

1. (10 points) Of the following statements, identify all that hold about the specified work.

- A. According to Huhns and Singh, implementation dependence is an important desirable trait for e-business settings realized using services

Solution: A is false:

- B. According to Clark and Waclawsky, an open architecture is characterized by loose coupling

Solution: B is true:

- C. According to Zachman, a *logistic network* pertains to the network of business relationships in a business model

Solution: C is true:

- D. According to Eric Yu, modeling the *who* facet is well-understood and over-emphasized in modeling an (Internet-based) information system

Solution: D is false: Yu says the opposite, and his observation relates to the emphasis on governance in this course

- E. According to Singh et al., *Revert Offer* is a transactional pattern because it helps reverse a business transaction

Solution: E is false: *Revert Offer* is a contextual pattern because it involves the organizational context

2. (12 points) Of the following statements, identify all that hold about e-business concepts.

- A. An open system is one whose executions do not terminate

Solution: A is false: openness has to do with characteristics of the members of the system

- B. Closed systems are used for e-business whenever security becomes a priority of senior managers

Solution: B is false: closed systems cannot be adequate for open settings such as e-business

- C. A classic novice error is to treat the business units of an enterprise as if they were autonomous entities

Solution: C is false: doing so is a desirable way to proceed

- D. Achieving the interoperation of software components means getting them to work together: this usually obviates getting them into a single integrated whole

Solution: D is true:

- E. A TP monitor is a simple way to overcome the problems caused by autonomy

Solution: E is false: a TP monitor is worthless against autonomy, since it works only when the components are not autonomous

- F. Although some settings may not exhibit heterogeneity, it is still in our interest to assume heterogeneity as the basis for organizing our system

Solution: F is true:

3. (24 points) Of the following statements, identify all that hold about architecture.

- A. The exercise of developing an IT architecture should begin by identifying the main uses of the system

Solution: A is true: the purpose of an architecture is to support the main uses identified for a system

- B. Developing and realizing an open architecture requires at least two distinct steps: one to identify the logical components and their interconnections and one to determine how to realize such logical components and interconnections

Solution: B is true: to develop an open architecture means to specify the logical components and interconnections; to realize an architecture means to realize the specified logical components and interconnections

- C. The success or failure in realizing an architecture often depends on how well it is aligned with the skill sets of the available staff

Solution: C is true: the skill of the staff are indeed an aspect in realizing an architecture; for example, if no one is available (as employee, contractor, or for hire) to carry out the functions to develop the different tiers of the three-tier architecture, it would be difficult to realize successfully

- D. The primary benefit of an architecture is to specify the details of how its interconnections would be implemented

Solution: D is false: an architecture specifies interconnections among its components, but leaves out how the interconnections are implemented using lower level technologies

- E. A component in one person's architecture may legitimately be an interconnection in another person's architecture

Solution: E is true: we may model such an entity as a component or a connector depending on what else we want to express about it in our architecture

- F. Including specific roles in (and adopting a specific structure) for an IT organization often influences the kinds of system architectures that organization can effectively implement and administer

Solution: F is true:

- G. The popular architectural styles are generally supported by products that help realize such styles

Solution: G is true:

- H. Latency is a key example of a simple nonfunctional requirement that never has any bearing on the functionality delivered by a system

Solution: H is false: failure to meet certain nonfunctional requirements can affect the ability to satisfy the desired function

- I. Because the stakeholders of a system may impose conflicting requirements on it, each robust architecture must include a component that can resolve conflicting requirements

Solution: I is false: the conflicts may be resolved through negotiation or by fiat; although a conflict resolving component (where possible) would be desirable, such components are not easy to build, and many conflicting requirements would not even be visible at runtime

- J. Because of the importance of policies, a policy repository is a key infrastructure module in an enterprise architecture

Solution: J is false: a policy repository is a key element of modern enterprise architecture, but it is not a part of the infrastructure

- K. It is simpler in most practical cases to choose stakeholders who can work with an IT system rather than try to build a system that would satisfy all of the stakeholders

Solution: K is false: in practical cases, when creating an IT architecture or an IT system, you don't get to choose the stakeholders

- L. Once a system is implemented and deployed with real users, the architecture of the system has little bearing on how it is administered

Solution: L is false: the architecture relates closely to the ongoing administration of a system, including its maintenance; for example, you can scale up an implementation of a three-tier architecture by adding application servers—the decision to do is a kind of governance but it is possible because of the architecture

4. (24 points) Of the following statements, identify all that hold about protocols and specifications.

- A. The three-tier architecture not only specifies the logical components of the presentation, logic, and data tiers and their abstract interconnections, but also commercial protocols such as JDBC through which the interconnections may be realized

Solution: A is false: an architecture does not specify commercial protocols, although commercial protocols are generally designed to help realize an architecture

- B. An architectural style limits the variety of protocols that we need to describe architectures that respect that style

Solution: B is true:

- C. The three-tier architecture involves logical protocols between the presentation tier and the data tier

Solution: C is false: no protocols arise between the presentation and data tiers, because they are not (directly) connected in the three-tier architecture

- D. The business protocols through which an enterprise interacts with other enterprises do not affect its internal business processes

Solution: D is false: the internal business processes ought to be designed to support the business protocols; the inputs and outputs of the internal processes may be determined through or played out through the protocols

- E. Business protocols can be understood as peer-to-peer computing applied at the business level

Solution: E is true:

- F. A policy-based approach enables expressing the potentially distinct decision-making policies for each stakeholder

Solution: F is true:

- G. A declarative specification describes, not *what* we need, but *how* we implement it

Solution: G is false: it is the reverse

- H. Asynchronous communication is avoided in good system design because it causes avoidable coupling of the components

Solution: H is false: asynchrony yields looser coupling than does synchrony; for this reason, asynchrony is generally preferable in e-business systems

- I. Protocols can only be correctly and precisely specified using finite state machines or sequence diagrams

Solution: I is false: not surprisingly, there are multiple ways to specify protocols

- J. Sequence diagrams (or message sequence charts or MSCs) that describe business protocols should capture the business partners involved and their interactions rather than software objects from the implementation

Solution: J is true:

- K. Given a statechart with at least two states *A* and *B* where *B* is nested within *A*, *B* conveys additional information about the status of the modeled entity than state *A* does

Solution: K is true:

- L. Given a statechart, if state *B* is nested within state *A*, any transition from *A* that ends outside state *A* also applies to state *B*

Solution: L is true:

5. (16 points) Of the following statements, identify all that hold about services and contracts.

- A. In many practical cases, a technical service can be viewed as a blackbox because its implementation details are irrelevant

Solution: A is true: in contrast with a business service, a technical service is indeed conceived of as a blackbox so you can substitute one for another that offers the same functionality

- B. A business service would involve some value transfer among its participants

Solution: B is true:

- C. Unlike products or goods, a business service does not involve any coproduction among its participants

Solution: C is false: coproduction is a key defining feature

- D. A business service is always intangible whereas products or goods are always tangible

Solution: D is false:

- E. It is good practice to design and configure a business service engagement before enacting it

Solution: E is true:

- F. Escalation in a business service engagement arises when a delegatee fails to deliver on a commitment it was delegated

Solution: F is true: such failure leads to escalating the commitment back to the prior debtor

- G. Reciprocal commitments, such as $C(\text{buyer, seller, ship, pay})$ and $C(\text{seller, buyer, pay, ship})$, always lead to a deadlock

Solution: G is false: one or both of the parties may be willing to act first

- H. The only legal way to discharge a commitment $C(\text{buyer, seller, ship, pay})$ is for the seller to ship the goods, whether before or after the buyer pays

Solution: H is false: the seller need not ship the goods; shipping the goods has nothing to do with the discharge of the commitment