

Information Systems Analysis & Design (M8748)

Tutorial 12 Answer

1. What are the advantages of separating the analysis and design phases of a project?

Project management advantage: being able to plan for and budget for the two stages separately.

Staff skills and experience advantage: having separate business analysts who are more familiar with business practices and designers who know the development environment well.

Client decisions advantage: having a clear decision point at which the client can read the specification of requirements and agree to it before design begins.

Choice of development environment: being able to delay the decision about the development environment to take advantage of new developments.

2. What are the advantages of an iterative life cycle?

Problems can be identified early in a project, which helps to mitigate risks.

Treating requirements change as an expected process and putting in place procedures to handle it makes it easier to manage.

Team members can be involved in and learning about requirements and the solution from early in the project.

Testing of deliverables begins early and quality is improved.

3. Users at Agate require a report of unpaid campaigns. Which of the following aspects of the report represents analysis, logical design and physical design?

The size of the paper and the position of each field in the report.

The fact that the user wants a report of completed campaigns that have not yet been paid for by the client.

The selection of the business objects and their attributes used by the report.

User wants report etc.—analysis.

Selection of business objects etc.—logical design.

Size of paper etc.—physical design.

4. Which of the following sentences describing an element of the FoodCo system represents analysis, logical design and physical design?

The reason for stopping a run will be selected from one of the values displayed in a listbox (Java Choice) in the Record Line Stop dialogue window.

When a production line stops during a run, the reason for stopping will be recorded.

The reason for stopping a run will be entered into the system by selecting from a list of valid reasons.

The reason for stopping a run will be selected from one of the values displayed in a listbox etc.—physical design.

When a production line stops etc.—analysis.

The reason for stopping a run will be entered into the system etc.—logical design

5. What is meant by seamlessness in object-oriented systems development?

Seamlessness means that the same model (class diagram) is used and successively refined throughout the project

6. What are the differences between system design and detailed design?

System design is concerned with the overall architecture of the system and the setting of standards, for example for the design of the human–computer interface.

Detailed design is concerned with designing individual components to fit this architecture and to conform to the standards.

In an object-oriented system, the detailed design is mainly concerned with the design of objects.

7. Explain the difference between cohesion and coupling.

Cohesion is concerned with how well all the elements of a part of the system contribute to achieving a single objective.

Coupling is concerned with the extent to which different parts of a system are dependent on one another

8. What aspects of the system are added to the class diagram(s) in object-oriented detailed design?

We elaborate user interface and application control classes, we add mechanisms to support data management. The class diagram is also updated with the types and visibility of attributes and operations and to show how associations are designed.

9. List four quality criteria for good analysis.

Correct scope, completeness, correct content, consistency

10. List twelve quality criteria for good design.

Functional, efficient, economical, reliable, secure, flexible, general, buildable, manageable, maintainable, usable, reusable.

11. Re-read the description of the FoodCo case study in Case Study 81. Identify any

constraints that you think might be imposed on the design of the new system.

These could include the following constraints.

- Initial need for new costing system to interface to existing accounts package.
- Need to interface to other existing systems—e.g. networking to the mini-computer.
- Unskilled workforce may need simple interface.
- Object-oriented development strategy.
- Data volumes needed for product costing.

12. Based on the same information try to identify possible measurable objectives for the new FoodCo system.

These are not particularly explicit, but might include the following.

- To reduce costs of production by 10% within one year.
- To reduce wastage due to changing market demand by 50% within one year.
- To reduce the costs of producing the payroll by the direct entry of timesheet information.
- To produce accurate costs of production for each line on a weekly basis.

13. Agate wants the new system to provide access to the same data from every office around the world. Maintaining a network that is constantly connected between all the offices is considered too expensive, and using a network that dials up remote offices as required, would provide response times that are too slow. What kind of compromise solution can you come up with to this problem??

This is an open-ended question with no right answer. The kinds of answers will depend on the background and knowledge of the students.

The Internet provides a solution in which there is only a need for a local connection to an Internet Service Provider, but data can be transferred all over the world. However, there may be security risks. Virtual Private Networks (VPNs) can be used to tunnel private networks over TCP/IP, the Internet protocol.

The data could be distributed, with data that is relevant to each local office held locally, and with shared data mirrored at each site and with some kind of overnight process to ensure that changes to shared data are replicated. However, with offices around the world, there is no common night-time.

Digital ISDN (Integrated Services Digital Network) lines provide a faster connection time than conventional telephone lines. However, they are more expensive than conventional lines. ADSL (Asymmetric Digital Subscriber Line) provides higher speed connections than conventional lines and is cheaper than ISDN, but is not yet widely available.