

Purdue University
Computer Science Department
CS44800 Homework 1
Spring 2019

Due: **January 23, 2019, before class**

Reference: **Fundamentals of Database Systems by Elmasri & Navathe, 7th Edition**

Total Points: **3 points**

Provide enough detail to support your answers. If possible, use bullets to organize the ideas in your answer.

Question 1. (0.25 pts)

Discuss the main characteristics of the database approach and how it differs from traditional file systems.

Question 2. (0.25 pts)

Discuss the capabilities that should be provided by a DBMS.

Question 3. (0.25 pts)

Cite some examples of integrity constraints (e.g. unique constraints, referential integrity constraints) that you think can apply to the database shown in Figure 1.2 in the textbook.

Question 4. (0.25 pts)

What is the difference between a database schema and a database state? Please, use examples to support your answer.

Question 5. (0.50 pts)

What is the difference between logical data independence and physical data independence? Which one is harder to achieve? Why?

Question 6. (0.50 pts)

What are the different components of a DBMS? Discuss the importance and need of each component.

Question 7. (0.50 pts)

What are the main phases of database design? What needs to be done by the user and what needs to be done by the database administrator? What is involved in physical database design?

Question 8. (0.25 pts)

What is a user transaction? What properties must be maintained for a transaction by the database system?

Question 9. (0.25 pts)

Why is accessing a disk block expensive? Discuss the time components involved in accessing a disk block.