CENG3420 Lab3 Report

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Program of lab3 depends on value in uop. Each digit will determine which gate should be open to bus, the output of mux, and to write or read the memory, etc.

The first program is swap.bin. It is to swap two memory addresses’ data. At first, the original memory content is that 0x34 stores “0xabcd”, and 0x38 stores “0x1234”. The others are the machine code of swap program.

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自動產生的描述

After running the machine code, t0 stores the data in original memory[0x34] and t1 stores the data in original memory[0x38], t2 and t3 stores the memory address respectively.

A picture containing graphical user interface

Description automatically generated

Also, after running the machine code, it swapped the data in memory[0x34] and memory [0x38]. [0x34] stores “0x1234”, and [0x38] stores “0xabcd”.

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自動產生的描述

Second program is Count10.bin. It is to let register t2[x7] count up with the number stores in register t1[x6], at the end each loop will decrease t1 by 1 and then will start a new loop unless t1 equals 0. The original register t1[x6] stores 55(0xa).

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自動產生的描述

After the first loop, register t1 and t2 store number as picture shown:

A picture containing graphical user interface

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Finally, register t1 and t2 will store 0 and 55(0x37), respectively.

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自動產生的描述

The last program is isa.bin. The original content in memory[0x0] to[0x84] are:

A picture containing graphical user interface

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After “la a0”, and “lw a0, 0(a0)”. a0 will store -2 (0xfffffffe)

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自動產生的描述

After “blt a0, zero, L1” and “addi a7, a0, 13”, a7 will store 11 (0x0000000b)

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自動產生的描述

Finally, a0 to a7 store -2, -1,-2048,23,-7,10, 13,52 respectively.

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自動產生的描述

After running the program, the value in memory[0x8c] is 0x17, and memory[0x94] is 0xffffffee.

A picture containing graphical user interface

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