

Chapter 6: Architectural design

Your name:

Answer all questions. 1 mark per question

1. What are the advantage of explicitly designing and documenting a software architecture?

It improves stakeholder communications

It encourages a detailed analysis of the system

It helps with large-scale reuse.

2. What are the two ways in which an architectural model of a system may be used?

As a means of facilitating discussion about the most appropriate architecture for a system.

As a means of documenting the architecture of an existing or an intended system.

3. List 4 fundamental questions that should be addressed in architectural design?

Is there a generic application architecture that can be used?

How will the system be distributed?

What architectural style or styles are appropriate?

How should the system be structured?

What control strategy should be used?

4. What are the fundamental architectural views proposed in Krutchen's 4+1 model?

A logical view that shows the key abstractions of the system.

A process view that shows the interacting processes in the system

A development view that shows how the system is decomposed for development

A physical view that shows the distribution of software on the system hardware

5. What is an architectural pattern?

A stylized abstract description of good practice in architectural design that has been tried and tested in different systems and environments. The pattern should include information on when it is and is not appropriate to use that architectural design.

6. What is the fundamental characteristic of a repository architecture?

All shared data is held in a central database that can be accessed by all sub-systems.

7. What is the most important advantage of a client-server architecture?

This is a distributed architecture so that it is possible to provide services on different computers. It is easy to add a new server or upgrade existing servers without disrupting the system

8. Briefly describe pipe and filter architecture?

A system is decomposed into a set of functional transformations that consume inputs and produce outputs. Data flows from one function to another (the pipeline) and is transformed as it passes through the sequence.

9. What are transaction-processing applications?

Database-centered applications that process user requests for information and update the information in the database. They are organized so that transactions cannot interfere with each other and the integrity of the database is maintained.

10. What are the principal functions of the 4 layers in a generic information system architecture?

- (1) *User interface*
- (2) *User communications, authentication and authorization*
- (3) *Information retrieval and modification*
- (4) *Database and transaction management*