# 322 Compilers Assignment: spill-test
# Register allocation: spill testing
**Due Thursday April 7th, noon**

**Your job:** Design test cases for the spill functions as a pair of files: input and expected output. Note that the following describes the spill function (so you can write tests for it), but the spill function itself is not due until next week.

This is the signature for the spill function:

```
spill : (i ...) var offset[multiple of 4] var -> (i ...)
```

The `spill` function accepts a L2 function (as a list of instructions), the name of a variable, an offset into the stack, and a prefix for the names of the spill variables. It returns a new program that spills the variable to that location in the stack. You can assume that no variable in the program begins with the spill variable prefix and you should use that prefix for any variable you spill. The first occurrence of a spill variable should have that prefix followed by the number `0`, the second should have the same prefix followed by the number `1`, etc.

The spill function should be wrapped up into a script that accepts a filename naming a file that contains the arguments in the file. The script should write their answers to stdout.

For example, if the file `f.L2f` contains:

```
((x <- 1) (eax += x)) x -4 s_
```

Then this this transcript would show how your script should behave:

```
% spill f.L2f
(((mem ebp -4) <- 1)
 (s_0 <- (mem ebp -4))
 (eax += s_0))
```

In general, use exactly one new temporary per instruction that uses a spill variable (no more and no less). For example, if g.L2f contains:

```
((x <- x < x)) x -4 s
```

then this is the correct behavior:

```
% spill g.L2f
((s0 <- (mem ebp -4))
 (s0 <- s0 < s0)
 ((mem ebp -4) <- s0))
```

One non-obvious special-case: when your spilling function is asked to spill x in the `(x <- x)`, just drop that instruction completely instead of adding in memory accesses.

One warning: when you see an instruction `(eax <- x)` and you're being asked to spill x to `(mem ebp -4)`, just generate `(eax <- (mem ebp -4))`, don't generate something like `(s0 <- (mem ebp -4)) (eax <- s0)`.

Any instructions that do not mention the spill variable should be left alone.

Hand in your assignment by sending email with the subject `spill-test` to robby@eecs.northwestern.edu. The email should include an attachment named *name*.`spill-test.tar.gz`. The *name* should be your last name in all lowercase letters unless you are pair programming, in which case it should be both last names in alphabetical order, separated by +. For example, if Robert Jordan and Brandon Sanderson were pair programming and handing in this assignment, they'd send in a tarfile named `jordan+sanderson.spill-test.tar.gz`.

The attachment must contain a single directory named `spill-test` containing the test cases.

The input files should use the suffix `.L2f` and the files with the correct answers should use the suffix `.sres`. You must include at least 15 test cases (but you may include as many as you like).