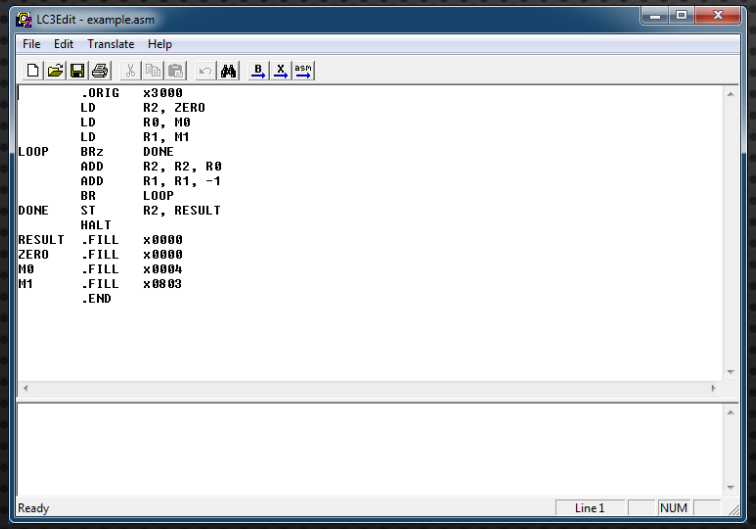
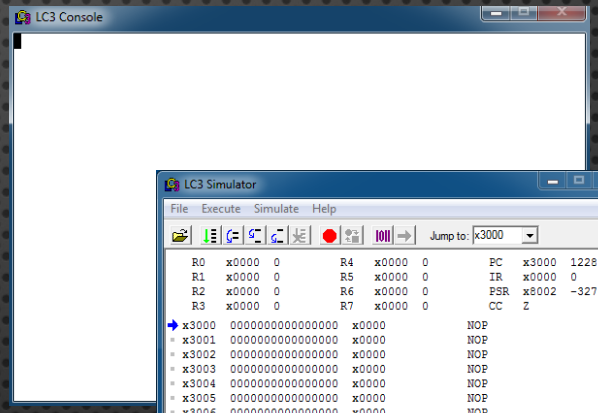
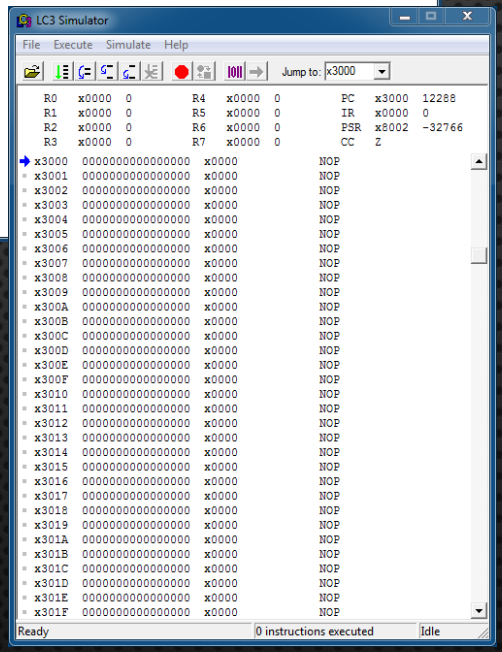
TUTORIAL THREE

LC-3

LC-3 SIMULATOR & LC-3 EDITOR

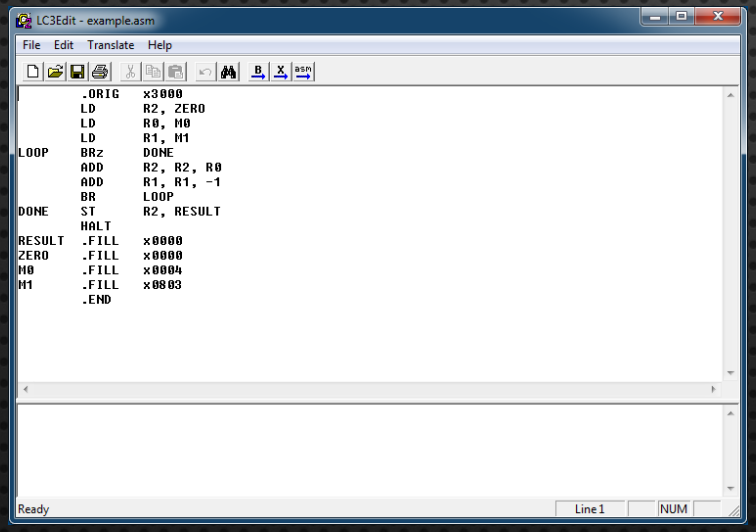


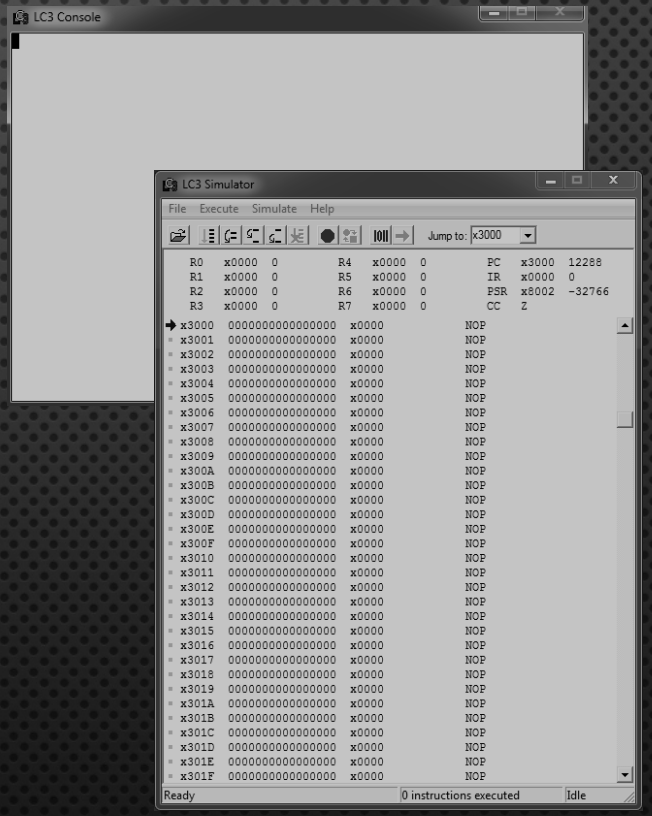




LC-3 SIMULATOR & LC-3 EDITOR

Editor





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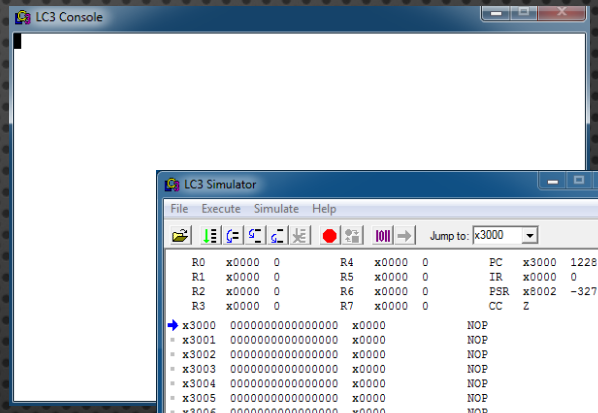
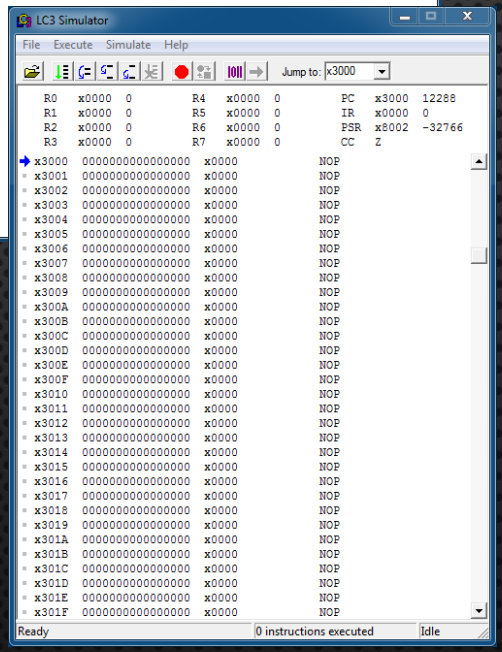


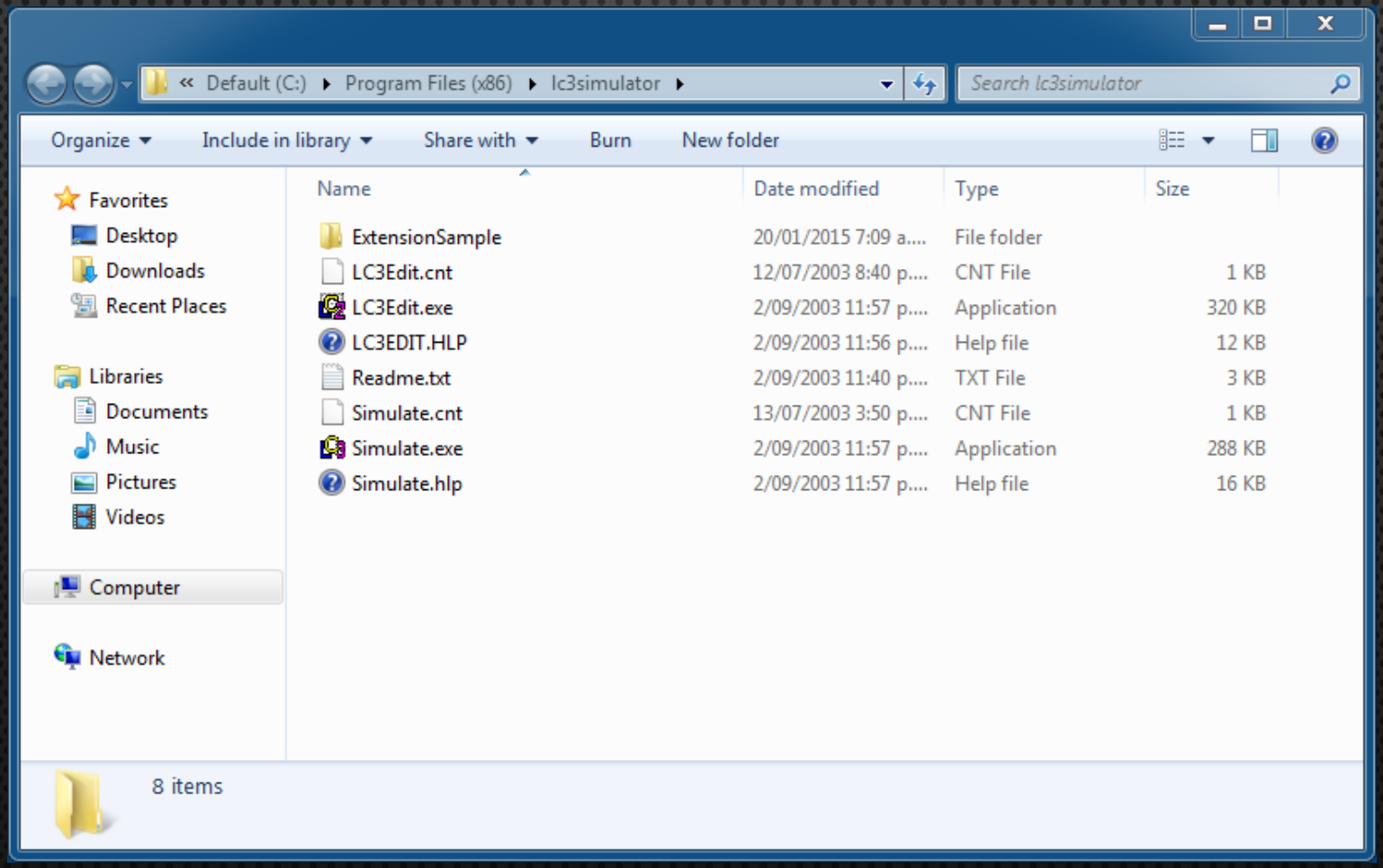


Simulator

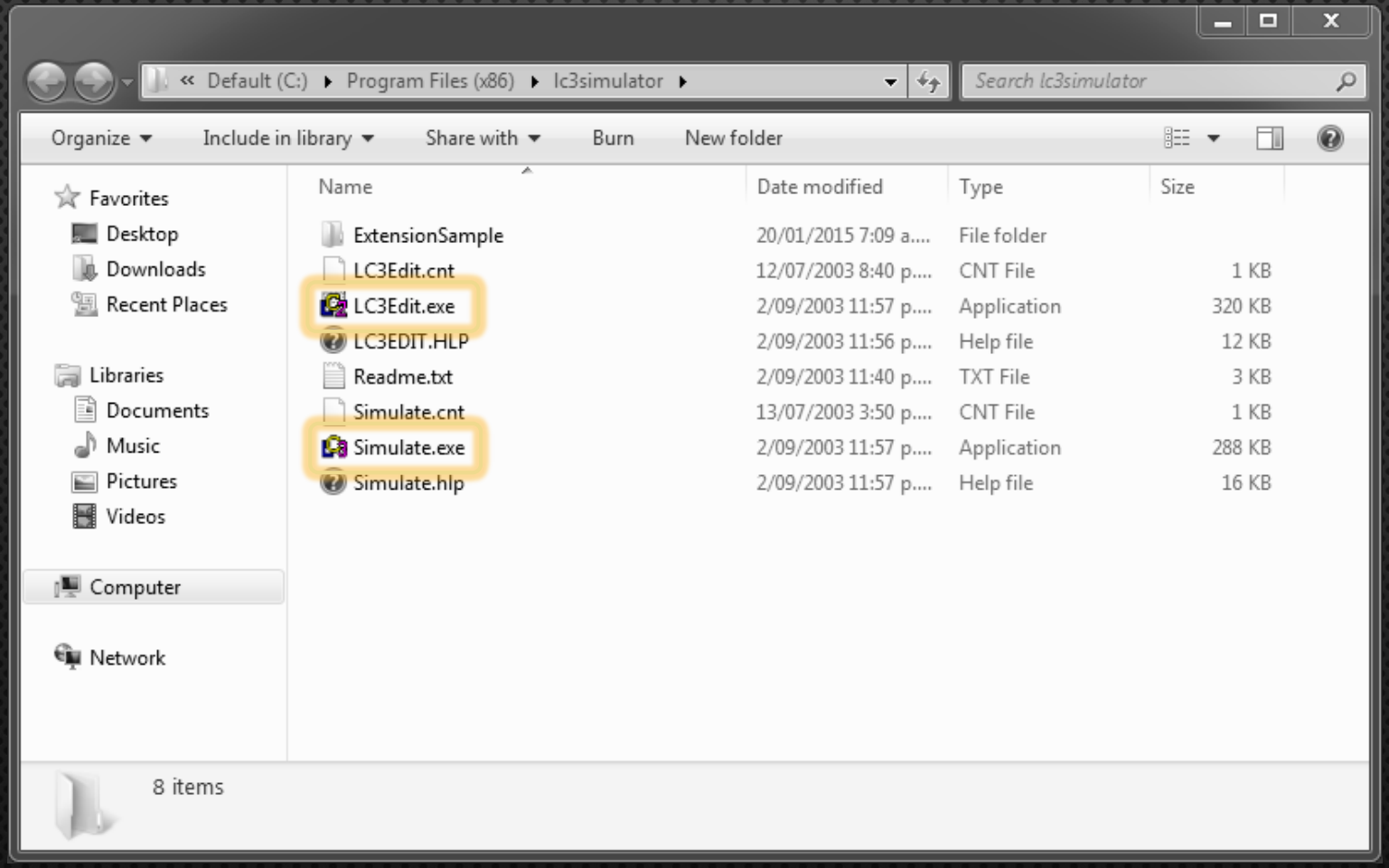
LC-3 NOTES

- The simulator and the editor are separate programs
- The simulator is available for Windows (maybe also Linux/Java/etc)
- The lab computers should have LC-3 included
- The LC-3 software can be executed from a flash drive
- Download from canvas if needed

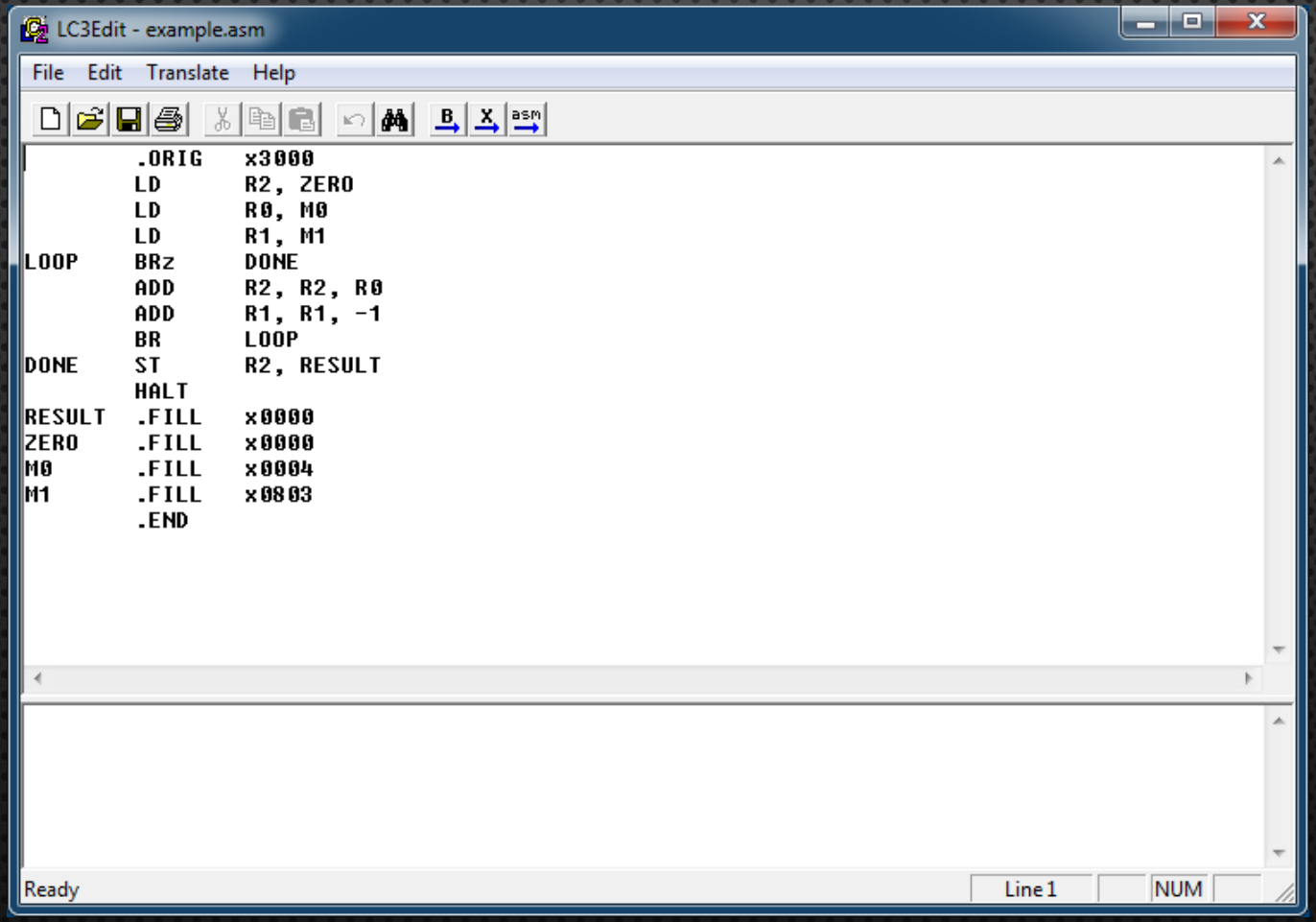
THE LC-3 FILES



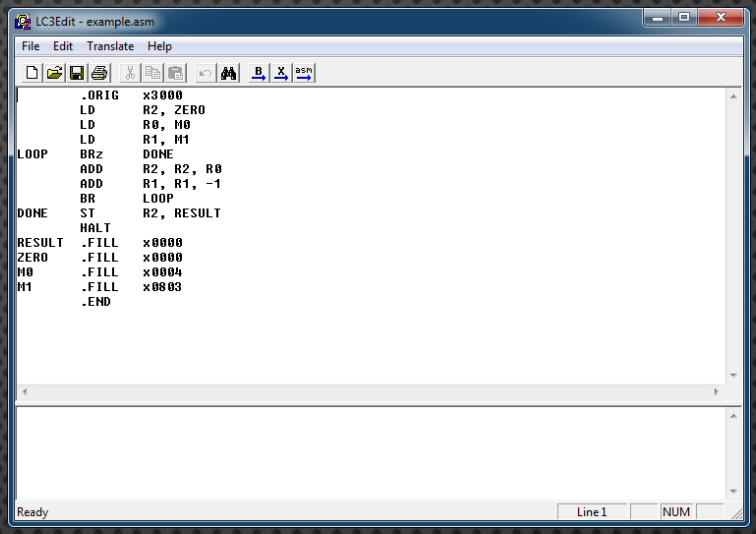
THE LC-3 FILES



LC-3 EDITOR


LC3Edit - example.asm
File Edit Translate Help
.ORIG x3000
LD R2, ZERO
LD R0, M0
LD R1, M1
LOOP BRz DONE
ADD R2, R2, R0
ADD R1, R1, -1
BR LOOP
DONE ST R2, RESULT
HALT
RESULT .FILL x0000
ZERO .FILL x0000
M0 .FILL x0004
M1 .FILL x0803
.END
Ready
Line 1
NUM

LC-3 EDITOR

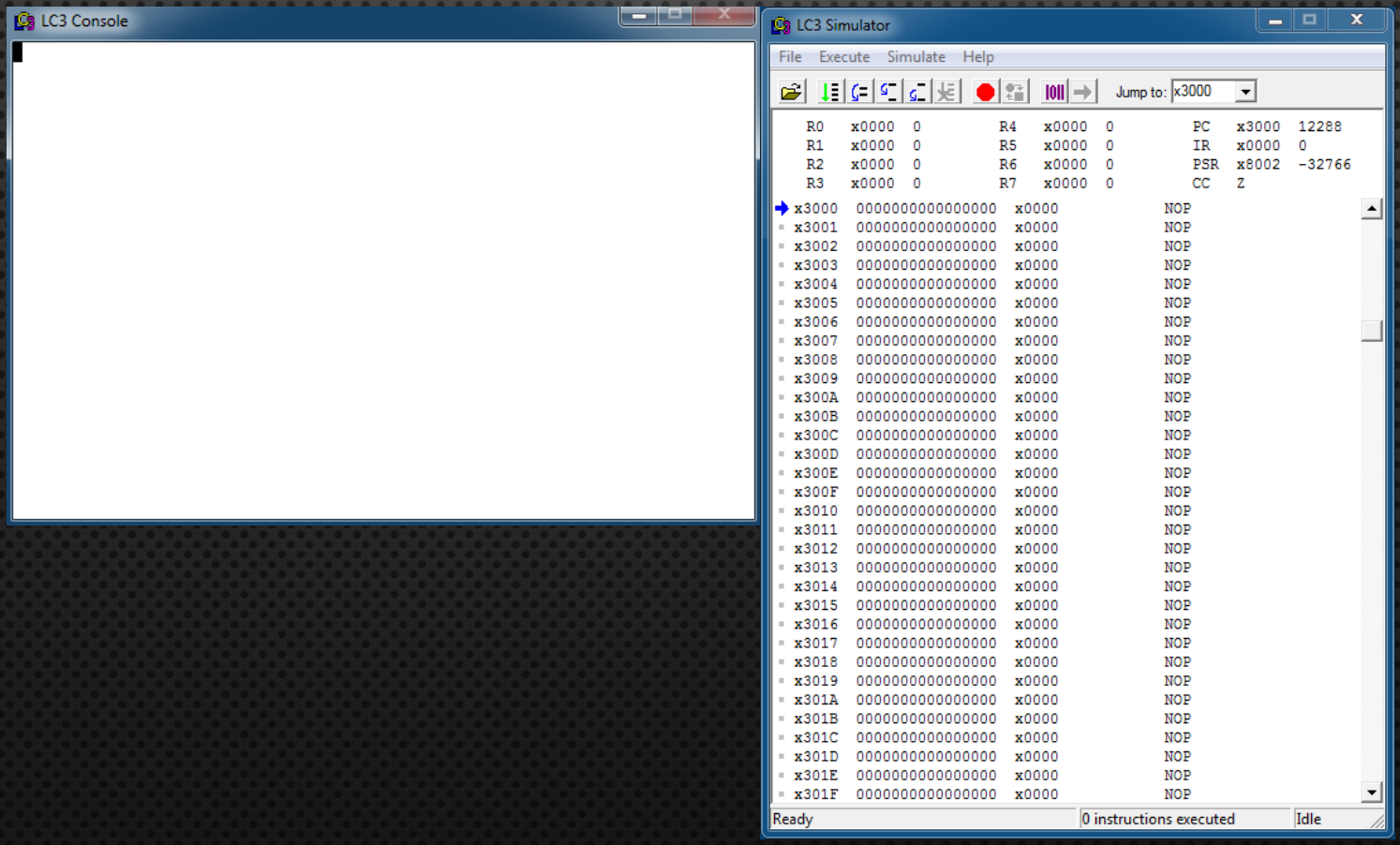


- The editor is used to enter your LC-3 instructions
- You will save your programs into the .asm format
- The editor will also assemble your .asm files into .obj files which can be run on the simulator

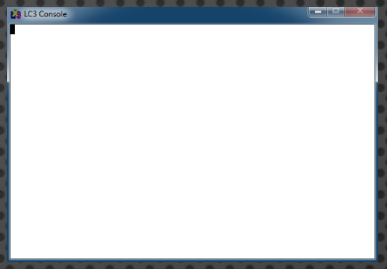
example.asm

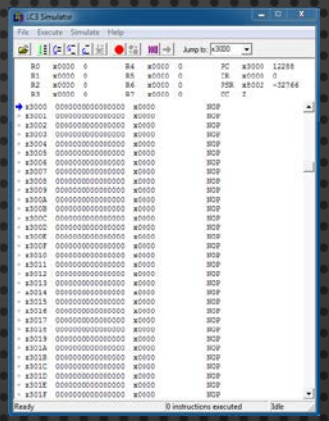
```
            .ORIG       x3000
            LD          R2, ZERO
            LD          R0, M0
            LD          R1, M1
LOOP        BRz         DONE
            ADD         R2, R2, R0
            ADD         R1, R1, -1
            BR          LOOP
DONE        ST          R2, RESULT
            HALT
RESULT      .FILL       x0000
ZERO        .FILL       x0000
M0          .FILL       x0004
M1          .FILL       x0803
            .END
```

LC-3 SIMULATOR



LC-3 SIMULATOR





- The simulator is used to execute your assembled LC-3 machine code
- You will load the .obj files you create into the editor
- The editor gives you a very detailed view of what is happening as your machine code is executed

Demonstration

Complete the following tasks in LC-3.

1. Write a program in the LC-3 Editor.
2. Assemble a program in the LC-3 Editor.
3. Load and execute a program in the LC-3 Simulator.
4. Set breakpoints in the simulator to pause execution.
5. Step forward through your executing program one line at a time.
6. Modify a register value during program execution.