SE 2 Midterm Sample

Course: SE2 - Software Architecture and Design
Instructor: Reid Holmes
Date: N/A

Notes

- You have 80 minutes to complete the midterm.
- No outside material is permitted.
- Only clarification questions will be answered.
- Writing in pen is preferred, and it is required if you want your Midterm remarked.
- Answer all questions; hand them in when completed.
- Square brackets [] indicate point value.

Student Name Quest ID Student Signature

Question	Maximum Marks	Awarded Marks
1	5	
2	5	
3	6	
4	2	
5	2	
6	3	
7	2	
8	4	
9	6	
10	4	
11	10	
12	1	
TOTAL	50	

1. Assess whether the following statements are true or false [5].

True or False?	Statement
	Reification refers to the concrete implementation of some concept.
	The integrity of a message is maintained if it is not modified in an unspecified way.
	Throughput is an ineffective measurement to evaluate system performance.

2. Match the appropriate term in the right column with the sentence in the left column [5]. Terms on the right can be used zero or more times.

Term	Sentence
	_____ means components are oblivious of each other's physical location.
	Systems that focus on providing simple security approaches are employing _____.
	_____ is the removal of detail while retaining essential properties of structure.
	Brooks claims that _____ have reduced accidental complexity more than any other advancement.
	_____ can result in difficult-to-debug dependencies between components.

Term
behaviour
high level languages
least common mechanism
advanced development tools
software architecture
economy of mechanism
content coupling
abstraction
distribution transparency
control coupling

3. Name the three entities that comprise a software architecture [3]. Provide a one-sentence description of each [3].

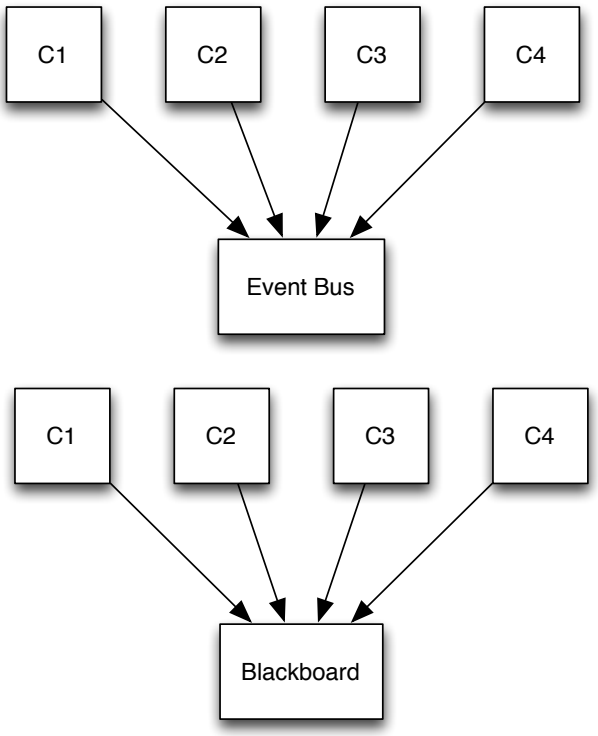
4.

5. What is architectural drift [1]? Provide an example of how drift can happen in practice [1].

6. Differentiate concrete and conceptual architectures [2]. Provide an example explaining how concrete and conceptual architectures differ in practice [1].

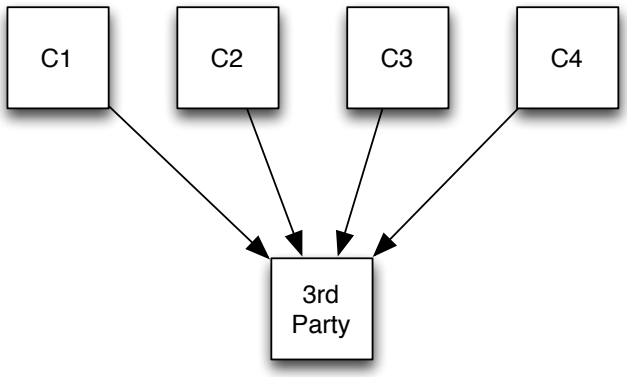
7. Provide one positive property [1] and one negative property [1] of having a large topological distance between two components.

8. Differentiate the architectural styles shown below [4].



9. Diagram and describe the interaction between four components in a system based on a non-strict layered architectural style [4]. Discuss one positive aspect of using a non-strict layered architecture [1] and one negative aspect [1].

10. Critique the architecture provided below, given the expectation that the system architect has reason to doubt the long-term viability of the third party component they are using [2]. Improve and justify the existing architecture to reflect this concern [2].



11. Consider a system that enables users to dynamically retrieve data from different services and perform various simple actions on the data. The user can specify any number of actions to be performed; new actions may be added to the system at a later time. For example, a user retrieves his list of friend metadata from a social network, removes anyone who hasn't posted in 30 days, extracts each remaining friend's current geographic location, and creates a map that shows the location visually.

    Apply one or more of the architectural styles we discussed in class to this system, justify your selection, and describe why your architecture is 'good' [4]. List two non-functional properties your architecture supports and describe how your architecture supports these properties [2]. Provide a component diagram that demonstrates your architecture as unambiguously as possible [4].

12. Provide at least one piece of feedback that you think could improve the remainder of the course or make effective use of the tutorials [1].