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Help

The initial design should not support forwarding or discarding the instructions in IF and ID when a BR is taken. In order for this to work properly, you will need to insert NOP instructions into the assembly code (using the .NOP assembly directive) in order to provide enough spacing between dependent instructions, and after a BR instruction.

Compare the performance of this initial design against the non-pipelined LC-3 Lite. How much faster is it in terms of executed cycles on different programs?

Following are an assembler window, and a few Jade instances which you can use.

Hierarchical Jade

You will notice a few differences in the Jade instances on this page. These identical instances allow you free reign to create and modify modules for the hackathon! Specifically, you'll notice three new buttons on the top toolbar next to the dropdown box: a create module icon, a copy module icon, and a delete module icon. These let you manage your own modules! Some restrictions still apply:

- You will still want to save and load your modules to ensure they're saved in your browser. edX does not allow any writable storage on their site.
- Your modules need to be named a certain way. They need to start with either:
 - /user/
 - /pipeslow/ (suggested prefix for modules in this pipelined LC-3 Lite)

If they are not prefixed with one of these two strings, they won't load or be editable!

There are three instances so you can see more than one module at a time. If you save a module in one instance, be sure to reload it if you want to see it in another instance!

Don't forget How to Use Jade (new window).

ASSEMBLER

Use CTRL-A (Apple-A) and CTRL-C (Apple-C) to quickly capture the data in the machine code section.

Help

LC-3 Assembler

```
1 .ORIG 0x3000
2 HALT
3 .DATA 0x4000
4 .END
```

```
1 @0b11000000000000
2 0b1111000000100011
3 @0b10000000000000
```

Check button now submits assembly to edX!

JADE

Help

The screenshot shows the Proteus 9.0 SP3 Schematic Editor. The main workspace is a grid with a single circular component placed in the center. The top toolbar includes icons for file operations, editing, and simulation. The right sidebar shows a component library with various logic gates and flip-flops under the 'gates' category. The bottom status bar displays the file name 'user/untitled'.

Check

MORE JADE

Help

Module: /user/untitled

SCHEMATIC | ICON | PROPERTIES | TEST

Grid icon, Plus icon, Minus icon, Arrow icon, T icon, D icon, R icon, MEM icon, A icon, Green checkmark icon

Grid workspace with a central circle

/user/untitled

▼ /gates

- AND gate
- OR gate
- NAND gate
- NOR gate
- XOR gate
- NOT gate
- Buffer
- Multiplexer
- Demultiplexer
- Comparator
- Counter
- Shift Register
- Register
- Memory

▼ /solutions

Click component to select, click and drag on background for area select, shift-click and drag on background to pan

[Jade 2.2.43 \(2015 © MIT EECS\)](#)

Check

EVEN MORE JADE

Help

Module: /user/untitled

SCHEMATIC ICON PROPERTIES TEST

4-bit adder

gates

/user/untitled

Jade 2.2.43 (2015 © MIT EECS)

Check

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