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Module 3 Review

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1. Which of these terms are used to describe coupling? **Choose the 3 correct answers.**

1 / 1 point

☒ degree

✓ **Correct**
Correct! Degree is how much two components are connected

☐ exposed

☐ frequency

☒ flexibility

✓ **Correct**
Correct! Flexibility is how easily a component can be used for another purpose.

☒ ease

✓ **Correct**
Correct! Ease is how easily a component can be switched for a different one.

2. Which is the most desirable?

1 / 1 point

☐ low cohesion, tight coupling

☐ low cohesion, loose coupling

☐ high cohesion, tight coupling

☒ high cohesion, loose coupling

✓ **Correct**
Correct!

3. What are some keywords you might use for information hiding in Java? **Select the three correct answers.**

1 / 1 point

☒ [none]

✓ **Correct**
Correct! Having no keyword will make the variable or method default to only being accessible by the class and its subclasses.

☒ private

✓ **Correct**
Correct! This will hide variables or methods from all other classes.

☒ protected

✓ **Correct**
Correct! This will hide information from all classes except those in the same package or those that extend.

☐ abstract

4. What are the best ways to promote Conceptual Integrity in your software? **Choose the two correct answers.**

0 / 1 point

☐ Good commenting

☒ Delegating development of different components to different teams

! **This should not be selected**
Incorrect. Having different teams is necessary in large projects but makes it more difficult to obtain conceptual integrity.

☐ Planning the architecture of the system

☒ Regular code reviews

✓ **Correct**
Correct! Regular code reviews will get everyone to think together about the best conventions to use in your software, and allow the team to correct missteps.

5. **Information Hiding** is closely related to one of the core design principles of object-oriented design. Which one?

1 / 1 point

☐ generalization

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- ☐ decomposition
- ☒ encapsulation
- ☐ abstraction

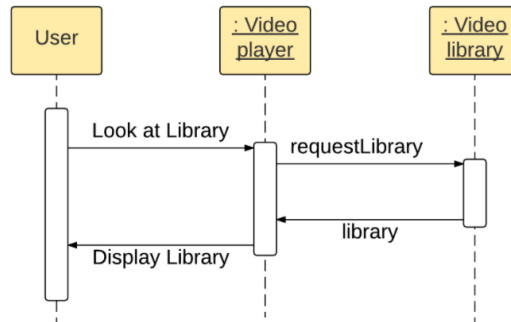
✓ Correct

Correct! Information hiding involves hiding away those details that are not important to outside classes. This is closely related to encapsulation.

6. Which of these sequence diagrams is correct?

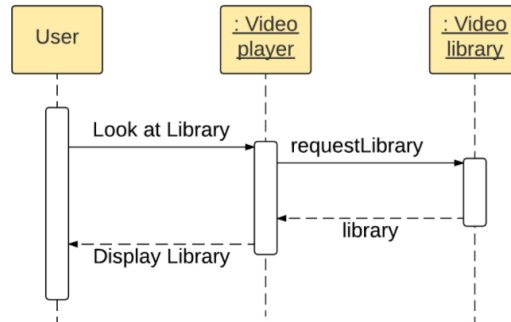
1 / 1 point

a)



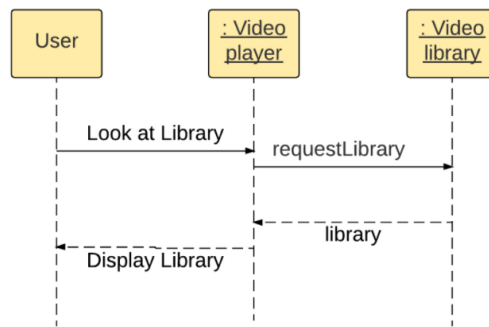
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b)



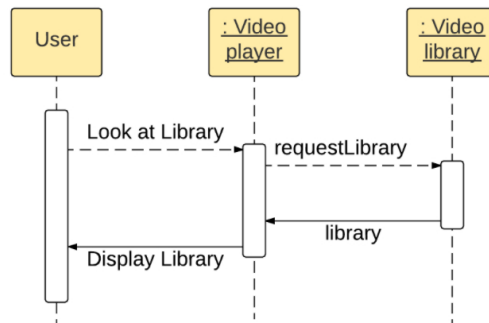
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c)



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d)



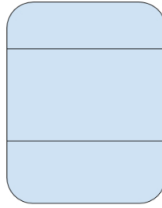
- ☐ a)
- ☒ b)
- ☐ c)
- ☐ d)

✓ Correct

Correct! This is a complete sequence diagram.

7. What are elements of a state in a State diagram (see diagram)? Choose the three correct answers.

1 / 1 point



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☐ responsibilities

☒ state variables

✓ Correct

Correct! State variables are manipulated depending on the state.

☒ activities

✓ Correct

Correct! The activities that are specific to this state are listed, sometimes including those that occur when entering or exiting the state.

☐ events

☒ state name

✓ Correct

Correct! The name of the state is at the top section of a state.

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8. When is **Model Checking** conducted?

1 / 1 point

☐ During development

☒ After development

☐ During planning

☐ After deployment

✓ Correct

Correct! Model Checking is done after the bulk of the development is finished.

9. What are the phases of Model Checking? Choose the 3 correct answers.

0 / 1 point

☒ Analysis Phase

✓ Correct

Correct! The counterexamples that were identified in the running phase are analysed to find the causes of the issues and the solution to each.

☒ Counterexample Phase

! This should not be selected

Incorrect. Surely, one of the goals of Model Checking is to eliminate counterexamples, but that's not the name of the step.

☒ Running Phase

✓ Correct

Correct! The model checking software identifies counterexamples if there are any.

☐ Model Simulation

☐ Modeling Phase.

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10. During model checking, what is the name for a violation of the desired properties of the model?

1 / 1 point

☐ Redevelopment

☐ Error

☒ Counterexample

☐ Model Gap

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✓ **Correct**

Correct! This is called a counterexample.

11. When two processes cannot run because they are waiting on the same resource, it's called...

1 / 1 point

- ☐ Mutual lock
- ☐ State lock
- ☒ Deadlock
- ☐ Transition lock

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✓ **Correct**

Correct! This is called a deadlock.

12. Choose the **three** examples of inheritance used **poorly**:

0 / 1 point

- ☒ The subclasses inherit methods from the superclass and have their own specific, related methods.

! **This should not be selected**

Incorrect. This is an ideal use for inheritance!

- ☒ A subclass inherits methods from the superclass and adds extra, new, unrelated functionality

✓ **Correct**

Correct! If your subclass inherits some behaviour and adds unrelated functionality, it is not very coherent. You should consider decomposing these responsibilities into different interfaces.

- ☐ A method in the superclass is overwritten with different behaviour by a subclass.

- ☒ Inheritance is used to share behaviour without specializing

✓ **Correct**

Correct! If inheritance is merely used to share behaviour and not much more, consider skipping it altogether and just using the superclass.