

# Course ISE 323: Information Systems Engineering 1

## Recitation 2 Exercise

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### 1 Review Questions

1. Describe the different kinds of information systems mentioned as abbreviations:
  - (a) Transaction Processing System
  - (b) Management Information System
  - (c) Decision Support System
  - (d) Executive Information System
  - (e) Knowledge Work System
  - (f) Office Information System
  - (g) Expert System
  - (h) Customer Relationship Management System
  - (i) Content Management System
  - (j) Enterprise Resource Planning System
  - (k) Storage Area Network
  - (l) Business Intelligence System

**A.** See notes.
2. What are the main aspects, advantages, and disadvantages of the following software development lifecycle patterns:
  - (a) Build and Fix
  - (b) Waterfall
  - (c) Spiral
  - (d) Incremental
  - (e) Prototype (evolutionary / throw away)
  - (f) Rapid Software Development
3. If you were going to develop an information system to manage flights taking off and landing in Ben Gurion Airport, which development model do you think would be most appropriate? Write down your assumptions about the input, output, and processing requirements for the system. What kind of systems would the systems need to interact with? Justify your answers based on your assumptions.

**A.** (Option) Could use the spiral development model based on the incremental model. Assume that the system must interact with planes, the weather authority, and consumer take off and landing web sites. The spiral model helps since it includes a phase worrying about threats to the system, an important aspect when designing safety critical systems. The system inputs include flight times from the airline companies, flight delays, weather information, and gate information. The output is information on screens for travelers to see and instructions for flight control agents to direct planes on the ground and in the air.

4. What is the difference between a “technique”, a “method”, and a “methodology”?

**A.** A method is a task or type of task to perform to accomplish something. A technique is a way of accomplishing the goal of the method. A methodology is a collection of methods and techniques that have some unifying feature or goal.

5. What are the advantages and disadvantages of developing in phases instead of all at once? What kind of solutions (mentioned or not mentioned in class) would help minimize the disadvantages?

**A.** Advantages include a more thought out development and design process that lets you plan ahead better. Disadvantages are that it takes longer and may lead to a disconnect between users and developers. Using a prototype or incremental development can help tighten the connection between developers and the users.

6. What is a “functional organization”? What is a “product organization”? What are advantages and disadvantages of both of them? Why would a company use one model over the other?

**A.** Functional organizations are divided up by expertise. Product organizations are divided up by product divisions, perhaps in addition to expertise. Functional organizations can more easily share information between product groups and create synergy by sharing results, problems, and funds. Product organizations can focus on developing their product, not distracted by outside forces. Companies with diverse product bases are likely to need the division to keep things efficient and accountable.

## 2 Discussion Topics

1. Take some examples from the real world and consider how they would fit into the categories provided:

- (a) A system to track all of the purchases that happen in a store
  - Transaction Processing System
- (b) Telem which enables students and teachers to exchange information
  - Cooperative Information System (not above)
- (c) Microsoft Exchange which manages email and calendars
  - Office Information System
- (d) Carnivore which monitors emails nationally
  - Decision Support System
- (e) Trading system for workers on the stock market
  - Knowledge Work System
- (f) Actuarial system which tells a bank the worth of its assets
  - Management Information System

- (g) Marketwatch.com which gives major indicators of stocks
    - Executive Information System
  - (h) Google Maps which gives mapping information
    - Geographic Information System System (not discussed above)
2. If you were going to build a cable television delivery system, which model of development would you use?
- (a) One option is the waterfall model since the company has specialized hardware which it must support.
  - (b) Another option would be to include the spiral model since there are significant risks faced by a cable company in terms of costs, customer addition and attrition, and fraud.
3. If we were going to redesign Kinneret College's organizational structure, what kind of organizational structure would we use?
- (a) Since the college has several, non-evenly sized divisions, it makes sense for there to be some centralized services such as the finance, human resources, and billing which all of the schools use. The larger schools should maintain their own secretaries and staff to manage their day to day affairs. The smaller ones may pool their staff.
  - (b) Consider the following parts:
 

Library	Finance	Marketing	Grades
Tests	Recruitment	Maintenance	