

Information Systems Analysis & Design (M8748)

Tutorial 20 Answer

1. What are the benefits of reuse?

Saving time and money in developing the components, and saving time and money in testing the components.

2. What are some of the obstacles to reuse?

Inappropriate choice of projects for reuse; planning for reuse too late in a project; the level of coupling between classes in an object-oriented design; the lack of standards for reusable components.

3. Give Jacobson et al.'s definition of a 'component'.

'A component is a type class or any other work product that has been specifically engineered to be reusable.' (Jacobson et al., 1997)

4. Name three mechanisms for creating reusable components in different programming languages.

Some examples:

Visual Basic – .vb and .ocx files.

Java – .jar files and JavaBeans.

Windows generally – COM, DCOM, .dll files, OLE, DDE.

Unix generally – shared object libraries .so files.

Perl – modules .pm files.

5. How does Allen and Frost's definition of a component differ from that of Jacobson et al.?

Allen and Frost consider reusable components to be executable units of code that provide a black-box encapsulation of some functionality, whereas Jacobson et al. think of any class or type or other work product that has been engineered to be reusable as a reusable component. They specify that a component should have an interface, and that it should be capable of being connected together with other components via its interface.

6. What are the three processes in Jacobson et al.'s approach to reuse, and what is meant by each?

Application Family Engineering (AFE) is an architectural process that captures the requirements for a family of systems and turns them into a layered architecture, consisting of an application system and a supporting component system.

Component System Engineering (CSE) is the process of focusing on the requirements for the component system and developing the use cases, analysis models and design for reusable components to support application development.

Application System Engineering (ASE) is the process of developing the requirements for applications and developing the use cases, analysis models and design to produce application software that makes use of the reusable component systems developed by CSE.

7. What is the purpose of the Facade pattern?

To provide an interface to a set of interfaces in a sub-system. Using a Façade provides a higher-level interface that makes the sub-system easier to use because the operations are all operations of a single Façade class. The developer using the sub-system does not need to know the details of the internal structure of the sub-system.