

Name (please print): _____ Solution _____

You have 75 minutes to complete this exam. Time will begin after we have read through it together.

- You may use your own personal copy of the textbook along with any notes or other files that you have brought with you, and anything that you find on the Internet that existed before the exam started.
- You may use any program on your own computer or the classroom computer, and you may use a calculator if you brought one.
- You may NOT communicate with any other person during this exam, (except the professor), either in person or using an electronic means.
- Do not discuss this exam with anyone until specific permission is given by the professor or the exam posted on the class Web page. Some students have to take the exam at a later time, and discussing the exam in any forum where the discussion might be overheard by a person who has not yet taken the exam would constitute academic dishonesty.

As for strategies for completing the exam, keep the following in mind:

- If you find a question to be ambiguous, you may ask about it privately by coming to the front of the room. If the confusion is not resolved to your satisfaction, please explain your confusion along with your answer so that we can consider it during grading.
- You are more likely to get partial credit for an answer that is not completely correct if you show your work.
- Be careful not to get carried away and run over the time limit by spending too much time on one question. Plan ahead, and don't devote more time to a question than it is worth.

Please write your answers in the space provided.

Score Summary (for use by grader)

Question	Possible points	Actual points
1	48	
2	20	
3	32	
TOTAL	100	

1. Short answers.

- a. [12 points] A small library in Louisiana has some computers running on the Windows 1998 operating system. The director wants you to install some software which requires Microsoft Windows XP Professional with Service Pack 3. Windows XP has the following requirements:
- (1) PC with 300 MHz or higher processor clock speed recommended;
(233 MHz minimum required;)
 - (2) 128 MB of RAM or higher recommended;
 - (3) 1.5 GB of available hard disk space
- The director does not have an MLIS and does not know much about information technology.

- a1. [8 points] Please explain to him/her what these three numbers mean. Do not use jargons and acronyms. Do the best you can.

The Central Processing Unit is a computer's electronic component that does computation, 300 megahertz is its speed. The Random Access Memory is the computer's component that stores instructions waiting to be executed and data needed by those instructions. 128 megabytes is its size. These two components are like a human's brain which does computation and holds short-term memory which can be accessed instantly. The hard disk is the computer's storage device, and 1.5 gigabytes is its size. It is more like a human brain's long-term memory and external libraries, which are large but accessed slowly.

- a2. [4 points] The computers are running on a 200 MHz processor clock speed, 64 MB of RAM, and 5 GB of available hard disk space. What will you suggest the director to do?

Either upgrade their RAMs and CPUs, or buy new computers.

- b. [12 points] On your homework Web page, you want to present a warning message in red and bold. Please write one line of HTML that will make that happen. The content of the warning message is up to you.

Watch out!

- c. [14 points] Suppose you volunteered to be a photographer for the Louisiana Book Festival and you took 100 photos with the resolution of 1024x768 pixels. Now you want to send the photos to the organizer using a 56 kilobits per second modem. How long will it take? (For this question, assume the modem runs continuously at 56 kilobits per second even though a real modem may not).

One photo's size: $1024 \times 768 \text{ pixels} \times 3 \text{ colors/pixel} \times 1 \text{ byte/color} = 2.4 \text{ MB}$;

100 photos' size: $2.4 \text{ MB} \times 100 = 240 \text{ MB} = 240 \times 1024 \text{ KB}$

Model speed: $56 \text{ kilobits/s} = 56/8 \text{ KB/s}$

Time needed to send 100 photos: $240 \times 1024 / (56/8) = 35,109 \text{ s} = 9.75 \text{ hrs}$

- d. [10 points] The Louisiana State Archives (LSA) wants to digitize some paintings for preservation purposes and also wants to post them on their Web site for the general public to view. (1) What image format should LSA choose that would best support public dissemination and why? (2) What image format should LSA choose that would best support digital preservation and why?

- (1) JPEG: lossy compression which supports fast download, lower resolution but does not affect viewing
- (2) PNG (or GIF): lossless compression which supports exact reproduction. (RAW and TIFF are also fine.)

2. [20 points] What will the following JavaScript code print?

```
<SCRIPT LANGUAGE=JAVASCRIPT TYPE="TEXT/JAVASCRIPT">
  for (var i=0; i<=5; i++) {
    if (i>=0 && i< 3 ) {
      document.write(" Wait... ");
    }else{
      document.write(" Go! ");
    }
  }
  document.write(" <br>Excellent!<br>");
</SCRIPT>
```

Wait... Wait... Wait... Go! Go! Go!
Excellent!

3. [32 points] The Louisiana Book Festival organized the featured authors with a directory (available at <http://www.louisianabookfestival.org/authors.html> if you'd like to see). Now you are asked to create a database (before the festival) for tracking the assignment of authors to their book talk locations and time slots. Note the same room can be used by different authors at different time slots. Your database design must include at least two tables. Then put a small amount of sample data into your database and execute a query that shows which two authors are assigned to *House Committee Room 4*, the time slot that each author will use that room, and what books they will be talking about. For full credit, you must sketch the entity tables and the resulting table generated by the query. Be careful with foreign keys. An Entity-Relationship diagram is NOT necessary, but if you cannot sketch the tables, the E-R diagram may earn you partial credit. If you make assumptions in your design, write them down. (Note you can use whatever author names and room numbers you like.)

We make two assumptions here to model some aspects of the reality:
 (1) Every book is authored by only one person (then Author can be an attribute of Book);
 (2) Every talk is given by only one person;
 then we can use only two tables.

Book table

BookID	BookTitle	AuthorFN	AuthorLN	Publisher
001	War and Peace	John	Brown	
002	Romeo and Juliet	Kelly	Blanchard	
003	The Puzzle	Monice	Jones	
004	Knowledge Management	Danny	Wallace	

Talk assignment table:

TalkID	BookID	Time	Location
1	001	10:00-11:00	House Committee Room 2
2	002	10:00-11:00	House Committee Room 4
3	004	9:00-9:45	House Committee Room 4
4	003	10:15-11:00	State Library Room 101

RED = Primary Keys

QUERY:

SELECT Book.BookTitle, Book.AuthorFN, Book.AuthorLN, Talk.Time, Talk.Location
 WHERE Talk.BookID=Book.BookID AND Talk.Location='`House Committee Room 4`';

QUERY RESULT:

BookTitle	AuthorFN	AuthorLN	Time	Location
Romeo and Juliet	Kelly	Blanchard	10:00-11:00	House Committee Room 4
Knowledge Management	Danny	Wallace	9:00-9:45	House Committee Room 4

Note: This is not a perfect answer, but a reasonably good answer given the limited amount of time. Time and Location can have their own tables. Furthermore, if we remove the assumptions, we need more entity and relationship tables.