Midterm Exam 1 Essay Questions

Two of the following five essay questions will appear on your midterm exam. The questions have been written for you to reflect upon our discussions and readings in hopes you might see the big picture, and become a more knowledgeable person. Please form your answers in the context of the textbook readings, and class lectures and discussion, and limit each response to one page.

Note. Pontificating will be a detriment to your grade.

1. Based on our class discussions and those in your textbook, explain the major conceptual differences between a file-based system and a relational database. In your discussion, contrast at least (i.e., a minimum of) 3 distinguishing features (i.e., differences).

2. Explain data abstraction in the context of general database concepts. Describe how it applies to file-based and database systems. Based on our discussions in class, why is this an important concept in database, and how does it apply to data management?

3. As expressed in various topic discussions in class, independence is an important concept in relational database. Discuss why independence is an underlying concept to database, and how it is implemented in the ANSI-SPARC architecture. Using the relational data model, explain how independence could be implemented.

4. During our class discussions, reference has frequently been made to data integrity. Explain the significance of data integrity (in database), and the importance of maintaining it. What is a major consequence of not maintaining data integrity? Contrast this to file-based systems. How can data integrity be implemented in relational database tables?

5. During our discussions in class and from your homework assignment, we examined how data sets are extracted and manipulated in various ways from relations through a mix of relational algebra operations. Explain the significance of these data sets in relational to the data retained in the database, and how they can be used in conjunction with application software and programs (i.e., how is this different from the applications you have developed in a 3GL, i.e., a procedural based programming language, and what is the advantage or disadvantage?).
General Rule: At the most, a textbook answer is considered only an average answer (i.e., 15 out of 20 points or 75 percent of 20). Remember, the exam’s emphasis is on conceptual understanding and not rote memory. Thus, bullet points and lists are not deemed appropriate for responses. Your responses should reflect integrative thought expressed in written English.

Other points to be aware of:

- Greater points are awarded when integrative thought is evident in your answers. Providing detail works to your advantage. Points will be reduced for false, irrelevant or unsubstantiated statements. Essentially, you need to express your understanding of the material. Even though you may possess a good understanding of the material, it can only be judged in your responses.

- Bullet points and lists are not considered appropriate responses.

- Points cannot be awarded to answers that are illegible. Please take the time to write legibly with a good writing utensil (i.e., pencil, pen, etc.).

- Although studying together is encouraged, your answers should reflect your understanding of the subject matter. Identically or near identically worded or phrased answers appearing on two or more exams will be graded at the most as textbook answers, regardless of their quality. This also applies to the examples you cite.

- A shotgunned answer (i.e., an answer does not directly address the question and dwells upon material irrelevant to the question) will be a detriment to your grade.

- Portions of your answer written beyond the one-page limit will not be graded. Therefore, organize your thoughts and be concise.

Please Note. As I have told students during past semesters, I can help you with the interpretation of a question, but I cannot tell you whether any pre-written answer is correct or incorrect. Doing so would provide you with an unfair advantage over others. Prepare your answers as you would for any other class exam. (The difference is that you know the questions in advance.)