CALIFORNIA STATE UNIVERSITY, SACRAMENTO
College of Business Administration

MIS 211 - Information Systems II

Midterm Exam

Points: 100 Date Due: Wednesday, May 15
No later than 6 p.m.[1]

This exam references an accompanying Adobe Acrobat file (PDF) with pages from the Gadget Universe catalog. You will need to review it to complete the exam.

Guidelines

1. The exam should reflect an individual's effort, and NOT be the product of group collaboration. Any form of copying, sharing, assisting, seeking aid from another person either enrolled or not enrolled in this class, or submitting work that completed entirely by you will lead to an automatic failing grade for the semester. Answers showing close resemblance will be considered a collaborative effort.

2. All answers should be software generated. Otherwise, a penalty of 15 percent (of the total possible points for the question) will be assessed.

3. Please do NOT bind you exam answers. Staple each answer in the upper left corner and submit them in a 9 x 12-inch manila envelope.

Refer to the syllabus for other requirements.

Answer the following three problems. The problems have been written for you to reflect upon our discussions and readings. Be sure to form your solutions and answers in the context of the textbook, and class lectures and discussions. Please keep in mind that credit cannot be awarded for assumed work.

No late exams will be accepted.

[1]If I am not in my office to receive your exam, please slide it under my office door.

Database Design

Following the database design methodology presented in class and your textbook, and using the sample documents in the accompanying PDF file, develop the logical and physical database designs for the Gadget Universe catalog. Although in practice the logical database design would normally support all the organization's functions, restrict your designs to the information provided to you. However, they should be flexible to accommodate change and/or expansion (e.g., accounting related functions).

Part 1. Logical Database Design (40 points)

Analyze the accompanying documents and create a logical database design. The design should include (but not be limited to) the following items in the context of the first three steps of the design methodology:

- Relations and their attributes
- Candidate and primary keys
- Unnormalized data model
- Data models for 1NF through BCNF with descriptions of each normal form, particularly how each was derived.
- ERD of the normalized data model (using the alternative method shown in class, and not the one from the textbook) showing:
  - Entity types and their attributes
  - Keys, candidate keys and foreign keys
  - Strong and weak entity types
  - Relationship types and their (minimum and maximum) cardinality
- Integrity constraints

Note. When an order is received a unique order number and the current date are assigned to it.

For your data models (unnormalized through BCNF), follow the notation presented in your textbook:

relation-name (key, $attribute_1$, $attribute_2$, ..., $attribute_n$)

Attributes to Ignore

Ignore the following references on the order for:

- Among the *Items Ordered*:
  - *Color Size*
  - *Gift wrap*
  - *Send Gift To*
- *Add'l Shipping Addresses*

- *Add'l Shipping Charges*
- *Gift Wrap Charges*
- All items for
  - *Billing Address* (assumed to be the same as what is printed on the label)
  - *Shipping Address* (assumed to be the same as what is printed on the label)
  - *Send Gift A To*
  - *Send Gift B To*
- Among *Method of Payment*:
  - *Authorized Signature*

Part 2. Physical Database Design (30 points)

Following your logical database design, develop the physical database design. The design should include (but not be limited to) the following:

- Denormalized data model with a explanation for denormalization.
  - Identify the anomalies resulting from denormalization, explain their effects and impact, and suggest ways in which their impact can be reduced or accommodated.
- ERD of the denormalized data model.
- Base relations and integrity rules designed for an Oracle8i or 9i installation.

Note. A normalized data model for your physical design is not an acceptable answer.

Part 3. Implementation in Oracle (30 points)

Following your physical design, build your tables and/or views in Oracle8i or 9i. Each table should contain at least 7 rows; where applicable, draw of your data from the catalog pages.

Note. If you create a view, copy and save your SQL CREATE VIEW command to a Notepad text (txt) file. It will be used to recreate the view. **Please do <u>NOT</u> include the SQL Plus prompts.** Name the file views.txt.

- Export all your tables to a single dump file. Follow the directions posted in the Introduction to Oracle8i Screen Cam.
- Copy your (dump) file to a 3½-inch diskette.
- Text file with you SQL CREATE VIEW command (if you have created any views).

Be sure to **test** your dump file. Import the file into your database using a different user. A dump file that cannot be imported or contains nothing cannot be awarded points.