

| Problem | 1 | 2 | 3 | 4 | 5 | 6 | Total |
|---------|---|----|----|----|----|----|-------|
| Points: | 8 | 12 | 22 | 26 | 28 | 24 | 120 |
| Score: | | | | | | | |

This homework assignment has 6 problems, for a total of 120 points.

1. (8 points) Of the following statements, identify all that hold about the specified work.
 - A. According to Yu, from the information systems standpoint, processes produce information artifacts both for routine and nonroutine work
 - B. According to Singh et al., a contextual pattern describes how each participant in a business service engagement is organized
 - C. According to Clark and Waclawsky, although IBM's System Network Architecture (SNA) was overshadowed by TCP/IP, it was well-suited to supporting distributed business
 - D. According to Zachman, stakeholders should agree one common description of the architecture of a system being designed

2. (12 points) Of the following statements, identify all that hold about architecture.
 - A. Adopting an architectural style for specifying the architecture of a system means that you know what the exact components and interconnections are in that system
 - B. An architectural style may help us override the constraints of the architecture on which the style is based
 - C. In IT architectures, the relevant protocols are all about bits being transported
 - D. In our conceptual approach, architectural constraints are largely expressed on the topology of the interconnections among the components
 - E. For an open system, a suitable architecture is one that defines a protocol of interaction, including the rules of encounter in force
 - F. For a closed system, a suitable architecture is one that defines a machine that serves all stakeholders

3. (22 points) Of the following statements, identify all that hold about architecture and governance.
 - A. Governance involves some but not all administrative decisions to be made in the life cycle of a resource
 - B. Governance is facilitated through the development of appropriate enterprise models
 - C. The applications modules in an enterprise architecture reflect the common needs of all users
 - D. Omitting identifying stakeholders and their concerns is a potential pitfall in talking about enterprise resources and governance
 - E. Resource administration is a challenge brought about by the Internet because no resource administration is needed in traditional enterprises
 - F. Automating governance presupposes representing contracts computationally
 - G. Governance has no bearing on the internal policies by which the stakeholders involved determine how they interact
 - H. The governance hypothesis states that there is an Org for each contract whether or not the contract pertains to IT resources
 - I. The façade of a role specifies its qualifications, liabilities, and privileges
 - J. An Org may be nested wholly within another Org but cannot partially overlap two distinct Orgs
 - K. From a DoDAF OV5 document showing interactions between stakeholders and resources, we can directly create an Org specification for a desired system

4. (26 points) Of the following statements, identify all that hold about norms.
- A. An Org represented via normative relationships is analogous to a human organization though formalized in a computational representation
 - B. Norms help us characterize an artificial society with the rules of encounter among its members
 - C. We don't need normative relationships for the participants in a system when we know the participants are autonomous
 - D. Loosely stated, a norm is a standard or convention that constrains the behaviors expected of the participants in a society
 - E. A norm must be beneficial to all parties to whom it applies
 - F. By our definition, all normative relationships can be enforced
 - G. In a well-designed system, all normative relationships *should* be enforceable
 - H. The normative relationships we consider characterize what is a liability and what is a privilege for what role
 - I. If when you adopt a role in an Org you are prohibited from exiting that role, that's a privilege because you are guaranteed membership forever
 - J. Given a commitment $C(d, c, p, q)$, if p occurs, the debtor d need not bring about q but is responsible for ensuring that q occurs
 - K. In a commitment $C(d, c, p, q)$, the creditor c need not bring about p but is responsible for ensuring that p occurs
 - L. For open systems we can adopt the pattern that an authorization can be enforced computationally whereas a prohibition is enforced socially via sanctions for infractions
 - M. Our definition ensures that if anyone is empowered, they are authorized for the same antecedent and consequent
5. (28 points) Of the following statements, identify all that hold about contracts.
- A. Business contracts are like contracts in programming languages because both kinds of contracts provide a black box view of an interaction
 - B. Business contracts differ from contracts in programming languages because business contracts involve autonomous parties
 - C. An interaction protocol is a kind of contract because it specifies two or more parties along with what each can expect from the other
 - D. A compensation clause is a kind of resolution clause because it specifies the payment a contractor would receive for performing a job
 - E. An implementation clause specifies how a contracted service is to be realized
 - F. Like a rental lease agreement, each contract must have a fixed term after which it will expire
 - G. In the contract life cycle, a contract may potentially pass through the violated state multiple times
 - H. In the contract life cycle, a contract may potentially pass through the failed state multiple times
 - I. We can view a contract as a set of normative relationships
 - J. A contract is a public specification of the interactions of two or more participants
 - K. A contract does not specify how the normative relationships between the participants change
 - L. Contracts are an effective means of achieving commercial transactions and governance because they help us deal with parties that have no mutual dependencies
 - M. A simple methodology for achieving governance is to specify a contract and its policy points, and for each participant to provide the internal policies needed to execute each policy point

N. No contract is involved in simple steps such as an agent adopting a role in an Org

6. (24 points) Of the following statements, identify all that hold about metadata and XML technologies.

- A. Metadata supports the heterogeneity of participants exchanging information because it makes data characteristics explicit instead of hardcoding them in a program
- B. Metadata enables the autonomy of participants exchanging information since they can write any metadata they choose
- C. Metadata applies to how information is processed, communicated, and stored
- D. Using different namespaces for different vocabularies is a way to ensure there are no name collisions
- E. Using XPath we can access the first text node or all text nodes under an element but we cannot access the second text node when three or more text nodes exist
- F. In general, an XPath axis yields a node sequence to which further selections can be applied
- G. In XPath, // abbreviates descendant-or-self::element()
- H. Unlike a FLWOR query, an XQuery function must output a well-defined XML tree
- I. The data-centric view of XML wins in precision and indexing but loses in flexibility to the document-centric view
- J. The expansion of XML and other NoSQL databases in modern computing indicates the success of the data-centric view
- K. The SQL/XML mapping rules address challenges such as relating the data types defined in SQL with those defined in XML
- L. SQL can be embedded within XQuery thereby facilitating relational and XML database integration