

## Systems Development: Detailed Design Study Guide

### Study Questions

Peruse the unit's selected readings to answer the following questions:

#### Collaboration Diagrams and Pseudo Code

Our primary design tools for this unit are collaboration diagrams and pseudo code. Our assignment requires us to create one of each:

- What are advantages of collaboration diagrams over pseudo code?
- What about the reverse: pseudo code over collaboration diagrams?
- Some people suggest pseudo code is an unnecessary step: real code is sufficient for design. Why is this argument false?
- What are advantages of pseudo code over real code in the design phase?

#### Table Design

In our system, we use tables for persistent storage of object data. We are using a relational database, not an object database. Relational tables are not encapsulated, meaning they contain only data but not methods.

- Is there any advantage to storing data in a table as opposed to an object?
- The normal forms try to avoid mathematical problems with the representation of data. What problem does 1NF try to avoid?
- How about 2NF and 3NF?

Most address tables violate 3NF: since every street address has exactly one postal code, this functional dependency can be computed.

- Why do we violate 3NF by storing redundant columns in address data?

## Human Factors

Some people think Apple is cool and Microsoft is not. Which company spends more on design? Probably Microsoft. But Apple puts more priority on design for people, while Microsoft emphasizes design for groups and organizations.

- In the Apple design guideline web pages, there are seven significant characteristics of great software. Compare a Windows computer and your cell phone. Which device meets each of these characteristics the best?
- The Gnome design principles web page lists nine guidelines. Name a product that meets and another that violates each of these guidelines.
- Do the same for our four key design guides given in the lecture.

## **Vocabulary**

Each English term in the following list has a specific, technical meaning. Determine the equivalent term in both Armenian and Russian and memorize the meaning (in your favorite language, of course ;] ):

- 1NF
- 2NF
- 3NF
- Collaboration
- Column
- Data item
- Factors
- Foreign key
- Human factors
- Index
- Key
- Message
- Natural language

- Normalization
- Notation
- Primary key
- Principle
- Pseudo
- Relation
- Relational algebra
- Query
- Row
- Table