CS 3423 Operating Systems
Fall Semester 2017
Prof. Pai H. Chou

Assignment 14

Due Date: Sunday, December 31, 2017, 11:59pm
Up to one-day late submission without penalty
Up to one-week late submission with 20% penalty
Submit electronically on iLMS

What to submit: One zip file named <studentID>-`hw14.zip` (replace <studentID> with your own student ID). It should contain four files:

- one PDF file named **hw14.pdf.** Write your answers in **English, and elaborate in order to receive full credit**. Check your spelling and grammar. Include your name and student ID! Elaborate in order to receive full credit.
- No programming for this assignment.

[100 points] Problem Set

1. [20 points] **15.1** Buffer-overflow attacks can be avoided by adopting a better programming methodology or by using special hardware support. Discuss these solutions.
2. [20 points] **15.2** A password may become known to other users in a variety of ways. Is there a simple method for detecting that such an event has occurred? Explain your answer.
3. [20 points] **15.4** The list of all passwords is kept within the operating system. Thus, if a user manages to read this list, password protection is no longer provided. Suggest a scheme that will avoid this problem. (Hint: Use different internal and external representations.)
4. [20 points] **15.11** What commonly used computer programs are prone to man-in-the-middle attacks? Discuss solutions for preventing this form of attack.
5. [20 points] **15.12** Compare symmetric and asymmetric encryption schemes, and discuss the circumstances under which a distributed system would use one or the other.