CSCI 1312 (Introduction to Programming for Engineering), Fall 2018

Quiz 3 Solution

1. (5 points) What will be printed by the following C program?

```
#include <stdio.h>
int foobar(int n, int m) {
    int work = 1;
    for (int i = 0; i < m; ++i) {
        work *= n;
    }
    return work;
}

int main(void) {
    printf("%d\n", foobar(5, 2));
    printf("%d\n", foobar(2, 5));
    return 0;
}
```

Solution: The following will be printed.

```
25
32
```

What this function does: It repeatedly multiplies `n` by itself `m` times; i.e., it computes the `m`-th power of `n`. We could trace through the code as follows for the first example:

Initially `work` is 1.

The first time through the loop, `work` becomes 5 and `i` becomes 1, so the loop runs again.

The next time through the loop, `work` becomes 25 and `i` becomes 2, so the loop stops.

2. (5 points) For this problem your mission is to write a C function `sumofsquares` that computes and returns the sum of the squares of integers 1 through `n`. Note that this function does not need to print anything, nor does it need to get input from "the user". Code below shows a declaration and sample uses of this function; it should print 1 and 30, each on a line by itself. (30 is 1 + 4 + 9 + 16.)

```
#include <stdio.h>
int sumofsquares(int n);

int main(void) {
    printf("%d\n", sumofsquares(1));
    printf("%d\n", sumofsquares(4));
    return 0;
}

/* FIXME your code goes here */
```

Solution: Here is one solution.

```
int sumofsquares(int n) {
    int work = 0;
    for (int i = 1; i <= n; ++i) {
        work += i*i;
    }
    return work;
}
```