Information Systems Analysis & Design (M8748)

Tutorial 5 Answer

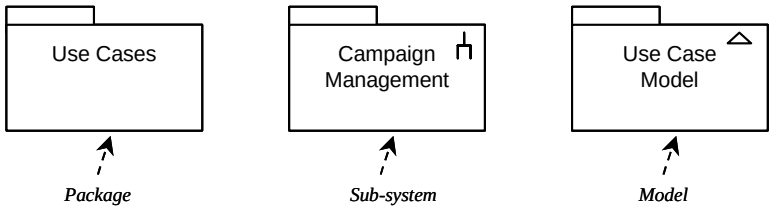
1. What is the different between a diagram and a model?
   A diagram is a graphical representation of something; a model is an abstraction of some system or sub-system from a particular perspective, using diagrams and textual information. (See pp.100-102.)

2. What are the four elements of a UML diagram?
   Icons, two-dimensional elements, paths and strings. (See p.100.)

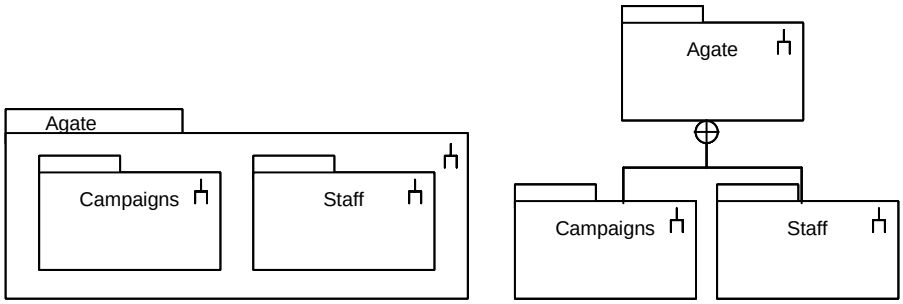
3. Why do we use models in developing computerized information systems and other artifacts?
   A model is quicker and easier to build, it can be used in simulations, it can be used to document the system that we are building and it can represent real or imaginary things from any domain. (See pp.97-98.)

4. Why do we need standards for the graphical elements of diagrams?
   To promote communication between team members in a project. To communicate over time to other people who will work on the system. To communicate good practice and experience. (See pp.98-99.)

5. What is the UML notation for each of the following: package, sub-system and model?



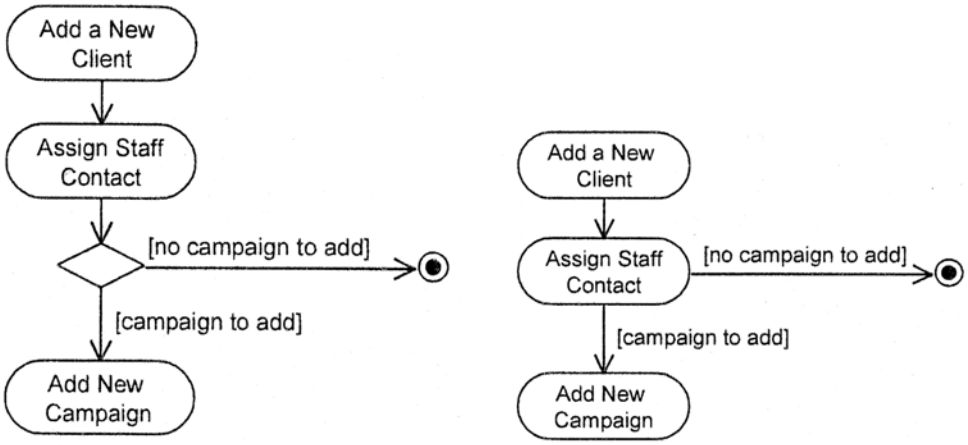
6. In what two ways can we show in UML that something is contained within something else, for example a sub-system within another sub-system?
   By showing one object contained within the other in the diagram and by using the notation of a circle with a cross in it.



7. What is the notation used for an activity in a UML activity diagram?
   A rectangle with rounded ends.

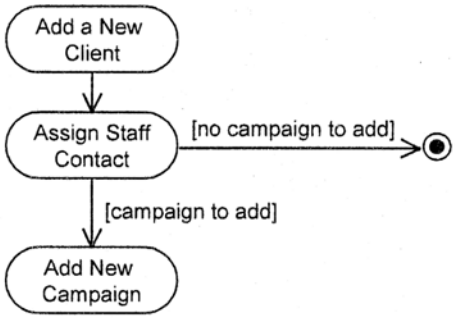
8. What links activities in an activity diagram?
   Transitions. (See p.106.)

9. In what two ways can a decision be represented in a UML activity diagram?
   By a transition to a diamond shape and then the alternative paths branching out from the diamond, or by having the alternative transitions leaving a state. Guard conditions in square brackets are used to show the conditions that must be satisfied for one of the alternatives to be taken.



10. What are the two special states shown in an activity diagram?
    The start state (a filled black circle) and the final state (a filled black circle within

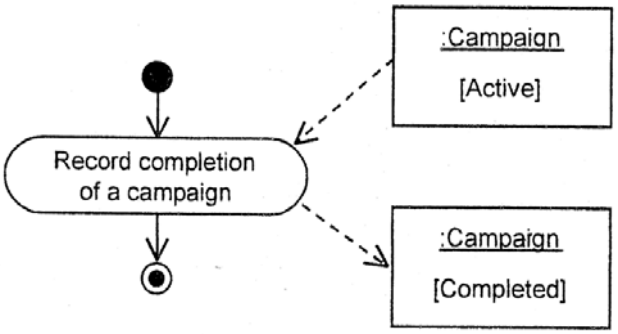
another circle).



11. What is meant by guard condition?
    Conditions on a transition that must evaluate to 'true' for the transition to the next state to take place.

12. What is an object flow?
    An object flow is a dependency between an object and an activity that results in a change to the state of that object. (See p.107.)

13. What is the notation for an object flow?
    An object, optionally showing its state in square brackets, and a dashed dependency arrow between the activity and the object.



14. What is the difference between the USDP and the waterfall life cycle in the relationship between activities and phases?
    In the waterfall life cycle, activities and phases are effectively the same, e.g. analysis activities take place in the analysis phase or stage. In an iterative life cycle like the USDP, the same activities represented by workflows take place in each phase, but the balance of activities changes as the life cycle progresses.