

USING “CASH FOR CLUNKERS” AND OTHER CURRENT CASES TO TEACH DATABASE CONCEPTS

Steven Alter

University of San Francisco
alter@usfca.edu

1. Goal and approach

A key difficulty in teaching database topics in introductory IS courses is that the examples are trivial and uninteresting. The students get lost quickly in details of database software such as Microsoft Access and miss the big picture about why data organization and access through database technology is important to business. A double whammy: They never attain fluency in using database software and they never see the importance of the topic.

A different approach to databases starts with real-world database problems and asks the students to identify the relevant data, the difficulties in obtaining or accessing that data, the relevant data integration issues, and the challenges in assuring or least evaluating the accuracy of the data. A recent example is the “cash for clunkers” program in which the US government paid up to \$4500 to individuals who would trade in old gas guzzlers for newer cars that obtain much better mileage. Newspaper articles reported substantial frustration by car dealers who were not receiving reimbursements in a timely manner. (e.g., Mitchell, J. and Linebaugh, K. “Clunkers Plan Needs a Tuneup,” *Wall Street Journal*, Aug. 14, 2009) An interesting exercise for students is to read several of those articles and apply them from a database perspective, even though they were not written as database articles. (Similar exercises can be done with newspaper or magazine articles about health care, customer loyalty cards, JetBlue's problems on Valentine's Day 2008, annual job performance appraisals, and news or business topics.)

2. Learning Goals and Summary of a Sample Exercise

- Understand how data requirements in real world situations derive from work systems.
- Learn to identify data requirements in real world situations, and conceptualize those data requirements in the form of a relational database.
- Recognize data integration issues when data comes from multiple sources.
- Recognize data integrity issues, especially when data comes from multiple sources.

Sample business problem: The “cash for clunkers” program encountered many complaints about late payments to auto dealers offering rebates for purchases involving the trade-in of an old gas-guzzling car. Keeping track of the purchase and rebate transactions required a database, at least conceptually.

Hands-on component: Produce a prototype of the database using Microsoft Access. Include tables such as auto dealer, buyer, transaction, trade-in car, purchased car, and automobile type (brand, model, and year)

3. Teaching note

Students read one or two newspaper accounts of the cash for clunkers program. (They can do this in class or before class.) Working individually or in teams, they identify problems that were encountered. Prodded by the discussion of the problems, they summarize the work system through which people in various roles authorize, perform, record, and check the transactions. A good template for doing this is a one-page work system snapshot (the work system's customers, products and services, processes and activities, participants, information, and technologies). Since newspaper or magazine articles about this topic are not designed for this exercise, and do not explicitly identify all of the relevant steps, participants, or information, the students must make assumptions about how the process occurs and what information is used. Different individuals or teams make different assumptions, and produce different summaries of the work system, including the information that is required. The discussion emphasizes that a real world analysis would involve interviews rather than just making assumptions for the purposes of a classroom exercise. A classroom discussion moves to integration issues and integrity issues involving the source of some of the information. For example, this work system seems to require DMV (Department of Motor Vehicles) information from 50 states. How would that information be obtained and validated? Separately, individuals or student teams set up a database prototype including at least four tables. A follow-on discussion compares prototypes and identify data omissions and to clarify requirements, noting that a real-world analysis and design effort would require much more to go beyond simply making assumptions about the requirements.