Chapter 5: System modeling
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Answer all questions. 1 mark per question

1. What perspectives may be used for system modelling?

- An external perspective
- An interaction perspective
- A behavioral perspective
- A structural perspective

2.What UML diagram types may be used to represent the essential features of a system?

- Activity diagrams
- Use case diagrams
- Sequence diagrams
- Class diagrams
- State diagrams

3.What is described in a context model?

- The immediate external environment of the system defining the system's context and the dependencies that a system has on its environment. The context model shows what is outside of the system boundary.

4.How are activity diagrams used in describing the context of use of a system?

- Activity diagrams may be used to describe the business processes in which the system is used and the other systems which are also used in these processes.

5.What are the principal components of a textual use-case description?

The actors involved :

- A description of the interactions
- The data that is exchanged
- The stimulus that triggers the use case
- The response of the system
- Comments and other information

6.What is illustrated in a UML sequence diagram?

- A sequence of interactions between the actors in a system's environment and the objects in the system itself. The sequence of interactions describes the implementation of a system feature or function.

7.How is generalization used to simplify the models of a system with many similar objects?

- Assuming that the similar objects have attributes and methods in common, these common attributes and methods are associated with a 'super-class' which generalizes all of the objects sharing these attributes/methods. The specific object classes only declare the attributes/methods specific to that class and they inherit the general attributes/methods from the super-class.

8.What is the basic assumption that underlies event-driven modelling?

- It is based on the assumption that a system has a finite number of states and that events (stimuli) may cause a transition from one state to another.

9.What are the claimed benefits of model-driven engineering?

Engineers can work at a high level of abstraction without concern for implementation details.

- Errors are reduced.
- The design and implementation process is sped up.
- By using powerful generation tools, implementations of the same system can be automatically generated for different platforms.

10.What are the three types of abstract system model that are recommended by the MDA method?

- A computation independent model (CIM) that models the important domain abstractions used in the system. CIMs are sometimes called domain models. You may develop several different CIMs, reflecting different views of the system.
- A platform independent model (PIM) that models the operation of the system without reference to its implementation. The PIM is usually described using UML models that show the static system structure and how it responds to external and internal events.
- Platform specific models (PSM) which are transformations of the platform independent model with a separate PSM for each application platform.