Computer Science CS 4/53401 Secure Programming
Fall, 2014
Midterm
November 5, 2014

Please be brief; Irrelevant or incorrect material will cost you points.

1. (25 points) Can a secure program have security issues? Why or why not?

    A secure program is defined as one that does not have vulnerabilities, so, the answer is no.

2. (25 points) Write code to read in and validate the name of a computer on the internet,

> Have to look here for:

(a) The input statement should limit the number of characters read, or read into a dynamically allocated structure (like using `#include <string>` in C++) Thus any cin.get function is OK, provided it either reads only one character or includes a max of characters to read. At any rate,

```
cin >> a
```

where a is a character array is wrong and should cost points.

(b) The program should then check that the input corresponds to a system name; it suffices if it checks that there are only alphanumerics and . in the string. Mark points off if it checks for strange characters to disqualify the string; it should really only accept strings if it is of the form they expect, even if it rejects some perfectly valid inputs.

3. (25 points) How would you protect the data I am sending in an email to my attorney? (Remember that emails can be read by any sysadmin along the way and any hacker with the approrpiate tools).

One word: encrypt the data.

4. (25 points) Is complete mediation a reality? if not, how difficult is it to implement?

> No, it is not a reality; however, it only needs keeping the permissions for the open file available for checking whenever a file operation is requested. The set of permissions is a small number of bits, so the overhead would be minimal.