

Which statements are the correct about the life cycle of a computer system...:

1. it is a template for ordering the activities of the computer system;
2. it is included in the development cycle of the computer system;
3. it can be organized in 5 stages (identification of requirements, analysis, design, implementation, maintenance);
4. it ends with the decision to abandon the system and replace it with a new system.

Select the correct combination:

Selectați răspunsul corect:

a. 2+3+4 ✗

b. 1+2

c. 3+4;

d. 1+3+4

What does "Continuous Deployment" mean in the DevOps methodology?

Selectați răspunsul corect:

a. A manual process for releasing new application versions

b. A process where every validated code change is automatically deployed to production ✓

c. A strategy to prevent any changes in the production environment

d. A method for automatically backing up applications

You can model the following situations with a state machine diagram:

Select one or more:

i. The states that the object of a class can have.

ii. Possible transitions from one state to another.

iii. Events that trigger transitions.

iv. Activities that are executed while the object is in a certain state or while a transition is occurring.

Selectați răspunsul corect:

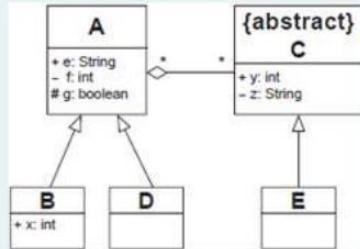
a. i+ii+iii+iv ✓

b. i+ii+iii

c. i+ii

d. i

You are given the following clipping of a UML2 class diagram.



Which of the following statements are FALSE?

Select one:

- a. An object of A may or may not contain objects of C
- b. An instance of A can see y
- c. Objects of B and D can see g
- d. Objects of C and B can see f

Relationships between components in a component diagram show that:

Selectați răspunsul corect:

- a. The classes included in the client component are interfaces of the classes in the supplier component;
- b. The classes included in the client component are composed of classes included in the supplier component;
- c. The classes included in the client component can inherit, instantiate or use classes included in the vendor component; ✓
- d. The classes included in the client component cannot exist without the supplier component;

What defines the DevOps process loop?

Selectați răspunsul corect:

- a. Plan, build, release, deploy, monitor;
- b. Build, test, release, monitor;
- c. Plan, code, build, test, deploy, operate, monitor, plan; ✓
- d. Code, test, deploy, operate, monitor, plan;

Which testing technique involves verifying software behavior without accessing the source code?

Selectați răspunsul corect:

- a. Profiling testing
- b. Static testing
- c. Black box testing
- d. White box testing ✗

The design of the system environment consists of:

Selectați răspunsul corect:

- a. Designing the configuration of the processing elements during execution.
- b. Establishing the architecture of the information system;
- c. Establishing the technical level of the equipment with the necessary computer technology;
- d. Identification of all the technologies necessary to support the implementation of the IT system; ✓

In a UML state-machine diagram, a state:

Selectați răspunsul corect:

- a. describes a workflow;
- b. may include special actions; ✓
- c. is included in the class diagram;
- d. is included in the activity diagram;

In a decision node of an activity diagram:

Selectați răspunsul corect:

- a. more flow enter and more than one come out;
- b. several flows enter and one come out;
- c. you can simulate the "DO-UNTIL" control structure from programming;
- d. output flows have mutually exclusive conditions; ✓

What elements should be added/ defined in a design class diagram?

Selectați răspunsul corect:

- a. associations
- b. entity classes
- c. stereotypes, controller classes, navigability, member's complete signature ✓
- d. multiplicities

What is the first step in designing a database?

Selectați răspunsul corect:

- a. SQL implementation
- b. Creating indexes
- c. Database normalization
- d. Defining the conceptual model ✓

What does involve preventive maintenance?

Selectați răspunsul corect:

- a. making changes within the system in order to repair and remove defects or errors in design, programming, or implementation
- b. implementing new functional or non-functional system requirements
- c. making changes to the information system to enhance its functionality or to adapt it to a new environment
- d. changes made to the system to reduce or eliminate the risk of system failure ✓

A shared aggregation between two classes (whole and parts) will be implemented:

Selectați răspunsul corect:

- a. By reference, adding a reference attribute to the Part class
- b. By reference, adding a reference attribute to the Whole class ✓
- c. By value, adding an attribute to the Whole class
- d. By value, adding an attribute to the Part class

Which of the following statements about shared aggregations is true?

Selectați răspunsul corect:

- a. A shared aggregation is shown by a solid-filled diamond on the end of an association line
- b. Shared aggregations are used to express an is-a relationship
- c. The multiplicity of a shared aggregation may be  $\geq 1$
- d. Chains of shared aggregation links may form a cycle ✗

Robustness in design can be implemented by:

Selectați răspunsul corect:

- a. separating persistent functions from business functions and separating relational storage and objects ✓
- b. using design patterns and separating relational storage and objects
- c. using design patterns

Selectați răspunsul corect:

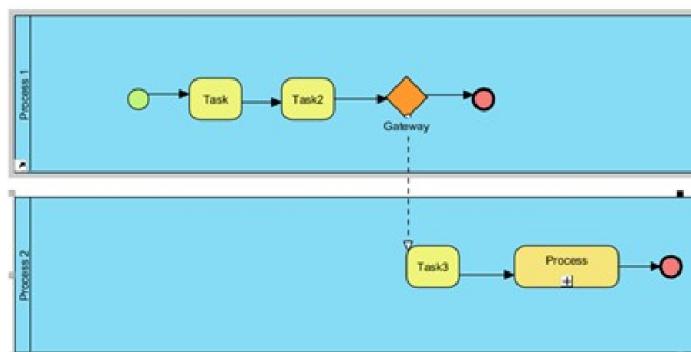
- a. Application; database; network; ✗
- b. Application, database, user interface;
- c. Company, application and database;
- d. Database, user interface; cloud;

What type of BPMN event is appropriate for modeling "Approved expense budget"? Choose one of the following:

Selectați răspunsul corect:

- a. timer
- b. conditional ✗
- c. signal
- d. receive message

Which element is missing from the following collaboration diagram;



Selectați răspunsul corect:

- a. A data flow;
- b. An intermediate event; ✗
- c. A message flow;
- d. A start event;

**Which of the following is a primary goal of software architectural design?**

Selectați răspunsul corect:

- a. To create user interface mockups
- b. To define the high-level structure of the system, including its components and their interactions ✓
- c. To conduct user acceptance testing
- d. To write detailed code for all modules

Which of these are the types of nodes used in the deployment diagram?

Selectați răspunsul corect:

- a. devices and artifacts
- b. devices and execution environments ✓
- c. execution environments and stereotypes
- d. artifacts and stereotypes

Designing interfaces with other systems involves:

Selectați răspunsul corect:

- a. Designing graphic interface layouts;
- b. Designing the model of collaboration between processes from different systems;
- c. Designing how to connect and interact with other systems, whether internal or external; ✓
- d. Designing dialogue with system users;

The <>boundary<> classes have the role of:

Selectați răspunsul corect:

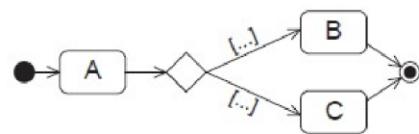
- a. Identifying classes of the problem domain;
- b. Creating objects that must also exist after the system is turned off;
- c. Ensuring communication with actors or other computer systems. ✓
- d. Mediating between boundary classes and entity classes;

In the context of software architecture, what is the main benefit of using containers?

Selectați răspunsul corect:

- a. They provide a lightweight environment for deploying applications with their dependencies ✓
- b. They allow multiple applications to run on different operating systems simultaneously
- c. They eliminate the need for virtualization
- d. They require dedicated hardware for each application

You are given the following activity diagram. Which of the following action sequences are possible during one execution of the activity diagram?



- i. A → B → C
- ii. A → C → B
- iii. A → B
- iv. A → C

Selectați răspunsul corect:

- a. i+ii
- b. i+iii+iv
- c. ii+iv
- d. iii+iv ✓

Within sequence diagrams ...

Selectați răspunsul corect:

- a. ...the behavior of one object is modeled
- b. ...time is no separate dimension
- c. ...the chronological process of one object is modeled ✗
- d. ...you can refer to other sequence diagrams

What is MOST important in an agile approach (according to the Agile Manifesto)?

Selectați răspunsul corect:

- a. People and how they communicate; ✓
- b. Control and management;
- c. Process and tools;
- d. Documentation and planning;

When choosing an implementation strategy you have to take into consideration:

Selectați unul sau mai multe:

- a. the degree of participation of the beneficiary in the implementation of the information system during the previous stages ✓
- b. the originality of the computer system
- c. the volume of data and the diversity of their sources ✓
- d. the degree of professional training of computer system users
- e. the nature and complexity of the designed computer system ✓

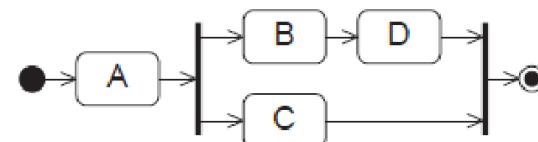
A fork node of a UML2 activity diagram ...

- i. ... is used for modeling parallel threads.
- ii. ... produces tokens for all outgoing edges.
- iii. ... deletes tokens which are not accepted.
- iv. ... is only valid when combined with a join node.
- v. ... is an alternative to the decision node.

Selectați răspunsul corect:

- a. i+ii+iii
- b. i+iv ✗
- c. i+ii+iii+iv
- d. i+ii

You are given the following activity diagram. Which of the following action sequences are possible during one execution of the activity diagram?



- i. A → B → C → D
- ii. A → B → D → C
- iii. A → C → B → D
- iv. A → B → D
- v. A → C

Selectați răspunsul corect:

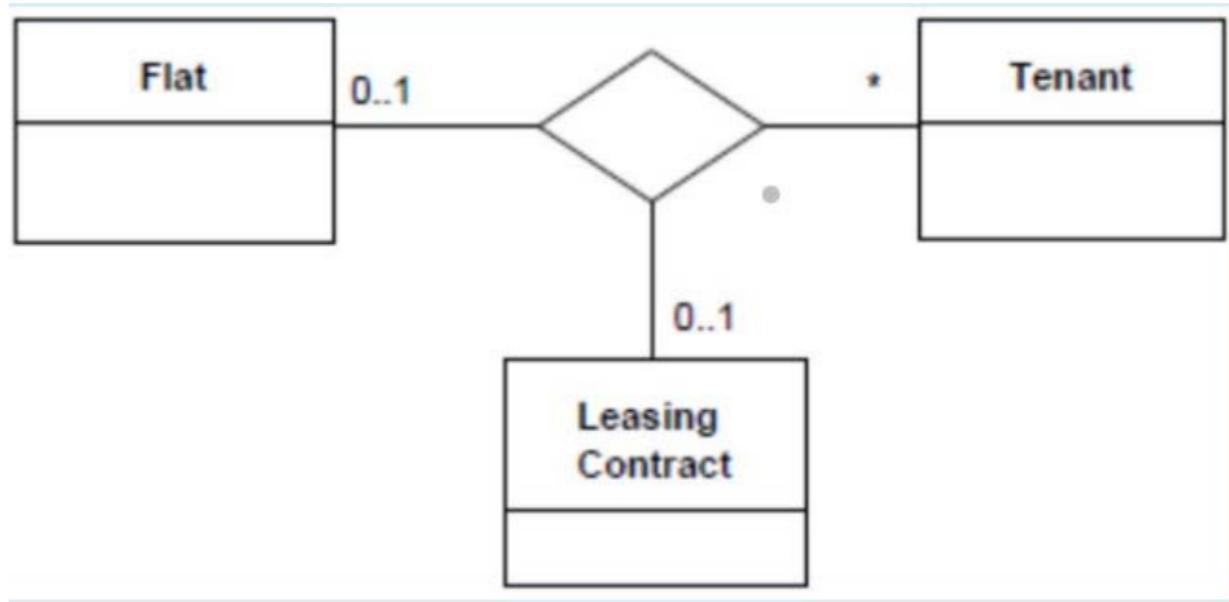
- a. i+ii+iv
- b. i+iv+v
- c. i+ii+iii ✓
- d. i+ii

During coding , a shared aggregation between two classes (whole and parts) will be implemented:

Selectați răspunsul corect:

- a. By reference, adding a reference attribute to the Whole class ✓
- b. By reference, adding a reference attribute to the Part class
- c. By value, adding an attribute to the Whole class
- d. By value, adding an attribute to the Part class

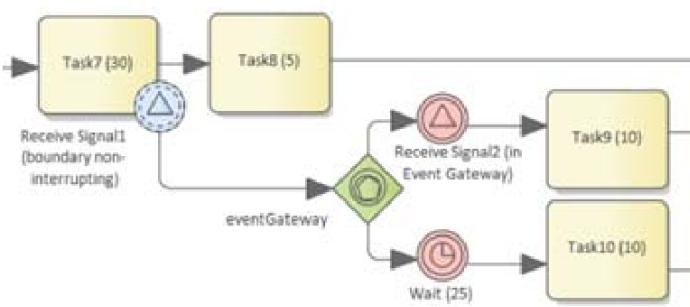
You are given the following clipping of a UML2 class diagram. Which of the following statements are true? Select one or more:



Selectați unul sau mai multe:

- a. One tenant can rent multiple flats with different leasing contracts.
- b. One tenant can rent multiple flats with the same leasing contract.
- c. One flat can be rented by multiple tenants with the same leasing contract. ✓
- d. One flat can be rented by multiple tenants with different leasing contracts

Consider the following business process diagram fragment:



The blue event on Task7 represents:

Selectați răspunsul corect:

- a. A non-interrupting intermediate error event
- b. An interrupting intermediate signal event
- c. A non-interrupting intermediate signal event ✓
- d. An interrupting intermediate error event

In BPMN, a message flow can be used to:

Selectați răspunsul corect:

- a. represent branching and merging
- b. connect two tasks in the same pool
- c. transfer data between tasks
- d. show message exchange between two participants ✓

In order to accelerate the analysis, design and implementation phases, in methodologies based on rapid development, it is recommended to use:

- A. CASE tools;
- B. hierarchical databases;
- C. code generators;
- D. visual programming languages.

Selectați răspunsul corect:

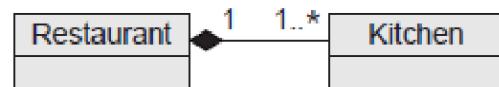
- a. (A+C+D) ✓
- b. (A+B+C)
- c. (B+C+D)
- d. (A+C);

How do you model the following situation with a UML2 class diagram:

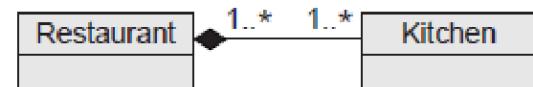
Every restaurant has at least one kitchen, one kitchen is part of exactly one restaurant.

Choose one or more:

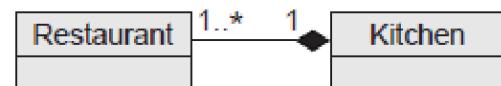
i.



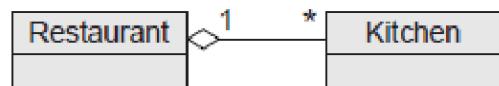
ii.



iii.



iv.



Selectați răspunsul corect:

- a. i + iv
- b. iv
- c. iii
- d. i ✓

A class diagram ...

Selectați răspunsul corect:

- a. shows the dynamic view of a system.
- b. shows the practical view of a system.
- c. shows the interaction view of a system.
- d. shows the static view of a system. ✓

Relationships between components in a component diagram show that:

Selectați răspunsul corect:

- a. The classes included in the client component can inherit, instantiate or use classes included in the supplier component; ✓
- b. The classes included in the client component cannot exist without the supplier component;
- c. The classes included in the client component are composed of classes included in the supplier component;
- d. The classes included in the client component are interfaces of the classes in the supplier component;

Components can be accessed:

Selectați răspunsul corect:

- a. directly
- b. by reusing classes
- c. through executables, linkable libraries, Web services, and mobile services.
- d. through their interfaces ✓

Which of the following models does NOT contribute to the design of the database:

Selectați răspunsul corect:

- a. Object diagram;
- b. Class diagram;
- c. Entity-relationship diagram
- d. Sequence diagram; ✓

Which of these are the types of nodes used in the deployment diagram?

Selectați răspunsul corect:

- a. devices and execution environments ✓
- b. execution environments and stereotypes
- c. artifacts and stereotypes
- d. devices and artifacts

The deployment diagram shows:

Selectați răspunsul corect:

- a. Existing dependencies between various software components that compose an information system;
- b. How a system is divided into logical groups and the links between them;
- c. Configuration of physical processing nodes during execution; ✓
- d. Interactions that take place between various objects of a system, chronologically ordered;

Which of the following diagrams is not refined in the design stage:

Selectați răspunsul corect:

- a. Sequence diagrams;
- b. ERD diagram;
- c. Class diagram;
- d. State-machine diagram; ✓

The design of the system environment consists of:

Selectați răspunsul corect:

- a. Identification of all the technologies necessary to support the implementation of the IT system; ✓
- b. Establishing the technical level of the equipment with the necessary computer technology;
- c. Designing the configuration of the processing elements during execution
- d. Establishing the architecture of the information system;

The development cycle of a computer system includes:

Selectați răspunsul corect:

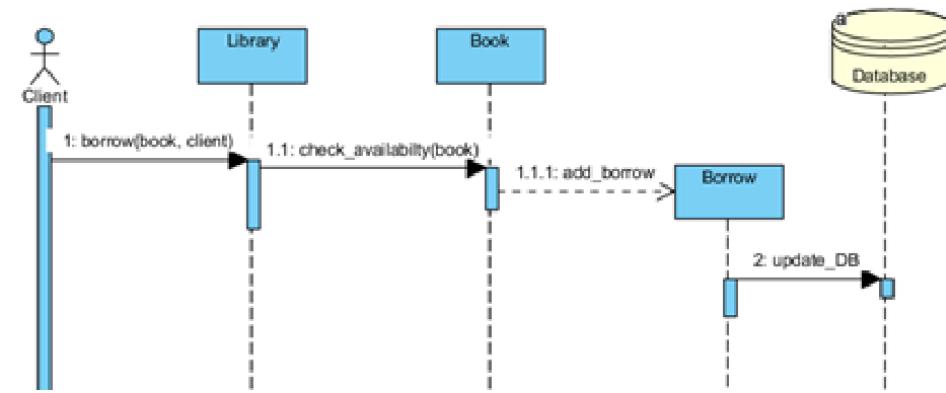
- a. The analysis phase; ✓
- b. The maintenance phase;
- c. The elaboration phase;
- d. The life cycle of the computer system;

Which of the following cannot be applied to DevOps methodology:

Selectați răspunsul corect:

- a. Addresses the gap between customer requirements and development - testing team ✓
- b. Intensifies reusability and automation
- c. Automated release management
- d. Addresses the gap between Development-Testing and Operational

Which of the following are inappropriately used in this sequence diagram?



Selectați răspunsul corect:

- a. the *Borrow* object;
- b. the *add\_borrow* message; X
- c. the Client actor;
- d. the data storage symbol;

What type of UML diagram can be used for user interfaces design?

Selectați răspunsul corect:

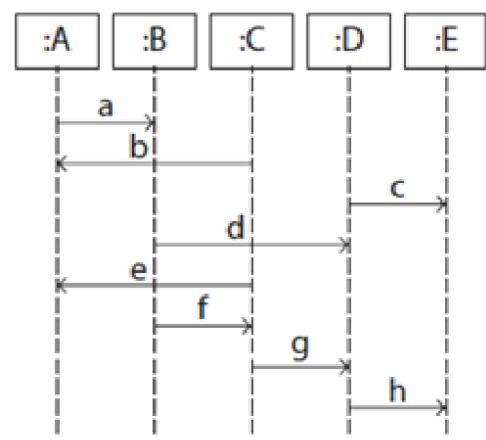
- a. state-machine diagrams
- b. navigation charts ✓
- c. use case diagrams
- d. activity diagrams

How can an object be mapped to a relational storage?

Selectați răspunsul corect:

- a. as a foreign key to connect with other objects
- b. as a row in the table OR as rows in more than one table ✓
- c. as a reference table
- d. as a primary key to uniquely identify a row

You are given the following sequence diagram. Which traces are possible?



- i. a → b → c → d → e → f → g → h
- ii. a → b → c → e → d → f → g → h
- iii. a → b → c → d → e → f → h → g
- iv. c → a → d → b → e → f → g → h

Selectați răspunsul corect:

- a. i+ii+iii
- b. i+iv ✓
- c. i+ii
- d. i+iii+iv

What does the syntax for labeling a transition look like in a state-machine diagram?

Selectați răspunsul corect:

- a. event[guard]/effect ✓
- b. [guard]effect/event
- c. [effect]guard/event
- d. [effect]event/guard
- e. effect[guard]/event

Stereotypes are added to classes in the stage of:

Selectați răspunsul corect:

- a. Specification of the requirements;
- b. Implementation
- c. Design ✓
- d. Analysis

What is the primary purpose of the MVC (Model-View-Controller) architecture?

Selectați răspunsul corect:

- a. To ensure that all application logic is written in a single module
- b. To tightly couple the user interface and business logic for faster execution
- c. To separate concerns by dividing an application into three interconnected components: Model, View, and Controller ✓
- d. To eliminate the need for frontend development

Which of the following is not a role according to the SCRUM methodology:

Selectați răspunsul corect:

- a. SCRUM master
- b. development team
- c. team leader ✓
- d. product owner

What type of testing verifies the interaction between system modules to ensure correct functionality?

Selectați răspunsul corect:

- a. Integration Testing
- b. Unit Testing
- c. Security Testing
- d. Regression Testing X

Corrective maintenance aims to:

Selectați răspunsul corect:

- a. repair and remove defects or errors in design, programming or implementation ✓
- b. reduce or eliminate the risk of system failure
- c. enhance the system's functionality or to adapt it to a new environment
- d. implement new functional or non-functional system requirements

What techniques can be used for identifying class operations?

- i. Class - responsibility cards
- ii. Activity diagrams
- iii. Sequence diagrams
- iv. Business process diagrams

Select one:

- a. i+ii+iii
- b. i+ii
- c. i+iii
- d. ii+iv

Which of the following statements about shared aggregations is true?

Select one:

- a. Chains of shared aggregation links may form a cycle
- b. Shared aggregations are used to express an is-a relationship
- c. A shared aggregation is shown by a solid-filled diamond on the end of an association line
- d. The multiplicity of a shared aggregation may be  $\geq 1$

What is MOST important in an agile approach (according to the Agile Manifesto)?

Select one:

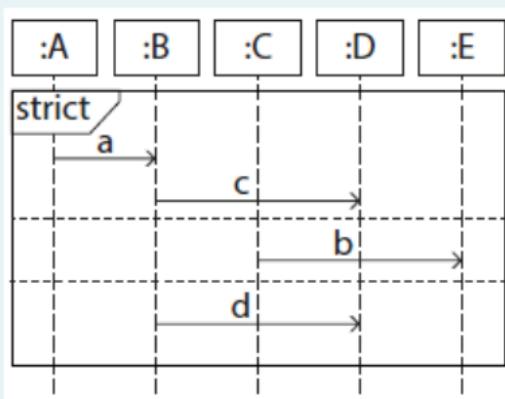
- a. People and how they communicate;
- b. Control and management;
- c. Documentation and planning;
- d. Process and tools;

In a decision node of an activity diagram:

Select one:

- a. several flows enter and one come out;
- b. you can simulate the "DO-UNTIL" control structure from programming;
- c. output flows have mutually exclusive conditions;
- d. more flow enter and more than one come out;

You are given the following sequence diagram. Which traces are possible?



Select one:

- a. a → c → b → d
- b. b → d → a → c
- c. a → b → c → d
- d. a → b → d → c

A class diagram describes ...

Select one:

- a. shows the static view of a system.
- b. shows the practical view of a system.
- c. shows the dynamic view of a system.
- d. shows the interaction view of a system.

What is UML?

Select one:

- a. a case tool
- b. an object-oriented methodology
- c. a standard modeling language
- d. a formal language

Which of the following models does NOT contribute to the design of the database:

Select one:

- a. Object diagram;
- b. Class diagram;
- c. Sequence diagram;
- d. Entity-relationship diagram

The current trend in developing computer systems is:

Select one:

- a. Reuse;
- b. Decentralization;
- c. Building closed systems;
- d. Increasing cost of computer systems implementation.

What statements about deployment diagram are TRUE ?

- i. It is a part of physical deployment of a system
- ii. It shows the configuration of runtime processing nodes
- iii. It is an important part of system architecture
- iv. includes processors, connections, nodes and notes

Select one:

- a. i+ii+iii
- b. i+ii+iii+iv
- c. i+ii
- d. i+iii