

CS4121 Homework Assignment #5

Due Date: Thursday, April 11 at 9:05am

1. (16 points) Problem 3.6, page 165. To answer Question c, please show the content of the symbol table (slide 18, a stack of hash tables) when the compiler enters the body of A. Also generate Mips assembly that calculates the address of g assuming that static link is stored at offset -4 on the stack followed by local variables.
2. (7 points) Problem 3.14, page 168.
3. (9 points) Problem 3.19, page 170.
4. (12 points) Evaluate the following C program using call-by-value, call-by-reference, call-by-value-result and call-by-name semantics. Show the output under each scheme.

```
int x = 6;

int g(int y) {
    return 3 * y;
}

void f(int y, int z) {
    x = x * 7;
    printf("y = %d\n", y);
    printf("z = %d\n", z);
    y = y * 5;
}

void main() {
    f(x, g(x))
    printf("x = %d\n", x);
}
```