



[Courseware](#) [Course Info](#) [Discussion](#) [Wiki](#) [Progress](#) [Discussion Guidelines](#) [Resources](#) [Exploring Engineering](#)

[Syllabus](#) [How to Use Jade](#)

Help

In this lab, we will write an LC-3 assembly language program that adds a list of numbers. The length of the list (the number of numbers to add) is located at 0x4000, followed by the list of numbers starting at 0x4001. These are provided in the code window below. The result of the addition should be placed in register R6. You will need to create a loop using the value at 0x4000 as the loop counter, which you should load into a register. You will also need a register for the sum (R6 makes sense since it will hold your final result), and a register for the next number in the list that is retrieved from memory.

Remember, the assembler automatically generates the code as you type (it refreshes every 3/4s of a second). The Check button will not respond. It should give errors (red 'X' next to the line number) when it runs into a problem. If new machine code on the right side does not appear, there's usually a problem with your input on the left side.

ADDING A LIST OF NUMBERS

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

LC-3 Assembler

```
1 .ORIG 0x3000
2 HALT
3 .DATA 0x4000
4 .FILL 0x0007
5 .FILL 0x0012
6 .FILL 0x0024
7 .FILL 0x0055
8 .FILL 0x1111
9 .FILL 0x7CCC
10 .FILL 0x0000
11 .FILL 0xBEEF
12 .END
```

```
1 @0b1100000000000000
2 0b1111000000100011
3 @0b1000000000000000
4 0b0000000000000011
5 0b0000000000010010
6 0b0000000000100100
7 0b0000000001010101
8 0b0001000100010001
9 0b0111110011001100
10 0b0000000000000000
11 0b1011111011101111
```

Check button now submits assembly to edX!

Check

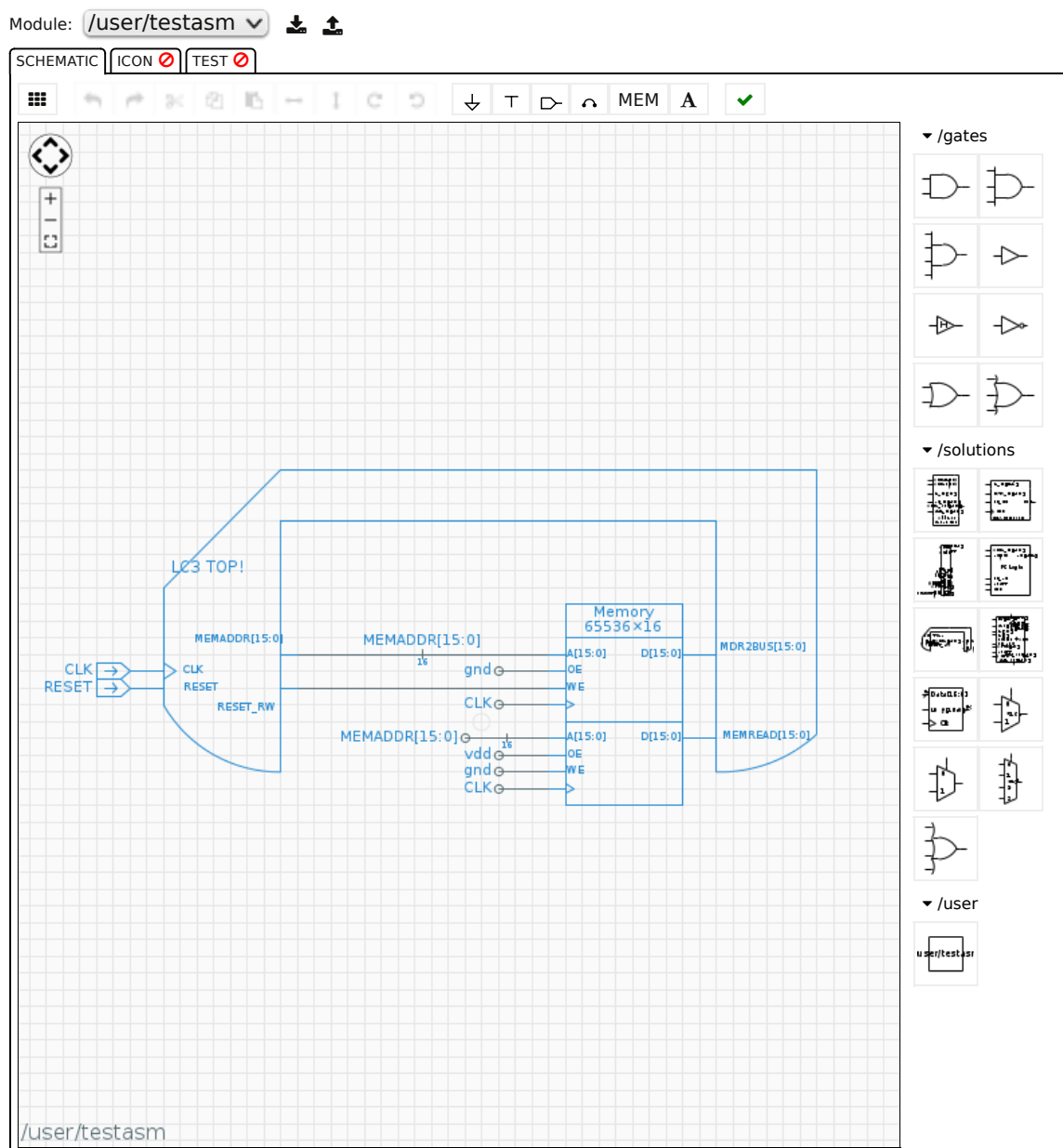
Help

In the window below, the LC-3 Lite memory plug in solution **/solutions/lc3_plugin_memory/**, should already be created and hooked up to a memory. Double click on the memory and paste the entire contents of the right hand side window above into the Contents entry in the Edit Properties window. Because the memory is "enveloped" by the LC3 implementation, you may need to click towards the lower part of the memory to select it (instead of the LC3 itself).

Run the test. It checks to see that at the end of the program, you have successfully added all the numbers.

ADD A LIST OF NUMBERS (1 point possible)

Help



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

Show Discussion

 [New Post](#)

If you would like to test your program on your own LC-3 Lite, use the ungraded Jade instance below. Copy your machine

code into the memory, and run the test.

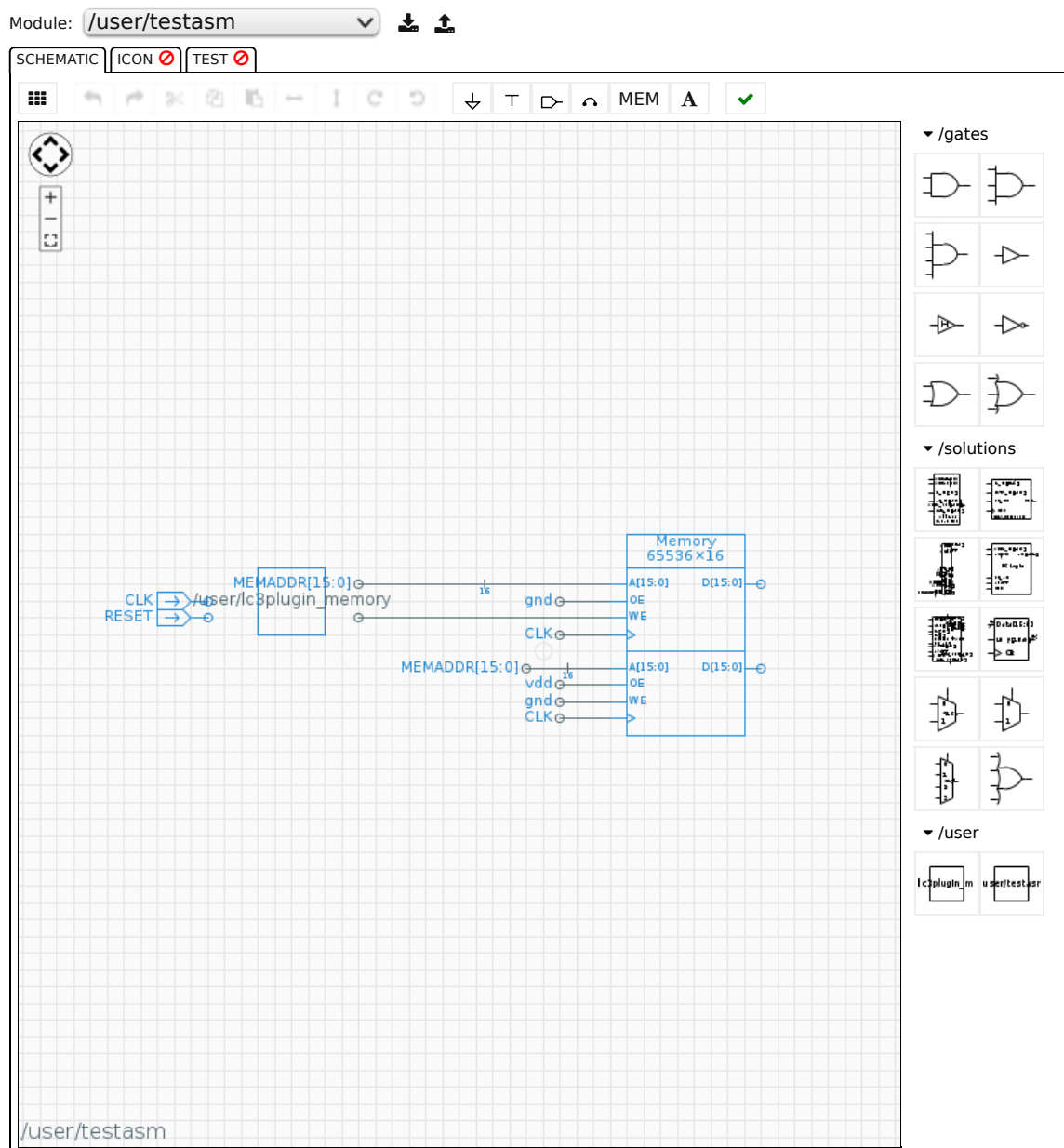
You may need to name the lc3plugin_memory module "lc3".

It is configured to use the **/user/lc3plugin_memory** module. If you want to use your own test and code, we have moved that option to a new page here.

This is optional.

Help

TESTING YOUR LC-3 LITE (UNGRADED)



[Check](#)[Help](#)[Show Discussion](#)[New Post](#)

EdX offers interactive online classes and MOOCs from the world's best universities. Online courses from MITx, HarvardX, BerkeleyX, UTx and many other universities. Topics include biology, business, chemistry, computer science, economics, finance, electronics, engineering, food and nutrition, history, humanities, law, literature, math, medicine, music, philosophy, physics, science, statistics and more. EdX is a non-profit online initiative created by founding partners Harvard and MIT.

© 2015 edX Inc.

EdX, Open edX, and the edX and Open edX logos are registered trademarks or trademarks of edX Inc.

[Terms of Service and Honor Code](#)

[Privacy Policy \(Revised 10/22/2014\)](#)



About edX

[About](#)[News](#)[Contact](#)[FAQ](#)[edX Blog](#)[Donate to edX](#)[Jobs at edX](#)

Follow Us

[Facebook](#)[Twitter](#)[LinkedIn](#)[Google+](#)[Tumblr](#)[Meetup](#)[Reddit](#)[Youtube](#)