

## Fall 2012 ECE498 Linux Assembly Language – Homework 1

**Due: 21 November 2012, 6PM**

1. Download the code from  
`http://www.eece.maine.edu/~vweaver/classes/ece498asm_2012f/hw1_code.tar.gz`  
to an x86 Linux machine.
2. Uncompress/unpack it with the command `tar -xzvf hw1_code.tar.gz`  
(the options to tar stand for eXtract Zipped Verbose File)
3. Change into the `hw1_code` directory `cd hw1_code`
4. Run `make` to build the code
5. Run `./count_to_32`  
This should only print “0”
6. Modify the `count_to_32.s` file so it counts to 32. Place your code where the comments say to. Be sure to comment your code!  
Hint: there are many possible ways to do this. Some useful instructions are `inc`, `add`, `dec`, `sub`, `cmp`, `jnz`, `jz`, and if you’re feeling CISCy: `loop`.
7. Describe how the decimal printing routine in `count_to_32.s` works. Put your answer in the README file.
8. Can the call `print_string` at the end of `print_number` be changed to an unconditional `jmp` instruction? What advantage would there be in doing this? Put your answer in the README file.
9. Make a copy of your working `count-to-32` code  
`cp count_to_32.s count_to_32_hex.s`
10. Convert the `print_number` routine in `count_to_32_hex.s` to instead print base-16 hexadecimal. Hint: `man ascii` can help. The finished program should count from 0 to 32 in hex.
11. Run `make submit` which will create a `hw1_submit.tar.gz` file. containing `count_to_32.s`, `count_to_32_hex.s`, and README.
12. You can verify the contents with `tar -tzvf hw1_submit.tar.gz`
13. e-mail the `hw1_submit.tar.gz` file to me by the homework deadline.