CS 215, Midterm Test, Fall 2006
October 17, 2005, 3:35-4:25 pm

Denbigh Starkey’s Solutions

Name: ______________________________

50 Minutes, Open Book and Notes. Time limit strictly enforced.

There are three parts to this test; 18 multiple choice questions worth 2 points each, 12 fill-in-the-blanks questions worth two points each, and 4 short essay questions worth 10 points each, for a total of 100 points.

For the four essay questions I expect about one paragraph each, and assume that each one will take about five minutes.

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Multiple Choice Questions
Circle the correct response letter.

1. Charles Babbage produced a machine that could compute polynomials using
   a) trigonometry
   b) the motion of the sun
   c) table lookup
   d) difference method
   e) electric motors

2. Which company produced the System/360, a family of compatible mainframe computers?
   a) Fujitsu
   b) Hewlett-Packard
   c) IBM
   d) Intel
   e) Popular Electronics

3. What visionary invented the computer mouse and demonstrated windows, email, and live network videoconferencing in 1968?
   a) Vannevar Bush
   b) Douglas Engelbart
   c) Tim Berners-Lee.
   d) Alan Kay
   e) Ted Nelson

4. The World Wide Web is the creation of
   a) Tim Berners-Lee
   b) Vannevar Bush
   c) Douglas Engelbart
   d) Alan Ka.
   e) Ted Nelson

5. In 1937 a single binary adder was built by
   a) Hollerith
   b) Zuse
   c) Atanasoff and Berry
   d) Stibitz
   e) Turing

6. A computer worm
   a) is usually attached to an executable file
   b) is also called a macro virus
   c) replicates itself without user action
   d) looks safe but contains a hidden danger
   e) is another name for a hoax
7. A patent can be used to protect your
   a) ideas or inventions
   b) software (e.g. a Java program)
   c) algorithm
   d) two of (a), (b), and (c) ((a) and (c))
   e) all of (a), (b), and (c)

8. ICANN
   a) is a networking company
   b) manufactures computers
   c) **controls internet names**
   d) is a government organization set up in response to the 9/11 attacks
   e) none of the above

9. Ada Augusta, Countess of Lovelace, collaborated with
   a) **Charles Babbage**
   b) Alan Turing
   c) Blaise Pascal
   d) George Stibitz
   e) Grace Hopper

10. Which of the following laws was upheld as constitutional by the U.S. Supreme Court?
    a) Communications Decency Act
    b) Child Online Protection Act
    c) **Child Internet Protection Act**
    d) two of these laws were upheld as constitutional by the U.S. Supreme Court
    e) none of these laws were upheld as constitutional by the U.S. Supreme Court

11. Colossus was
    a) a computer company originally started by Hollerith
    b) Charles Babbage’s system that wasn’t successful in his lifetime
    c) an IBM computer for playing chess
    d) subsequently renamed the ENIAC
    e) **a computer developed at Bletchley Park**

12. Hollerith designed his punch card system
    a) to compute payrolls more effectively
    b) to compete with IBM
    c) to compute missile trajectories
    d) **to process the 1890 census data**
    e) to run Fortran when it was first developed
13. Grace Hopper worked for most of her career for
   a) the US Army
   b) the US Navy
   c) the US Air Force
   d) IBM
   e) the CIA

14. Sometimes it is legal to reproduce a copyrighted work without the permission of
    the copyright holder. These circumstances are called
    a) fair use
    b) noncommercial use
    c) piracy
    d) public domain
    e) reciprocity

15. The 1988 Internet Worm was released by
    a) Steve Jobs
    b) the French government
    c) Robert Morris
    d) The British government
    e) Peter James

16. In the US student academic records are protected by
    a) FERPA
    b) ICANN
    c) MSTA
    d) USA Patriot Act
    e) US Department of Commerce

17. Security freeze laws let
    a) the government block the exportation of military-related software
       programs
    b) the government classify military-related software programs
    c) law enforcement agencies block bank accounts
    d) companies stop you from accessing your credit ratings
    e) you freeze access to your credit information

18. Griswold vs. Connecticut
    a) established a marital right of privacy
    b) was used in the Roe vs. Wade decision
    c) was the first supreme court decision related to school desegregation
    d) two of (a), (b), and (c) ((a) and (b))
    e) all of (a), (b), and (c)
Fill-in-the-blanks Questions
Write your response in the underlined area

1. Charles Babbage designed a system that he called **Difference Engine**
2. Charles Babbage designed another system that he called **Analytical Engine**
3. EFF is the acronym for the organization whose full name is the **Electronic Freedom Foundation**
4. The theory that good actions are those aligned with the will of an all-knowing entity (God, Allah, etc.) is called **Divine command theory**.
5. An attempt to bring down a system or server by sending it an overwhelming number of messages is called a **Denial of Service Attack/DoS/DDoS**.
6. Computer programs can be copyrighted because the copyright laws consider them to be **literary works**.
7. The first supercomputer was the **Cray I**.
8. A **virus** will usually be attached to some executable file, and becomes active when the file is executed.
9. A **worm** replicates itself without user action.
10. A **Trojan horse** is hidden in what appears to be useful software that it expects the user to install.
11. John Backus developed a programming language called **Fortran** in 1954.
12. If an email system automatically sends a response asking for a confirmation when you receive an email from someone who isn’t on your whitelist of acceptable addresses this is called a **challenge/response** system.
Essay Questions

1. Distinguish between worms, viruses, and Trojan horses.

   A worm replicates without user action. Once running on a system it will attempt to use that system to invade other systems over the network.

   A virus requires some user action, and is usually hidden in an executable like an email attachment. In that case opening the attachment will release the virus.

   A Trojan horse is hidden in a software system that appears to be useful. It does not replicate, but will usually damage the host system one the package is installed.

2. Some critics of the CAN SPAM Act of 2003 say it may actually result in more spam, not less. Explain how they have reached this conclusion.

   CAN SPAM superseded a number of state laws, which in most cases were more restrictive. Because of CAN SPAM these laws were no longer valid. There were also other stronger federal efforts which did not pass once CAN SPAM had been approved.
3. Describe when you would use copyright protection for something and when you would use patent protection.

Copyright protection is for “original works of authorship” and so in computer software terms this includes programs. Patent protection is for ideas or inventions, so for computer software this means new algorithms. So if you design a new algorithm and implement it in software you can seek patent protection for the algorithm and copyright protection for the implementation.

4. Distinguish between phishing and pharming.

Phishing tries to get you to submit personal information in response to a disguised request. This request can take forms like a claim of a fortune that someone in Nigeria wants to launder through your bank account or a request to update your bank account information online.

Pharming redirects your request, usually to an online financial site, to the pharmer’s mock site, usually by taking advantages of weaknesses in the name server system.