

**CALIFORNIA STATE UNIVERSITY, SACRAMENTO**

College of Business Administration

MIS 211 - Information Systems II

## Homework 6 - Logical Data Modeling

Points: 30

Due: Wednesday, April 24

Developing a logical database design for a relational database begins with defining the logical conceptual data models for each user or user groups. This mainly involves examining their tasks and applications, and determining their data needs. Activities focus on identifying entity types, their attributes, attribute domains, both the candidate and primary keys, and the relationship types specific to a task or application. Upon completion, all functionally similar logical conceptual data models are merged to form a local logical data model. During this step, the analyst produces a (local)logical data model, and examines its validity and robustness through normalization, ERDs and simulated transaction processing. These activities help ensure the design can support current applications and (to some degree) accommodate future changes.

The objective of this assignment is to better familiarize you with designing and validating a logical data model. The two parts involve (1) creating a normalized logical data model, and (2) graphically depicting the entity types and their relationships through an ERD.

**Data Normalization**

Using the attached sample mileage summary for Hawaiian Air's frequent flier program (Figure 1), develop a normalized (i.e., 3NF) logical data model. Use only the elements shown on the summary (i.e., do not add any attributes beyond those appearing on the document). However, you may assume that upon receipt, the order form is assigned an order number and date. **Begin by showing the unnormalized relation. For each normal form** (i.e., 1NF through 3NF), be sure to identify the relations (i.e., entity types), their candidate and primary keys, and attributes. Please use descriptive and consistent names throughout your model. Follow the notation used in the textbook:

*entity-type-name* (key, attribute\_1, ..., attribute\_n)

Be careful to show your work and present it in an organized and readable manner. Points cannot be awarded for assumed work or steps.

**Note.** For 1NF, follow the presentation given in class, not your textbook.



**Hint.** Organize your unnormalized and normal form relations in Word or Word Perfect. This will allow you to *cut-and-paste*.

### **ERD Modeling**

Following the logical data model you developed in the prior section, draw an ERD showing: (1) all entity types including weak and strong types, (2) all attributes and keys, (3) relationship types, (4) cardinality (minimum and maximum). Be sure to note the keys and foreign keys. As in the case of the prior section, please use descriptive and consistent names throughout your diagram.

Be careful to present your work in an organized, readable and understandable manner. Points cannot be awarded for assumed work.

**Note.** Follow the ERD diagramming technique presented in class. Do NOT use the textbook's technique.

### **Tangibles**

Submit printouts of your normal forms (i.e., unnormalized, 1NF through 3NF) and ERD. Your assignment should be software generated (i.e., no hand-drawn diagrams will be accepted). Place your assignment tangibles in a manilla envelope. Be sure your name appears on all printouts.

As stated in the course syllabus, late assignments will NOT be accepted.



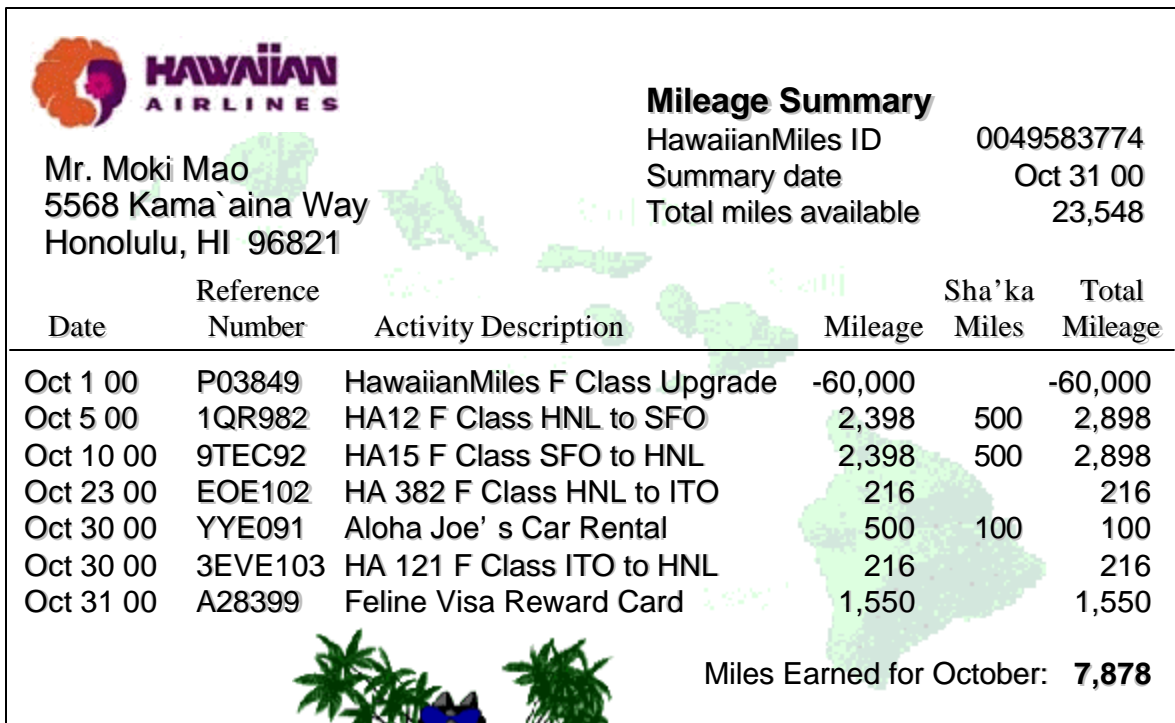


Figure 1. Mile summary

