your program should start at memory location **x3000**. The value of the *A* and *B* should be set **manually** in **x3100** and **x3101** respectively (Therefore, you can use LD or other instructions to load *A* and *B* from memory to registers). You may assume that *A* is a positive number ranging from **0x0001** to **0x7FFF**. Your program should store the output in **x3102**.

## Attention:

1. Your zip file should contain at least two files:
   **.bin(or .asm)** file and **report in pdf format**.
   As for the subject name, please refer to the notice on the course web page.

2. Your report should contain at least four parts:
   the purpose, principles, procedure, and result.
   Well-written will bring you a high score.