**CS 4347: Database Systems  
Homework 1**

**Due: 9/2 – 100 points  
Late: 9/7 – 50 points**

1. What four main types of actions involve databases? Briefly discuss each.
   1. CRUD Operations
   2. Create
   3. Read
   4. Update
   5. Delete
2. What are the responsibilities of the DBA and the database designers?
   1. DBA
   2. Database Designers
3. What is the difference between controlled and uncontrolled redundancy? Illustrate with examples.
   1. Controlled Redundancy
      1. Increases efficiency of Read operations
   2. Uncontrolled Redundancy
4. Specify all the relationships among the records of the database shown in Figure 1.2.
5. Cite some examples of integrity constraints that you think can apply to the database shown in Figure 1.2.
   1. Integrity Constraint
   2. Examples
      1. If there is a student in a class, then do not allow deletion of the record
6. Consider Figure 1.2.
   1. If the name of the ‘CS’ (Computer Science) Department changes to ‘CSSE’ (Computer Science and Software Engineering) Department and the corresponding prefix for the course number also changes, identify the columns in the database that would need to be updated.
   2. Can you restructure the columns in the COURSE, SECTION, and PREREQUISITE tables so that only one column will need to be updated?

