# MIPS Assembly Workshop - 2017

This workshop exercise is to allow you to practice your skills at the art of assembling MIPS Assembly Language program code.

The following page has a small copy routine written in MIPS Assembly Language.

Please fill in the spaces in the table as my example shows:

Please use decimal values for the OpCode row, and Hex digits for the Instruction row. Use your Green Card to lookup the required values.

| Location Counter | | | | | | | Program Counter |
|---|---|---|---|---|---|---|---|
| | | **BEQ** | $t4, | $s7 | **Fini** | # Branch when equal | |
| | OpCode | Rs | Rt | Offset or immediate value | | | |
| | **4** | **12** | **23** | Offset from Program Counter to **Fini** (Calculation based on location of **Fini**) | | | |
| **24** | Instruction: **1 1 9 7 (offset to Fini)** [Use Hex digits] | | | | | | **28** |

Additionally, use the Left margin to keep track of the Location Counter, and the right margin to note the value that would be in the Program Counter.

The initial value of the Location Counter should be zero.

The first instruction below is worked.

| | | **OpCode** | $rs | $rt | $rd | | |
|---|---|---|---|---|---|---|---|
| **LC** | | **ADDI** | $v0, | $zero, | 0 | # Initialize counter | **PC** |
| | | 8 | 2 | 0 | 0 | | |
| 0 | 2002 0000 | | | | | | 4 |
| | **loop:** | **LW** | $v1, | 0 | ($a0) | # read the next source word | |
| | | | | | | | |
| 4 | | | | | | | |
| | | **SW** | $v1, | 0 | ($a1) | # copy to the destination | |
| | | | | | | | |
| | | | | | | | |
| | | **ADDI** | $v0, | $v0, | 1 | # count the copied word | |
| | | | | | | | |
| | | | | | | | |
| | | **ADDI** | $a0, | $a0, | 4 | # the next source word | |
| | | | | | | | |
| | | | | | | | |
| | | **ADDI** | $a1, | $a1, | 4 | # move destination pointer | |
| | | | | | | | |
| | | | | | | | |
| | | **BNE** | $v1, | $zero, | **loop** | # next, if not zero value | |
| | | | | | | | |
| | | | | | | | |
| | | **JR** | $ra | | | # return to caller | |
| | | | | | | | |
| | | | | | | | |