



Exam : 000-486

Title : Object-Oriented Analysis and Design with UML
Test

Ver : 01-30-09

QUESTION 1

How often should globals be used in an OO system?

- A. Depends on performance needs.
- B. Zero always.
- C. Sparingly, if at all.
- D. There are no globals in OO systems.

Answer: C

QUESTION 2

When scheduling project iterations based on use cases, which of the following are good candidates to consider for development in early iterations? Use cases that:
(Select 3 answers)

- A. represent primary line-of-business processes.
- B. involved new and risky technology.
- C. involve well-established technologies.
- D. impact the architectural design significantly

Answer: ABD

QUESTION 3

Each credit card service provider has its own interface that all client programs must use. What is the BEST way to design a system so that it may easily switch between multiple providers and add new providers as required, while keeping the complexity low.

- A. Create an object with a common API for business objects to use. This object covers all credit card providers and routes requests from the business objects to the adaptor object of the designated credit card service provider, which handles the interface conversions.
- B. Create an ordered collection of credit card service providers and have each try to handle the service requests from the business objects. If one cannot handle the request it passes the request to the next one until it is eventually handled or discarded.
- C. Have the business objects communicate directly to the service providers using each service provider's API.
- D. Maintain a global pool of credit card service requests from the business objects. Each credit card service goes through the pool to find and claim the requests that it can handle. It then processes each request.

Answer: A

QUESTION 4

Based on the information in the Exhibits

Class Dictionary for Event Scheduling and Ticketing System	
Agent	A Person role in which to Events.
CreditCard	Information holder with credit card number, type and expiration date.
Customer	The profile of a customer buying tickets including the customer address and credit card information.
Event	An activity, such as a concert or a hockey game, that occurs during a period of time and is attended by multiple people who sit in Seats in a Facility.
EventPlanner	A Person role in which she schedules and configures a Facility to hold an Event at a particular time.
Facility	A building, park, or other venue that can be used to schedule Events in.
Level	A portion of a Facility that contains Sections.
Person	An individual that can be a Customer, EventPlanner, or TicketAgent and has a name and Address.
Reservation	Allocation of a Seat for an Event.
Row	A collection of adjoining Seats in a Section of a Level of a Facility.
SalesTransaction	A Transaction in which Tickets for Seats are sold for an Event to a Customer.
Schedule	The calendar of upcoming Events that will occur at Facilities.
Seat	A Location in a Facility where a Person can sit during an Event.
Section	Contains Rows.
Ticket	The pass that gives a Person the right to attend an Event and sit in a Seat.
Ticket System	Handles ticket sales to Customers for Events. It is the main application interface for servicing ticket sales requests, delegating connection to business objects.

The CertKiller.com Ticket Company is an international company with a ticketing system from which tickets for major events such as musical concerts, theater and sports events, can be purchased over the phone. It employs many agents to answer call inquiries concerning dates and locations, and, in most cases, results in the caller purchasing tickets.

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The caller decides on the section and confirms the number of tickets. The agent collects payment information from the caller, such as the cardholder name, credit card number, and expiration date. After receiving the credit transaction authorization from the card issuer, the agent confirms the ticket purchase and gives the confirmation number to the caller. If the sale does not complete due to bad credit, the seats are released, otherwise the seats are sold. If the credit card system is not operational, the seats are held and the sales transaction will be completed later. All sales are final. The customer and agent agree on either having the tickets mailed directly to the customer mailing address or held at the "will-call" box of the performance location.

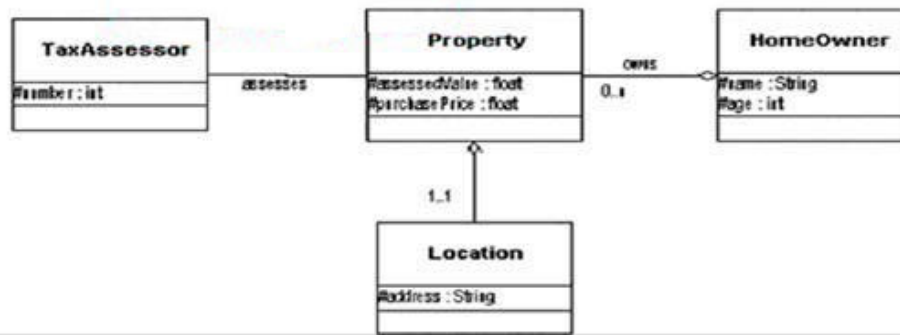
Which class would be MOST responsible for determining the total purchase price (including the sales tax).

- A. SalesTransaction.
- B. Ticket.
- C. Seat.
- D. Event.

Answer: A

QUESTION 5

An analyst is brought in to help an existing project with its modeling. The analyst is shown the use case requirements, a partial existing modeling class diagram as shown in the Exhibit, and legacy database schema. The analyst notes that the class diagrams and database schema do not match exactly for the model and table relationships, but that all the state data exists in both. What advice can the analyst initially give based on these inputs alone? (Select 2 answers)

Exhibit
"focus"

- A. The relationships in the class diagram and database schema should match and the class diagram should be changed, since the database is used by legacy systems.
- B. The relationships in the class diagram and database schema do not have to match exactly and no changes for that difference are needed.
- C. The most important portion of a class diagram is the data; therefore the class diagram is well designed to capture all the database fields.
- D. An essential portion of a class diagram is the required behaviors, so the class diagram should be expanded to include the methods of each of the classes.

Answer: BD

QUESTION 6

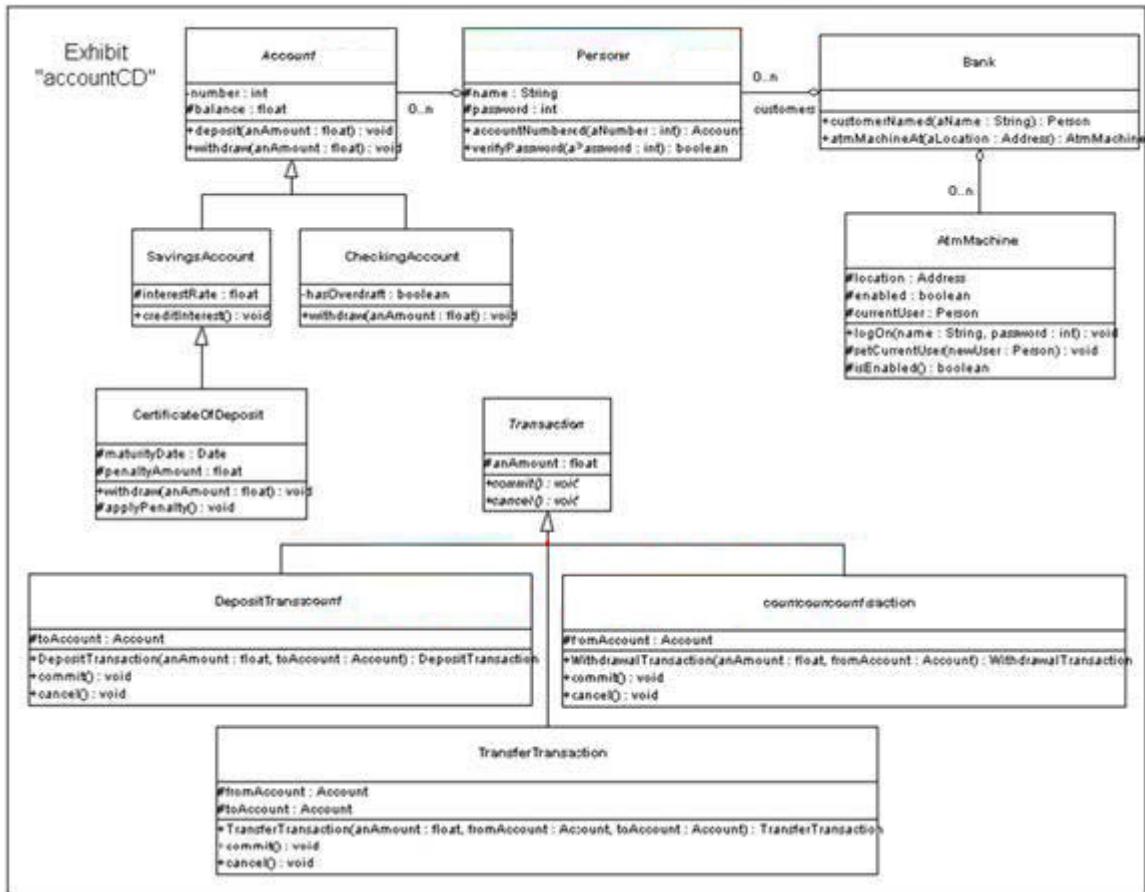
The farthest that requirements on an OO project can be traced is to:

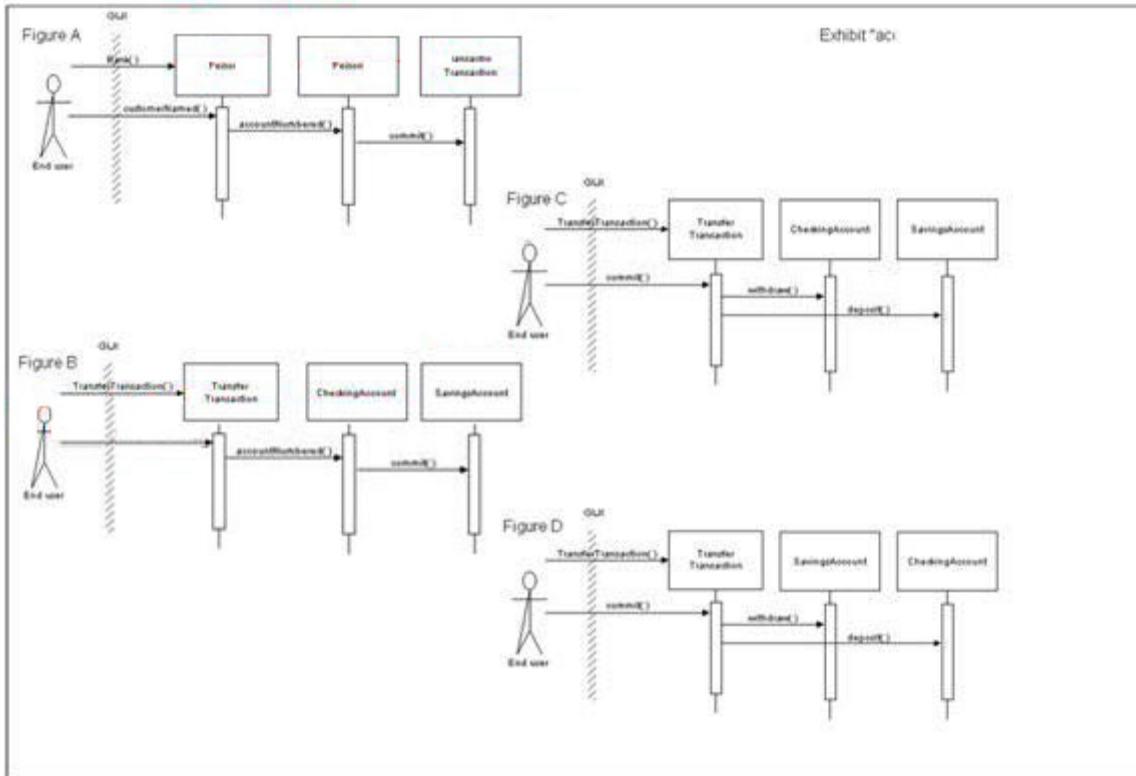
- A. use cases.
- B. interaction diagrams.
- C. class diagrams.
- D. public methods.
- E. private methods.

Answer: D

QUESTION 7

Certkiller .com is transferring funds from savings to checking. Given the class diagram in the Exhibits





Which one of the following BEST completes the interaction diagram in the Exhibits to accomplish this transfer of funds?

- A. Figure A
- B. Figure B
- C. Figure C
- D. Figure D

Answer: D

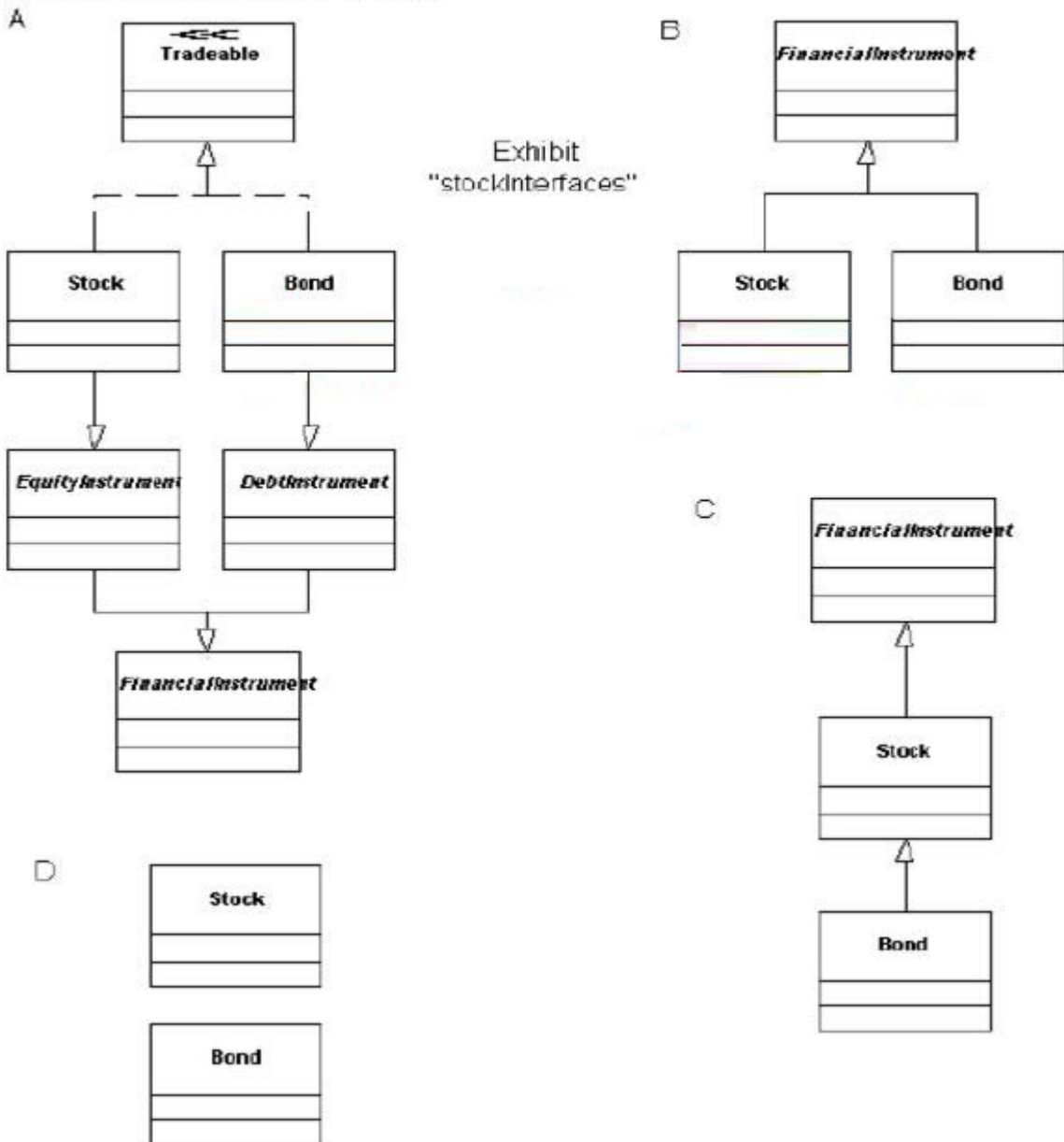
QUESTION 8

There is a new requirement to extend the "trade stock" use case by supporting bond trades.

Which figure in the Exhibit is the BEST design to support these new types of objects?

Stock Equity ownership of a portion of a company.

Bond A loan made to a company that is repaid with interest at a future date.



- A. Figure A
- B. Figure B
- C. Figure C
- D. Figure D

Answer: A

QUESTION 9

On a large project, where it is important to architect the system so that teams can work relatively independently, what should the primary focus be?

- A. Packages and their public interfaces.
- B. Frameworks.
- C. Smaller teams.
- D. The use of interfaces.

Answer: A

QUESTION 10

Refer to the Exhibit

The CertKiller.com Ticket Company is an international company with a ticketing system from which tickets for major events such as musical concerts, theater and sports events, can be purchased over the phone. It employs many agents to answer call inquiries concerning dates and locations, and, in most cases, results in the caller purchasing tickets.

Scenario: **Purchase tickets from the CertKiller Ticket Company over the phone**

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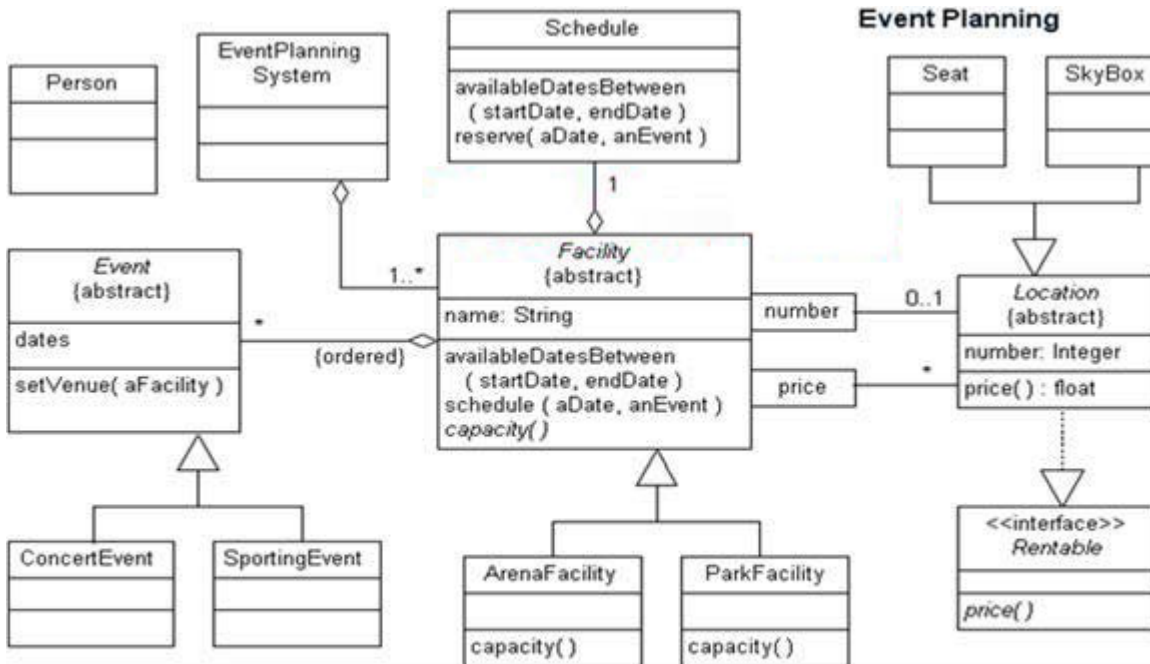
Given the scenario "Purchase Tickets from Certkiller .com Ticket Company over the Phone", which one of the following is the BEST partial list of candidate classes?

- A. Section, Seats, EventLocation.
- B. CustomerTable, Seat, EventLocation.
- C. Section, EventLocation, CreditCardNumber.
- D. CreditCard, Seat, EventLocation.

Answer: D

QUESTION 11

Refer to the Exhibit



Arena events are scheduled by the event planner. When an event gets scheduled, it is added to the arena schedule. Each event is scheduled for a date and time period. Each event has different prices for different seat types. Each arena can hold different types and quantities of seats. The possible types of seats are: balcony, mezzanine, and floor. In addition, an arena can be reconfigured based upon the event type. For example, a hockey game will use the floor space for the game; a concert will use the floor space for seating. At this time, the event planner has a master schedule for all events and facilities.

Referring to seat, Location, and Rentable in the Event Planning class diagram, which of the following is true?

- A. This is an example of how to model your business when you need to use multiple inheritance.
- B. The superclass of Location is Rentable.
- C. Rentable defines methods for the Location class to reuse.
- D. Rentable defines methods that must be implemented by all objects of that type.

Answer: D

QUESTION 12

When exploring the process model of a system, such as the use of threads, what type of diagram is MOST useful?

- A. Collaboration.
- B. State transition.
- C. Class.
- D. Activity.

Answer: D

QUESTION 13

If there is a business rule stating that Certkiller .com object must be associated with every SalesTransaction, it can BEST be enforced by:

- A. writing the customer creation code so that it requires a Sales Transaction parameter.
- B. writing our object creation code so that it is not possible to create a sales Transaction object without its required association with Customer in place.
- C. writing a test case based on the use case requirement.
- D. drawing an association between salesTransaction and Customer on the class diagram.

Answer: B

QUESTION 14

Use cases should be utilized to: (Select 4 answers)

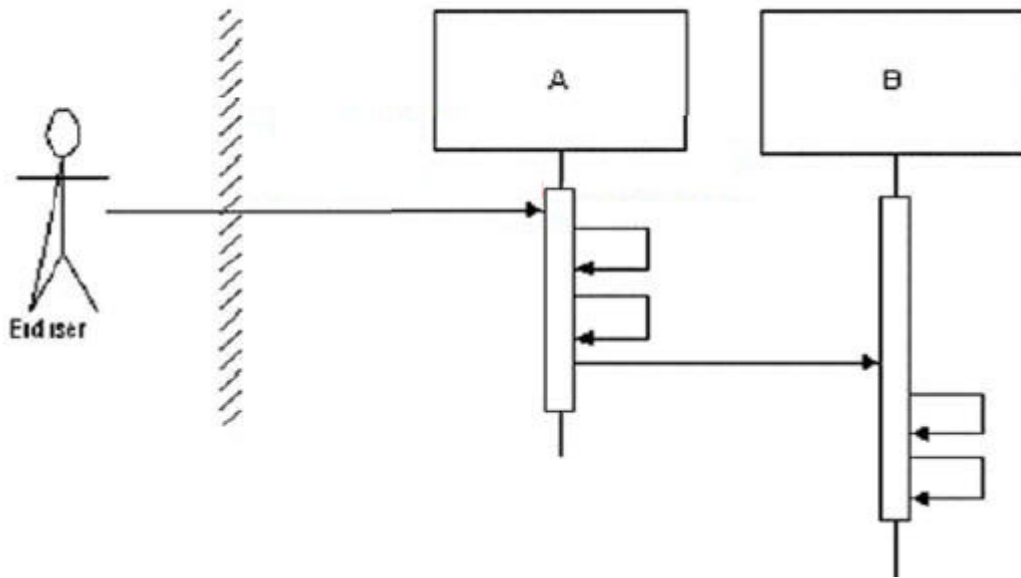
- A. capture the requirements from users in meaningful chunks.
- B. capture business processes.
- C. plan what each iteration will accomplish.
- D. develop a test plan.
- E. show cases of control structure use.

Answer: ABCD

QUESTION 15

Refer to the Exhibit.

Exhibit "details" GUI



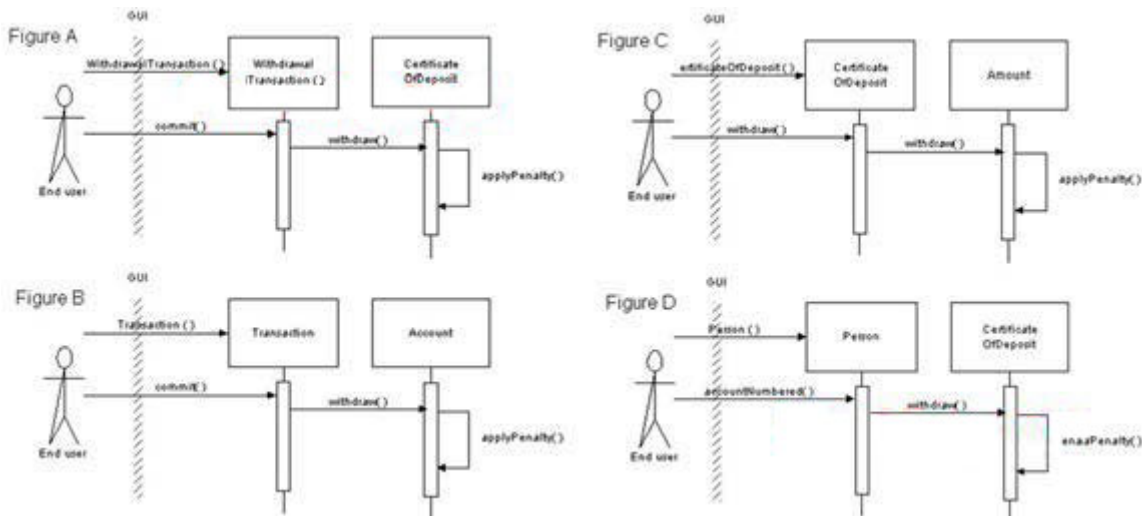
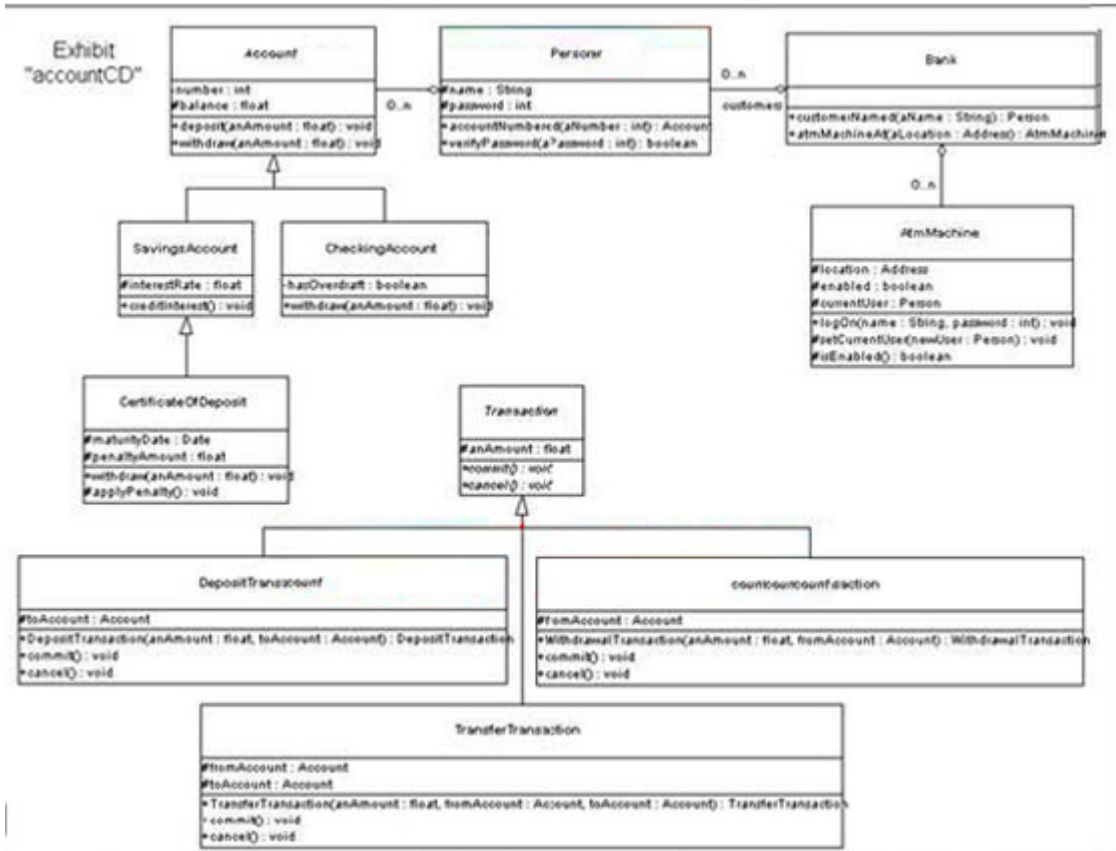
Referring to the patterns of interactions in the Exhibit, which of the following are possible problems with the design to be considered by the analyst? (Select 2 answers)

- A. Responsibilities are not well distributed, with classes carrying out too many actions via their own methods.
- B. Poor cohesion as indicated by multiple messages in a row to the same object.
- C. The interactions are too detailed, continuing past public methods to protected or private methods.

Answer: AC

QUESTION 16

It is required to incur a penalty whenever Certkiller .com withdraws funds from a certificate of deposit before its maturity date. Given the class diagram in the Exhibits



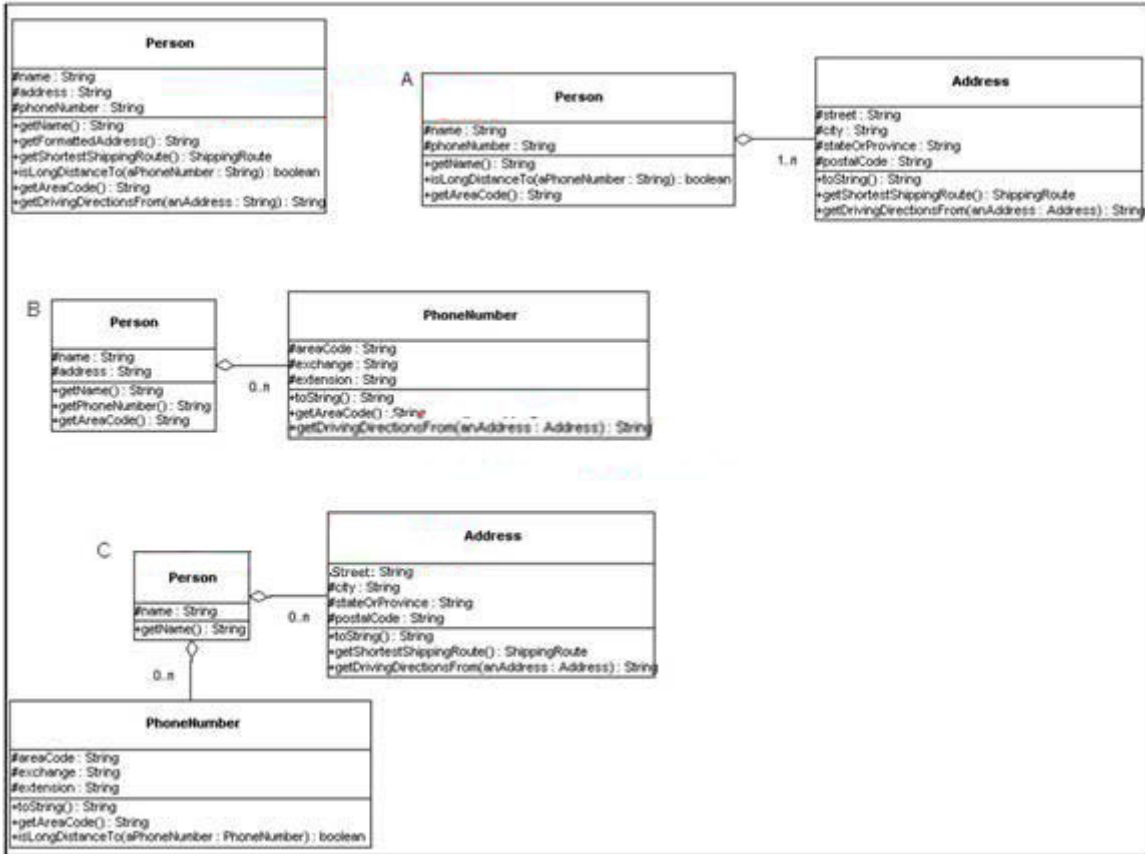
Which one of the following BEST completes the interaction diagram in the Exhibits to withdraw funds from a certificate of deposit?

- A. Figure A
- B. Figure B
- C. Figure C
- D. Figure D

Answer: A

QUESTION 17

Refer to the Exhibit



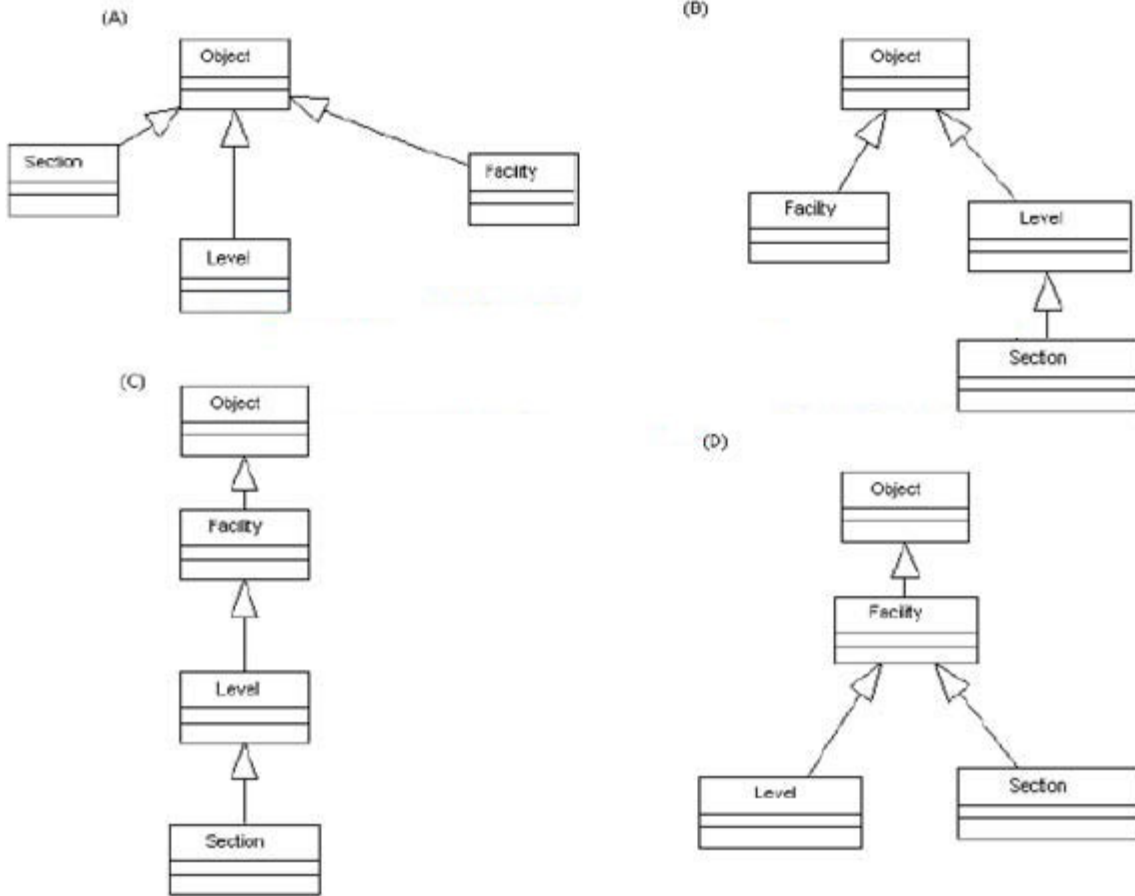
The Person class is designed as shown in the Exhibit. What is the BEST action for an analyst to take?

- A. Redesign to A
- B. Redesign to B
- C. Redesign to C
- D. No action - leave the Person class design as it currently exists.

Answer: C

QUESTION 18

Refer to the Exhibits



Class Hierarchies

The CertKiller.com Ticket Company is an international company with a ticketing system from which tickets for major events such as musical concerts, theater and sports events, can be purchased over the phone. It employs many agents to answer call inquiries concerning dates and locations, and, in most cases, results in the caller purchasing tickets.

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A facility may contain multiple levels, each level may contain multiple sections, each section may contain multiple rows, and each row may contain multiple seats. What is the proper class hierarchy for the following classes: Object, Facility, Level, Section?

- A. Hierarchy A.
- B. Hierarchy B.
- C. Hierarchy C.
- D. Hierarchy D.

Answer: A

QUESTION 19

Which of the following statements are true about incremental and iterative processes? (Select 2 answers)

- A. Incremental development is a divide-and-conquer approach to developing an application.
- B. Incremental and iterative development can coexist in a project
- C. Increments are usually modeled with activity diagrams.
- D. It is impractical for several development teams to carry out parallel iterations of concurrent development by taking on an increment or a part of the application.

Answer: AB

QUESTION 20

Besides individual tickets for sale, there are also group packages and season tickets. Each of these has a different price. A GroupTicketPackage is a set of tickets for an individual performance. A SeasonTicket is a ticket for the same seat for a number of performances. A SeasonTicketPackage is a set of tickets for the same seats for a given number of performances. Each has its own rules for determining its price. What would be the BEST abstract superclass which defines the operations getPrice(), getSeats() and getCustomer() and which all these new classes could be subclasses of?

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- A. TicketOffering.
- B. TicketPackage.
- C. SeasonTicket.
- D. Ticket.

Answer: A

QUESTION 21

Refer to the Exhibit.

CRC:TicketSystem

Responsibilities

knows facilities
knows events
knows agents
knows ticket outlets
finds ticket outlet closest to
a postal code

Collaborators

TicketOutlet
SalesTransaction
TicketPrintingCoordinator

Based on the CRC card, which operations would TicketSystem have? (Select 3 answers)

- A. getFacilities()
- B. ticketOutletClosestTo(aString)
- C. getCustomers()
- D. getAgents ()

Answer: ABD

QUESTION 22

When naming a class, it is MOST important that the name is:

- A. agreed by the development team, is short, and is easy to remember.
- B. meaningful to the development team and appears in the class dictionary.
- C. meaningful to the domain expert, indicates specialization of any superclass, and is a noun.
- D. meaningful to the domain expert and is a verb.

Answer: C

QUESTION 23

An application project is being built that enables users to research stocks interactively over the Internet. Mary has been a stock analyst for years and understands how to use technical indicators, such as price movements, to determine when to buy and sell stocks. Sam has been a stock analyst for years and understands how to use techniques such as Price/Earnings (PIE) valuation and growth rates to determine when to buy and sell stocks. Harry is the company webmaster and knows a lot about the Internet. Denise is the manager in charge of the project and is ultimately authorized to decide what requirements are to be delivered in the different releases. Who should the analyst include in the use case writing sessions for this application?

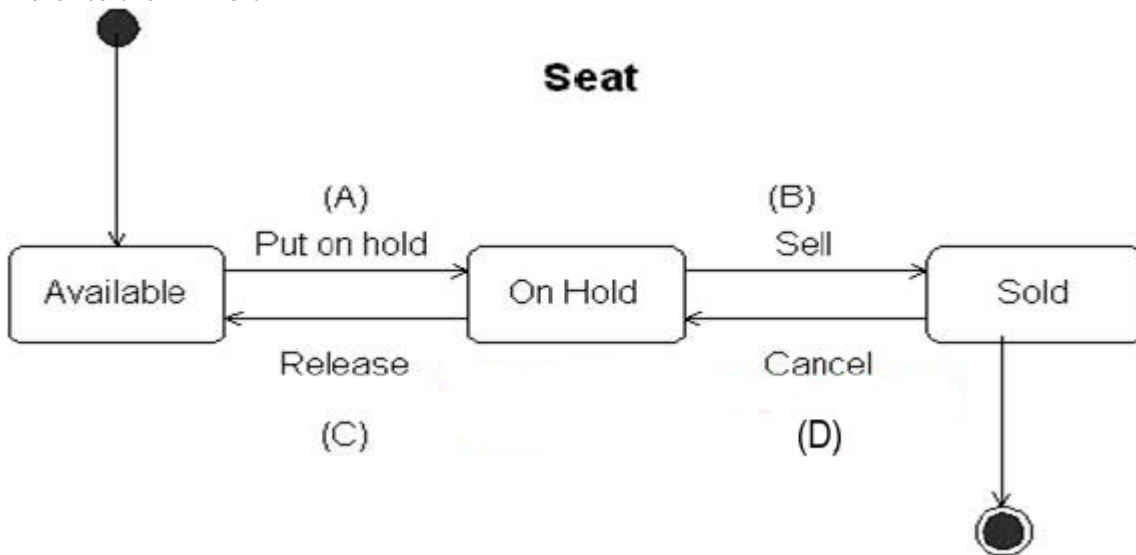
- A. Mary, Sam, Harry and Denise during requirements discussions.

- B. Mary, Sam, and Harry during requirements discussions. Denise occasionally to approve the decisions.
- C. Mary during requirements discussions that relate to technical trading techniques. Sam during discussions that relate to valuation trading techniques. Harry occasionally to answer technical feasibility questions. Denise as much as possible to make scope decisions in realtime.
- D. Mary during requirements discussions that relate to technical trading techniques. Sam during discussions that relate to valuation trading techniques. Harry occasionally to answer technical feasibility questions. Denise occasionally to approve the decisions.

Answer: C

QUESTION 24

Refer to the Exhibit



The CertKiller.com Ticket Company is an international company with a ticketing system from which tickets for major events such as musical concerts, theater and sports events, can be purchased over the phone. It employs many agents to answer call inquiries concerning dates and locations, and, in most cases, results in the caller purchasing tickets.

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Which event transition is illegal in the Seat state transition diagram?

- A. Put on Hold.
- B. Release.
- C. Sell.
- D. Cancel.

Refer to the Exhibits

```

classDiagram
    class Person
    class EventPlanningSystem
    class Schedule {
        availableDatesBetween(startDate, endDate, anEvent)
        reserve(aDate, anEvent)
    }
    class Facility {
        <<abstract>>
        name: String
        availableDatesBetween(startDate, endDate)
        schedule(aDate, anEvent)
        capacity()
    }
    class Event {
        <<abstract>>
        dates
        setVenue(aFacility)
    }
    class ConcertEvent
    class SportingEvent
    class ArenaFacility
    class ParkFacility
    class Seat
    class SkyBox
    class Location {
        <<abstract>>
        number: Integer
        price(): float
    }
    class Rentable {
        <<interface>>
        price()
    }

    EventPlanningSystem o-- "1" Facility
    Facility o-- "1..*" Event : (ordered)
    Facility "1" -- "*" Event
    Facility "1" -- "0..1" Location : number
    Facility "1" -- "*" Location : price
    Event <|-- ConcertEvent
    Event <|-- SportingEvent
    Facility <|-- ArenaFacility
    Facility <|-- ParkFacility
    Location <|-- Rentable
    Rentable ..> Location : price()
  
```

A. can get to a particular seat by type of seat.
B. can access seats by price or by seat number.
C. may get multiple seats back when accessing by price.
D. may not find a seat when accessing by number.

Answer: BCD

QUESTION 26

True or False? In general, on an OO system, it is better to have a greater number of smaller classes than fewer bigger classes.

- A. True.
- B. False.

Answer: A

QUESTION 27

When a class has a larger number of responsibilities, and consequently operations and attributes, than the other classes in your domain, what should be done? (Select 2 answers)

- A. Merge code to reduce the number of operations.
- B. Consider refactoring the class into several classes to better distribute the responsibilities and operations.
- C. Consider adding subclasses to the class and moving responsibilities to appropriate specializations.
- D. Have the class keep its responsibilities, but also delegate them out to other classes, so the behavior is more distributed.

Answer: BD

QUESTION 28

When doing domain analysis, the class diagram should be drawn mainly to represent:

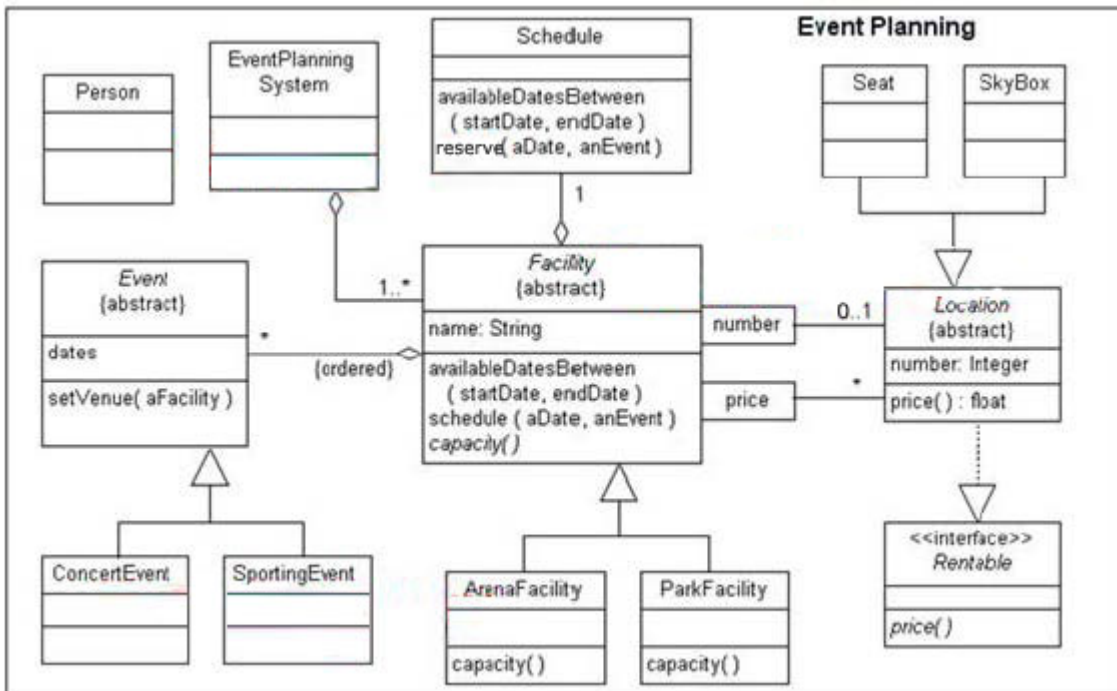
- A. messages sent between objects.
- B. implementation objects such as wrappers and devices.
- C. business objects and implementation objects such as wrappers and devices.
- D. business objects.

Answer: D

QUESTION 29

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Customer	The profile of a customer buying tickets including the customer address and credit card information.
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Singleton design pattern describes a class that only has one instance in the system. For the event planning system, which class could be a Singleton?

- A. Event.
- B. ArenaFacility.
- C. Location.
- D. EventPlanningSystem.

Answer: D

QUESTION 30

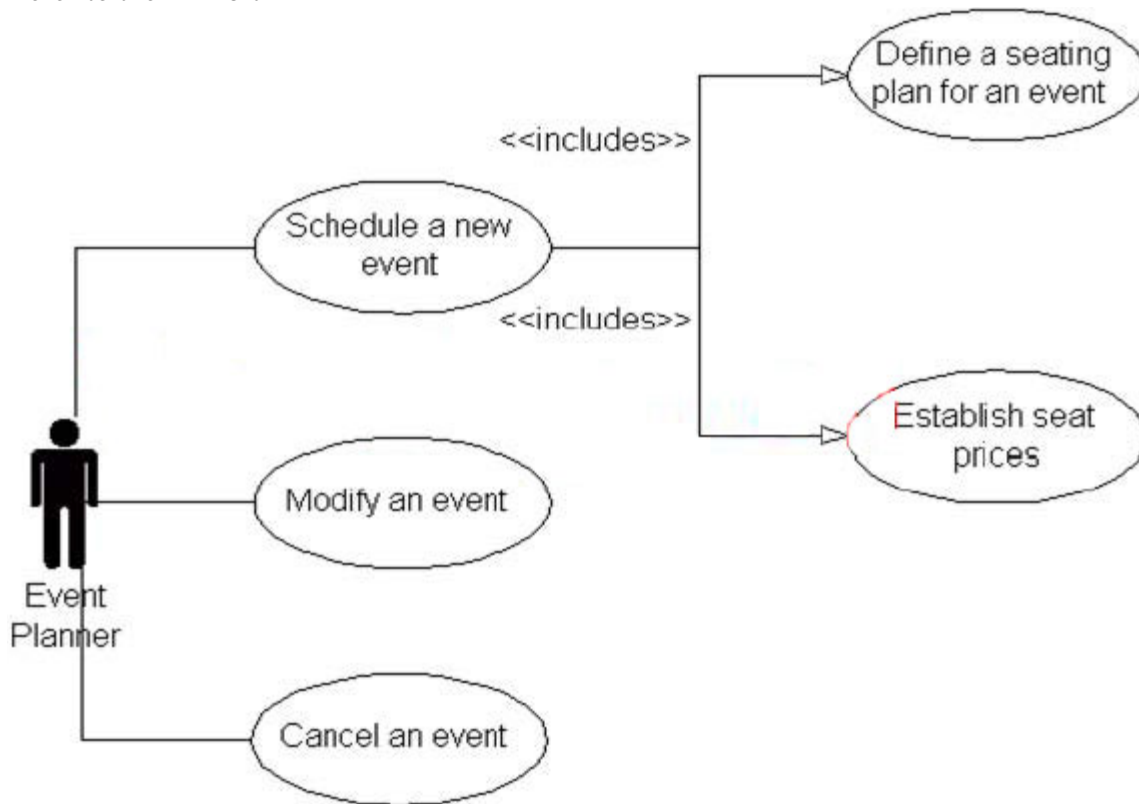
Which of the following are synonyms? (Select 2 answers)

- A. Subtyping and specialization.
- B. Abstract class and interface.
- C. Subclassing and subtyping.
- D. Type and interface.

Answer: AD

QUESTION 31

Refer to the Exhibit



Arena events are scheduled by the event planner. When an event gets scheduled, it is added to the arena schedule. Each event is scheduled for a date and time period. Each event has different prices for different seat types. Each arena can hold different types and quantities of seats. The possible types of seats are: balcony, mezzanine, and floor. In addition, an arena can be reconfigured based upon the event type. For example, a hockey game will use the floor space for the game; a concert will use the floor space for seating. At this time, the event planner has a master schedule for all events and facilities.

There are new requirements to create seating configurations that are reusable, store those configurations in an external database, and automatically create a weekly

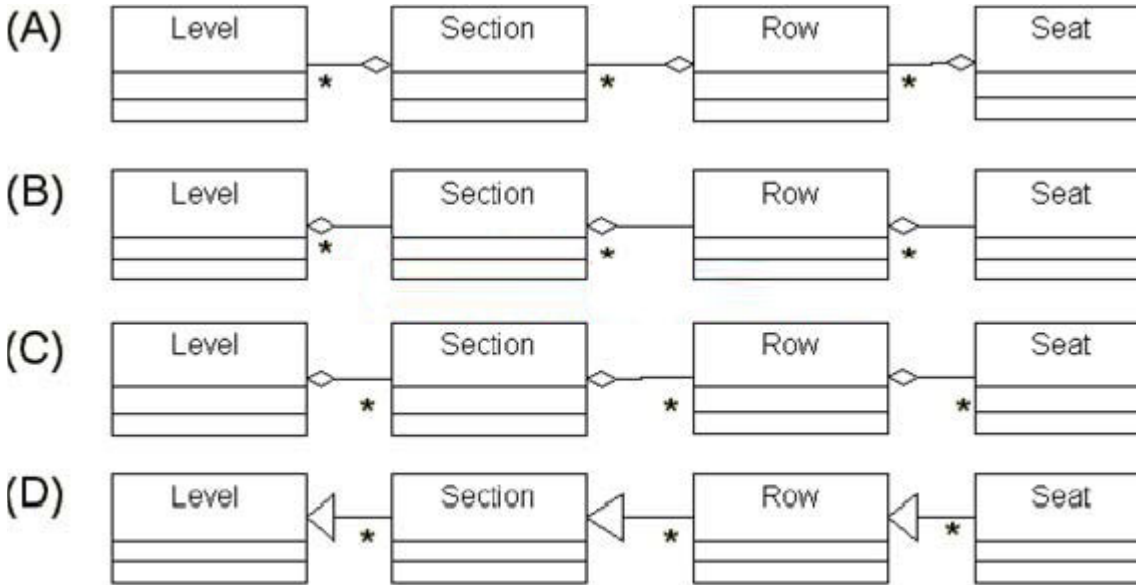
event status report. What new use cases are necessary for our system?

- A. Create a seating configuration, Store seating configuration, Generate event status report.
- B. Create a seating configuration, Generate event status report.
- C. Create a seating configuration, Modify a seating configuration, Delete a seating configuration.
- D. Store seating configuration, Generate event status report.

Answer: B

QUESTION 32

Refer to the Exhibits



Class Association Choices

A facility may contain multiple levels, each level may contain multiple sections, each section may contain multiple rows, and each row may contain multiple seats. Which is the BEST way to model these objects?

- A. Choice A.
- B. Choice B.
- C. Choice C.
- D. Choice D.

Answer: C

QUESTION 33

True or False? A model can be designed to allow more than the current release's stated requirements and the capabilities of the system can be restricted through view capabilities until they are needed.

- A. True.
- B. False.

Answer: A

QUESTION 34

A use case should focus on:

- A. how the customers' requirements are going to be met.
- B. multiple related uses of the system.
- C. a service the customer requires
- D. a time-ordered sequence of actions the system is required to take upon a user action.

Answer: C

QUESTION 35

Which of the following BEST utilizes OOAD artifacts to manage a project team?

Divide into:

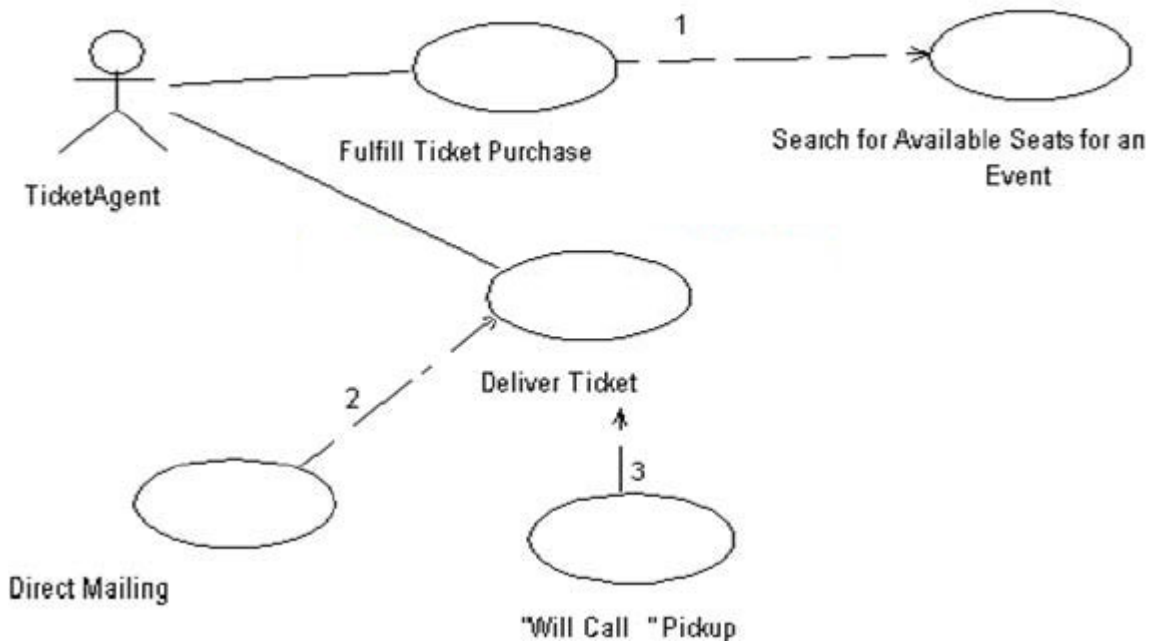
- A. teams along the lines of your software architecture layers, distribute use cases to the team that is most responsible for the use case functionality.
- B. teams according to packages, schedule efforts by use cases across the teams as appropriate.
- C. teams according to packages, assign ownership of each use case to one developer to own, schedule efforts by use case with multiple developers working on a use case as appropriate.
- D. small teams, distribute an appropriate number of use cases to each team, schedule the team efforts by the use cases.

Answer: C

QUESTION 36

Refer to the Exhibit

Ticket Agency Use Case Model



The CertKiller.com Ticket Company is an international company with a ticketing system from which tickets for major events such as musical concerts, theater and sports events, can be purchased over the phone. It employs many agents to answer call inquiries concerning dates and locations, and, in most cases, results in the caller purchasing tickets.

Scenario: **Purchase tickets from the CertKiller Ticket Company over the phone**

A customer calls to purchase tickets to an event. The agent asks the caller the name of the event, its location and preferred dates. The caller provides this information. The agent informs the caller if seating is available for the requested show and the available ticket prices. The caller selects the ticket price and the number of seats. The agent locates the required number of seats in a section and holds them temporarily so they cannot be taken by another agent. The agent informs the caller of the viewing angle of the seating, such as from the left side, front, or back of the stage.

The caller decides on the section and confirms the number of tickets. The agent collects payment information from the caller, such as the cardholder name, credit card number, and expiration date. After receiving the credit transaction authorization from the card issuer, the agent confirms the ticket purchase and gives the confirmation number to the caller. If the sale does not complete due to bad credit, the seats are released, otherwise the seats are sold. If the credit card system is not operational, the seats are held and the sales transaction will be completed later. All sales are final. The customer and agent agree on either having the tickets mailed directly to the customer's mailing address or held at the "will-call" box of the performance location.

Which one of the following labels should be used to describe lines 1, 2, 3?

- A. includes, includes, includes.
- B. includes, extends, extends.
- C. extends, includes, extends.
- D. extends, extends, includes.
- E. includes, includes, extends.

Answer: B

QUESTION 37

As the use cases are being written, the analyst notes the following within the requirements: "The system shall be capable of providing specific processing commands for up to 50 devices concurrently, each of which must control up to 10,000 items per minute." The analyst knows that this requirement is for more throughput than previous systems and is key to the success of the system as a whole.

What action BEST reduces risk on the project?

- A. Focus on the design and implementation of a feasibility prototype as soon as possible.
- B. Work with end users to prepare a contingency plan in case the throughput cannot be achieved.
- C. Continue to develop use cases and related designs, scheduling the use cases related to the throughput earlier in the overall schedule.

Answer: A

QUESTION 38

Classes should be grouped into packages by:

- A. project team organization.
- B. classes that are related to the same overall services.
- C. classes that work together in the same interaction diagrams.
- D. the class diagrams they appear in.

Answer: B

QUESTION 39

An Interaction Diagram should be associate with:

- A. a Use Case.
- B. an Activity Diagram.
- C. a CRC card.
- D. a State Transition Diagram.

Answer: A

QUESTION 40

The MOST powerful way to achieve reuse on an OO project is:

- A. Develop a model layer that makes it easy for the view layer to reuse the persistence layer.
- B. Develop a persistence layer that makes it easy for the model and view layers to reconstitute business objects.
- C. Keep the business rules as stored procedures in the database and develop a common look-and-feel framework in the view layer.
- D. Keep business rules in the model layer and develop a common look-and-feel framework in the view layer.

Answer: D

QUESTION 41

A GUI prototype has been demonstrated to marketing personnel and end users for a

project. During the demonstration, it became clear that the terminology used and computer skill level were not a good match for the end users, but marketing was thrilled with the state-of-the-art user interface designed. What steps should the analyst take? Update the:

- A. object model and GUI to match the end users' terminology and continue with development.
- B. object model and GUI to match the end users' terminology, redesign the GUI to be targeted to a less-skilled user, iterate on the prototype, explain the steps you are taking to marketing, and hold another demonstration session with end users and marketing.
- C. GUI to match the end users' terminology, arrange training offerings to accompany the product release to enhance end users skills support marketing in a roadtrip to client sites as well as conference demonstrations
- D. GUI to match the end users' terminology, continue with development, and support marketing in their trips to client sites as well as conference demonstrations.

Answer: B

QUESTION 42

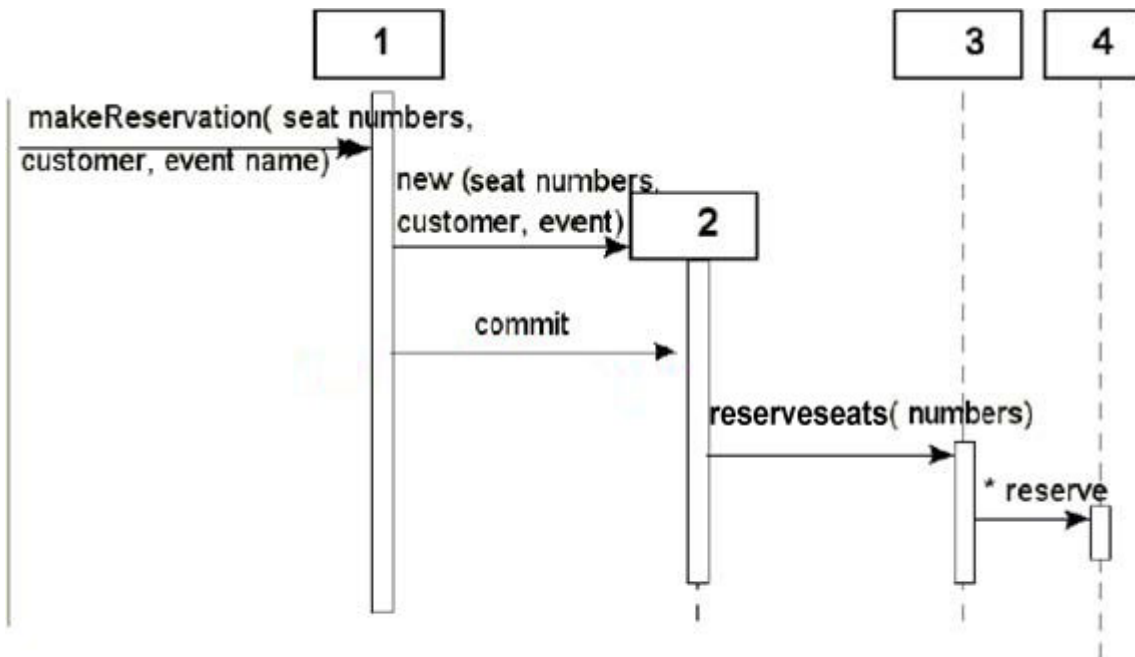
All of the following are potentially beneficial things to do. Which one of the following is MOST important for large teams to work together effectively on one project?

- A. Use the UML notation, agree on coding standards, use an iterative process.
- B. Write use cases, draw interaction diagrams, divide and assign use cases to the team appropriately.
- C. Hold design walkthroughs, work from the same library system, use an iterative process.
- D. Group classes into packages, define package interfaces, describe classes.

Answer: D

QUESTION 43

Refer to the Exhibit



Make a reservation with no purchase

Based on the sequence diagram for Make a Reservation With No Purchase, what is the BEST answer for naming, in order objects 1, 2, 3 and 4?

- A. aTicketSystem, anEvent, aReservation, aSeat.
- B. aTicketSystem, aReservation, anEvent, aSeat.
- C. anEvent, aReservation, aTicketSystem, aSeat.
- D. aTicketSystem, aReservation, aSeat, anEvent.

Answer: B

QUESTION 44

Which of the following UML diagrams can be used for modeling behavior that spans multiple use cases? (Select 2 answers)

- A. Deployment Diagram.
- B. Activity Diagram.
- C. State Diagram.
- D. Interaction Diagram.

Answer: BC

QUESTION 45

Refer to the Exhibit

Class Dictionary for Event Scheduling and Ticketing System	
Agent	A Person role in which to Events.
CreditCard	Information holder with credit card number, type and expiration date.
Customer	The profile of a customer buying tickets including the customer address and credit card information.
Event	An activity, such as a concert or a hockey game, that occurs during a period of time and is attended by multiple people who sit in Seats in a Facility.
EventPlanner	A Person role in which she schedules and configures a Facility to hold an Event at a particular time.
Facility	A building, park, or other venue that can be used to schedule Events in.
Level	A portion of a Facility that contains Sections.
Person	An individual that can be a Customer, EventPlanner, or TicketAgent and has a name and Address.
Reservation	Allocation of a Seat for an Event.
Row	A collection of adjoining Seats in a Section of a Level of a Facility.
SalesTransaction	A Transaction in which Tickets for Seats are sold for an Event to a Customer.
Schedule	The calendar of upcoming Events that will occur at Facilities.
Seat	A Location in a Facility where a Person can sit during an Event.
Section	Contains Rows.
Ticket	The pass that gives a Person the right to attend an Event and sit in a Seat.
Ticket System	Handles ticket sales to Customers for Events. It is the main application interface for servicing ticket sales requests, delegating connection to business objects.

When tickets are sold to Certkiller .com, a salesTransaction is created. This transaction can be suspended or cancelled. Which of the following support this functionality? (Select 2 answers)

- A. Create SuspendedTransaction and CancelledTransaction classes.
- B. Create SuspendedTransaction and CancelledTransaction subclasses of SalesTransaction.
- C. Have the SalesTransaction held by another object in a context that defines its state, such as a TicketBooth's suspendedTransactions attribute.
- D. Have the SalesTransaction hold its state as suspended or cancelled.
- E. Throw away the SalesTransaction instance and create anew one when needed.

Answer: CD

QUESTION 46

During the execution of an OO system:

- A. model objects are instantiated from the database as needed to support the current view objects, and then discarded.
- B. the last set of running objects is brought into memory.
- C. the business model, as drawn on class diagrams, will be in memory upon startup.
- D. a portion of the object model will be in memory, with requests "traversing" the model.

Answer: D

QUESTION 47

In a well-designed, layered architecture, which layers should know about which?

- A. Model knows View and Persistence, View knows Model and Persistence.
- B. View knows Model, Model knows Persistence, Persistence knows Model.
- C. View knows Model, Persistence knows View and Model.
- D. View knows Model, Model knows View and Persistence, Persistence knows Model.

Answer: B

QUESTION 48

Refer to the Exhibit

Class Dictionary for Event Scheduling and Ticketing System	
Agent	A Person role in which to Events.
CreditCard	Information holder with credit card number, type and expiration date.
Customer	The profile of a customer buying tickets including the customer address and credit card information.
Event	An activity, such as a concert or a hockey game, that occurs during a period of time and is attended by multiple people who sit in Seats in a Facility.
EventPlanner	A Person role in which she schedules and configures a Facility to hold an Event at a particular time.
Facility	A building, park, or other venue that can be used to schedule Events in.
Level	A portion of a Facility that contains Sections.
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Reservation	Allocation of a Seat for an Event.
Row	A collection of adjoining Seats in a Section of a Level of a Facility.
SalesTransaction	A Transaction in which Tickets for Seats are sold for an Event to a Customer.
Schedule	The calendar of upcoming Events that will occur at Facilities.
Seat	A Location in a Facility where a Person can sit during an Event.
Section	Contains Rows.
Ticket	The pass that gives a Person the right to attend an Event and sit in a Seat.
Ticket System	Handles ticket sales to Customers for Events. It is the main application interface for servicing ticket sales requests, delegating connection to business objects.

The Facility class is responsible for knowing its available seats. With which class would it most likely directly collaborate to fulfill this responsibility?

- A. Agent.
- B. Schedule.
- C. Level.
- D. Event.

Answer: C

QUESTION 49

Refer to the Exhibit

The CertKiller.com Ticket Company is an international company with a ticketing system from which tickets for major events such as musical concerts, theater and sports events, can be purchased over the phone. It employs many agents to answer call inquiries concerning dates and locations, and, in most cases, results in the caller purchasing tickets.

Scenario: **Purchase tickets from the CertKiller Ticket Company over the phone**

A customer calls to purchase tickets to an event. The agent asks the caller the name of the event, its location and preferred dates. The caller provides this information. The agent informs the caller if seating is available for the requested show and the available ticket prices. The caller selects the ticket price and the number of seats. The agent locates the required number of seats in a section and holds them temporarily so they cannot be taken by another agent. The agent informs the caller of the viewing angle of the seating, such as from the left side, front, or back of the stage.

The caller decides on the section and confirms the number of tickets. The agent collects payment information from the caller, such as the cardholder name, credit card number, and expiration date. After receiving the credit transaction authorization from the card issuer, the agent confirms the ticket purchase and gives the confirmation number to the caller. If the sale does not complete due to bad credit, the seats are released, otherwise the seats are sold. If the credit card system is not operational, the seats are held and the sales transaction will be completed later. All sales are final. The customer and agent agree on either having the tickets mailed directly to the customer's mailing address or held at the "will-call" box of the performance location.

Based on the Exhibit, for which classes would a state diagram give the MOST value?

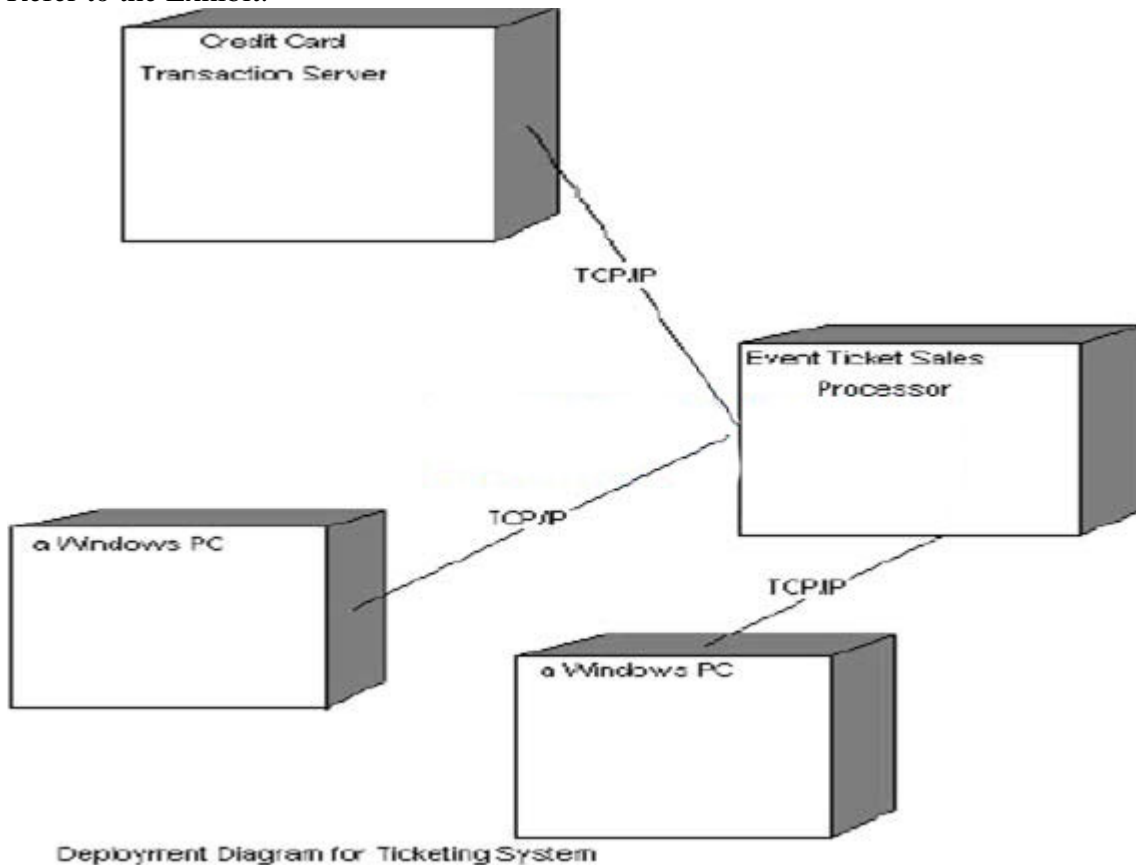
- A. CreditCard, Seat.

- B. Seat, Section.
- C. SalesTransaction, Seat.
- D. SalesTransaction, EventPlanningSystem.

Answer: C

QUESTION 50

Refer to the Exhibit.



Which packages should be placed in the Event Ticket Sales Processor that is pictured in the Deployment Diagram for the Ticketing System? (Select 2 answers.)

- A. Credit Card Domain.
- B. Ticket Purchasing.
- C. Event Ticketing Domain.
- D. Ticket Purchasing Client.

Answer: BC

QUESTION 51

The following interaction occurs during a requirements discussion:

End user "The trader should be able to set up multiple stock trades to be submitted together."

Developer "So, that's like a queue that gets processed first-in, first-out, right?"

End user "That's right. Once the trade occurs, the stocks show up in the user's portfolio."

Developer "The portfolio is a container of the user's stocks then..."

What terms should the analyst include in the related use cases?

- A. Queue, container.
- B. Trade, container.
- C. Trade, portfolio.
- D. Trade, queue, portfolio, container

Answer: C

QUESTION 52

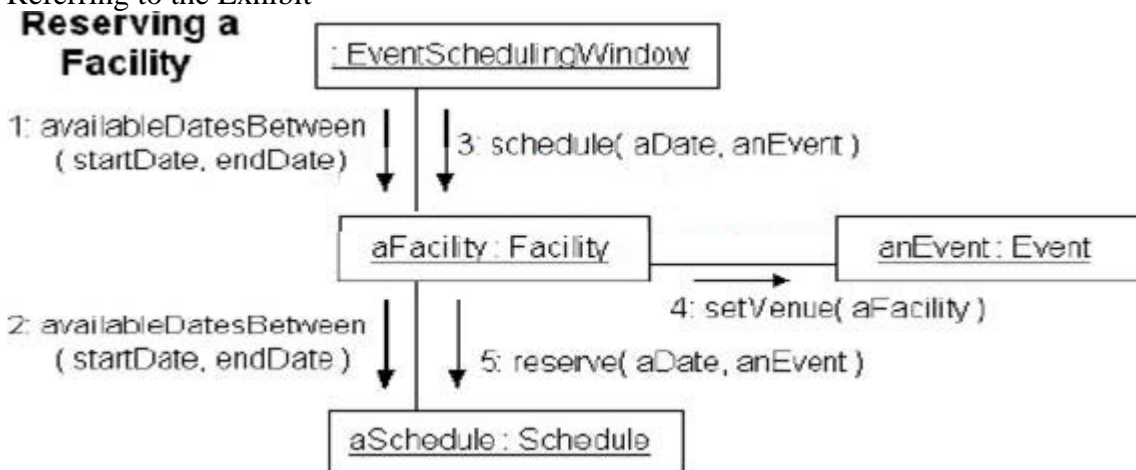
True or false? Due to the realities of a commercial system, performance requirements should be resolved in the analysis phase of the project.

- A. True.
- B. False.

Answer: B

QUESTION 53

Referring to the Exhibit



Reserving a Facility collaboration diagram, what public methods are required of the Facility class?

- A. `availableDatesBetween(startDate, endDate)`, `reserve(aDate, anEvent)`
- B. `availableDatesBetween(startDate, endDate)`, `schedule(aDate, anEvent)`
- C. `availableDatesBetween(startDate, endDate)`, `reserve(aDate, anEvent)`, `setVenue(aFacility)`
- D. `setVenue(aFacility)`

Answer: B

QUESTION 54

When should attributes of an object be public?

- A. In those cases when performance needs to be enhanced.
- B. As a normal course of action, so that client objects require less code and can more easily get at other objects' state data.
- C. Rarely, since it breaks encapsulation.
- D. When the implementation language supports multiple levels of object visibility.

Answer: C

QUESTION 55

Refer to the Exhibit

The CertKiller.com Ticket Company is an international company with a ticketing system from which tickets for major events such as musical concerts, theater and sports events, can be purchased over the phone. It employs many agents to answer call inquiries concerning dates and locations, and, in most cases, results in the caller purchasing tickets.

Scenario: **Purchase tickets from the CertKiller Ticket Company over the phone**

A customer calls to purchase tickets to an event. The agent asks the caller of the name of the event, its location and preferred dates. The caller provides this information. The agent informs the caller if seating is available for the requested show and the available ticket prices. The caller selects the ticket price and the number of seats. The agent locates the required number of seats in a section and holds them temporarily so they cannot be taken by another agent. The agent informs the caller of the viewing angle of the seating, such as from the left side, front, or back of the stage.

The caller decides on the section and confirms the number of tickets. The agent collects payment information from the caller, such as the cardholder name, credit card number, and expiration date. After receiving the credit transaction authorization from the card issuer, the agent confirms the ticket purchase and gives the confirmation number to the caller. If the sale does not complete due to bad credit, the seats are released, otherwise the seats are sold. If the credit card system is not operational, the seats are held and the sales transaction will be completed later. All sales are final. The customer and agent agree on either having the tickets mailed directly to the customer's mailing address or held at the "will-call" box of the performance location.

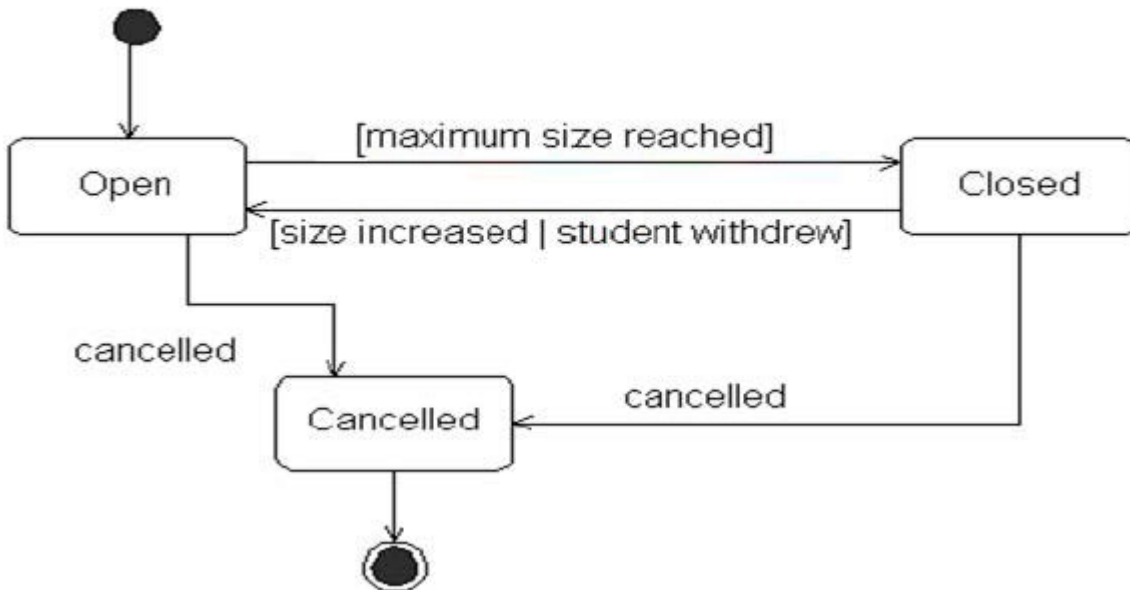
The Certkiller Ticketing System is to be updated so customers can also purchase tickets directly via the Internet. Besides the Agent which already exists, which of the following are also actor(s) for the updated system?

- A. Internet Browser.
- B. Customer.
- C. Customer, Ticketing System.
- D. Customer, Internet Browser.
- E. Customer, Internet Browser, Ticketing System.

Answer: B

QUESTION 56

Which of the following are true about the state diagram in the Exhibit? (Select 2 answers)

CourseSection

- A. Closed is a final state.
- B. When an open section reaches its maximum size, it is closed.
- C. A possible superstate called scheduled could be added to the diagram. Scheduled would include the open state and the closed state.
- D. Increasing the size of a closed section will not reopen it.

Answer: BC

QUESTION 57

An OO development process is normally iterative and incremental. Which of the following exemplify an iterative, incremental process? (Select 3 answers)

- A. Design a little. Code a little. Test a little. Repeat.
- B. (1) Get new behavior working. (2) Improve the design. (3) Repeat 1 and 2. (4) Improve performance and optimize size.
- C. Grow your software from a working core, refactoring as you grow.
- D. Develop the pieces and integrate them just in time (JIT) for deployment.

Answer: ABC

QUESTION 58

Suppose the interactions between certain critical components of a distributed system being developed involve a new technology. Which one of the following is the BEST way to identify and reduce the associated technological risks?

- A. Build prototypes that focus on the interaction between the components so as to better understand them.

- B. Build prototypes that focus on developing the individual components, because well-designed components imply good interactions between them.
- C. Factor the risk into the architecture design, and proceed with the development, in order to save time and effort spent on prototyping.
- D. Schedule the project in such a way that the component interactions are handled later, when the technology is more mature.

Answer: A

QUESTION 59

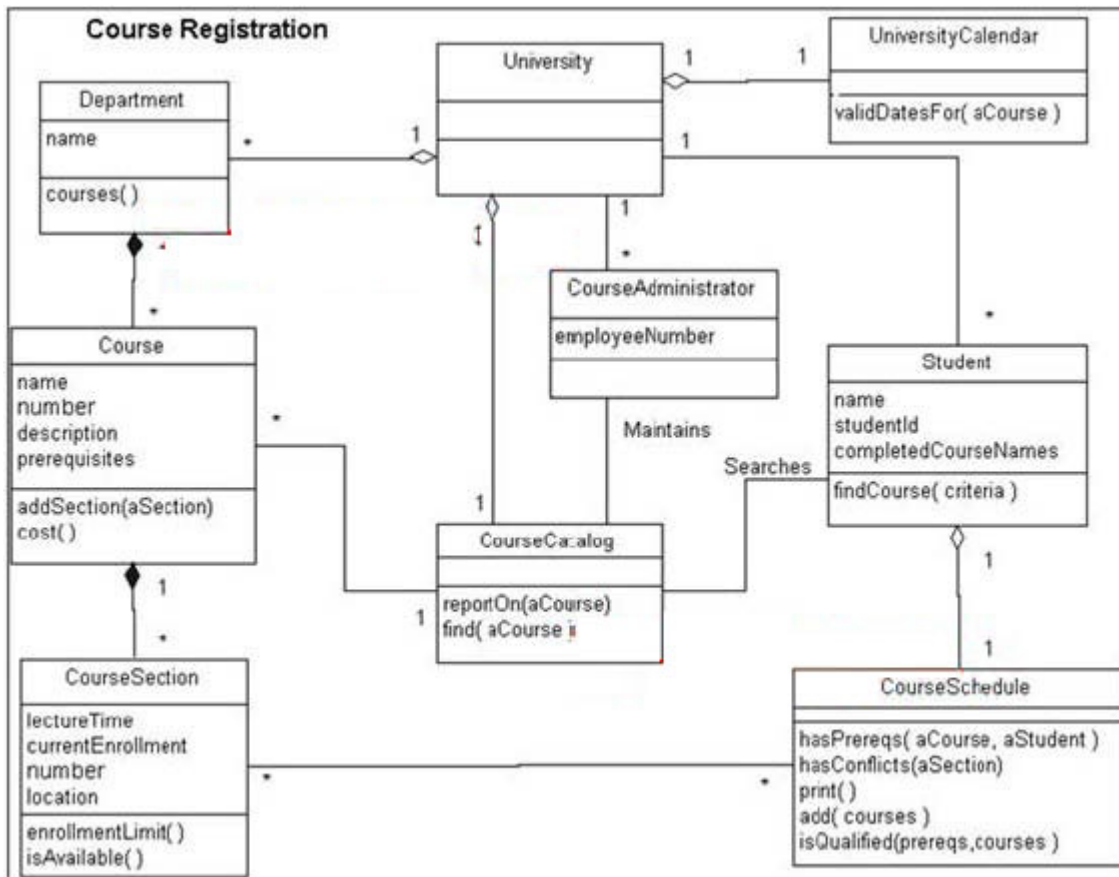
When writing the initial use cases for a project, what is the MOST important to define?

- A. The job title for each user of the system.
- B. What user requirements will be fulfilled.
- C. How user requirements will be fulfilled.
- D. How external system interactions will be fulfilled.

Answer: B

QUESTION 60

Refer to the Exhibit



The Course Registration application will be extended to include processing related to the persons teaching the courses. They can be employees of the University or contracted from outside, but they must all have a Ph.D (Doctor of Philosophy) degree. Which of the following is the BEST name for the new class to handle this requirement?

- A. DoctorOfPhilosophy.
- B. Instructor.
- C. Contract Professor.
- D. Employee.

Answer: B

QUESTION 61

How should use cases be utilized? (Select all correct answers)

- A. As a way to define the required functionality for an increment
- B. As a source of system test cases
- C. As a way to gather insight into how system components interact
- D. As a way to choose the appropriate technology for developing a system

Answer: A,B

QUESTION 62

An existing application that accesses the database is to be re-engineered using object technology. The analyst arrives at an initial start at a class diagram on the basis of discussions with domain experts. Which of the following subsequent steps would constitute a good approach for the analyst to follow? (Select 3 answers)

- A. Refine the class diagram by identifying the behavior for each class.
- B. Look for common behavior across classes and develop inheritance hierarchies.
- C. Where possible, encapsulate the data required for each class to exhibit its behavior.
- D. Ensure that there is a direct mapping between the class relationships and the database schema.

Answer: ABC

QUESTION 63

A system is being developed that will get the values for its objects from a variety of possible sources, including a relational database system, a legacy transaction system, and indexed files. Each persistence store has its own wrapper object that wraps its API. Which one of the following BEST describes the design approach to manage the storing and retrieving of the business objects by using these wrappers?

- A. Each business object communicates with the appropriate wrapper to get fully populated during its instantiation.

- B. The class of each business object communicates with the appropriate wrapper to instantiate and populate instances.
- C. The views communicate with the wrappers to instantiate and populate the business objects.
- D. Brokers with a common interface instantiate and populate objects using the appropriate wrappers.

Answer: D

QUESTION 64

To show the dynamic behavior of the system across multiple requirements, or the behavior of the key objects throughout their life cycles, which of the following are appropriate? (Select 2 answers.)

- A. Class diagram.
- B. Use cases.
- C. Activity diagram.
- D. State diagram.

Answer: CD

QUESTION 65

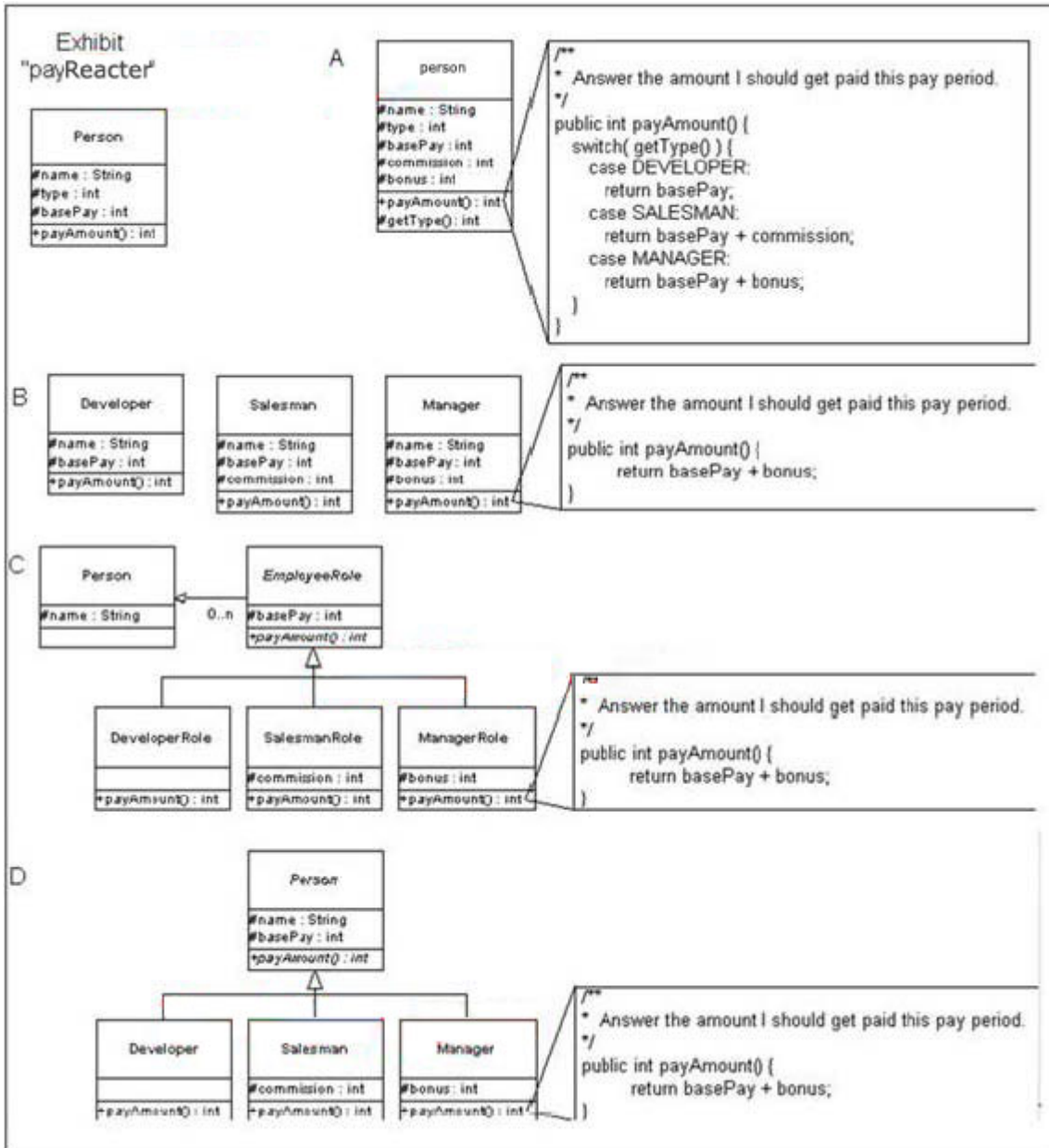
Which one of the following is the BEST way to decrease client code errors and increase reuse?

- A. Reduce message parameters and sequencing of services.
- B. Document available services.
- C. Provide more services for the client classes.
- D. Hold educational meetings to explain the services.

Answer: A

QUESTION 66

Refer to the Exhibit.



Currently, the Person class is designed as shown in the Exhibit, with employees being paid a base salary. New requirements are being added to pay bonuses to managers and commissions to salespeople, leaving developers being paid a base salary as before. Which of the following is the BEST refactoring of the system?

- A. Extend the Person class and payAmount () method as shown in A.
- B. Replace the Person class with Developer, Salesman, and Manager classes, writing specific payAmount () methods as shown in B.
- C. Associate the Person with EmployeeRole specializations, moving the payAmount () method as shown in C.
- D. Create Developer, Salesman, and Manager specializations of the Person class, writing specific payAmount () methods as shown in D.

Answer: C

QUESTION 67

To show where components and objects are physically located in a distributed system, it is BEST to use:

- A. Activity diagrams.
- B. Distributed state diagrams.
- C. Distributed component diagrams.
- D. Deployment diagrams.

Answer: D

QUESTION 68

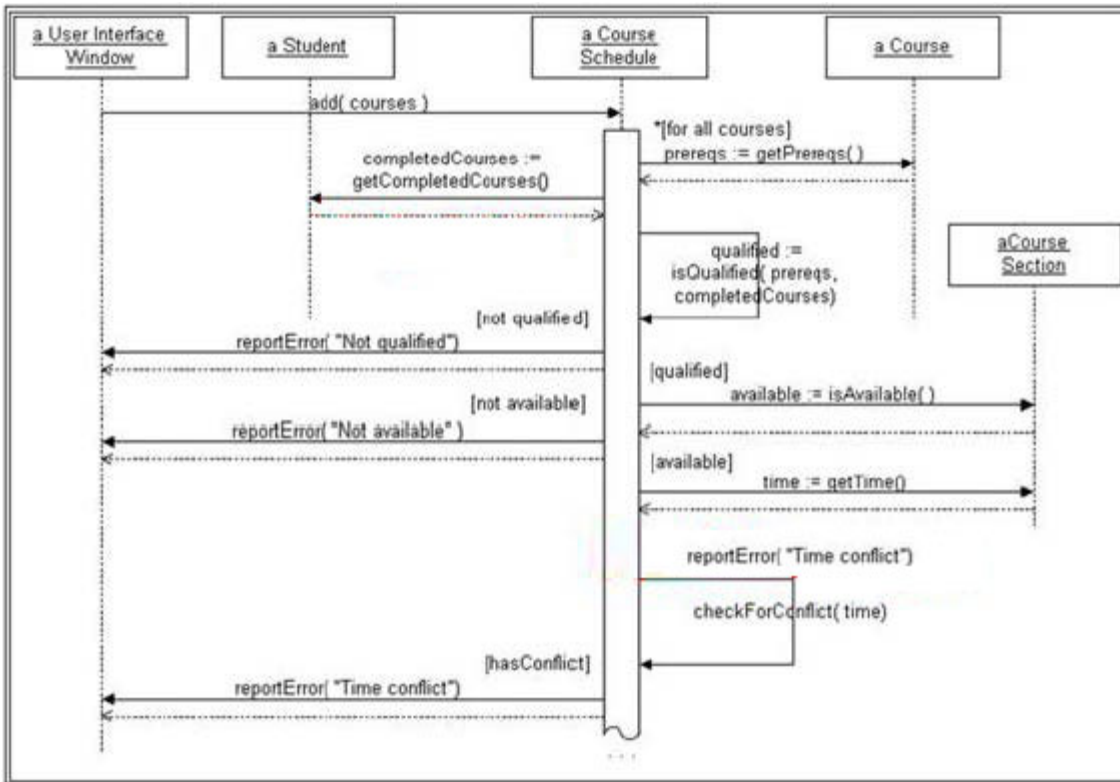
Use cases should: (Select 2 answers)

- A. be written in a way such that end users can understand them.
- B. specify implementation details for the system.
- C. describe what the system must do.
- D. be discarded after building the use case model.

Answer: AC

QUESTION 69

Refer to the Exhibit



Which of the following are true about the sequence diagram in the Exhibit? (Select 2 answers)

- A. course is responsible for determining if a student is qualified for a course.
- B. CourseSchedule is responsible for determining if a student is qualified for a course.
- C. CourseSchedule collaborates with course to obtain the time for the available course section.
- D. The application user may specify that multiple courses be added to his course Schedule at once.

Answer: BD

QUESTION 70

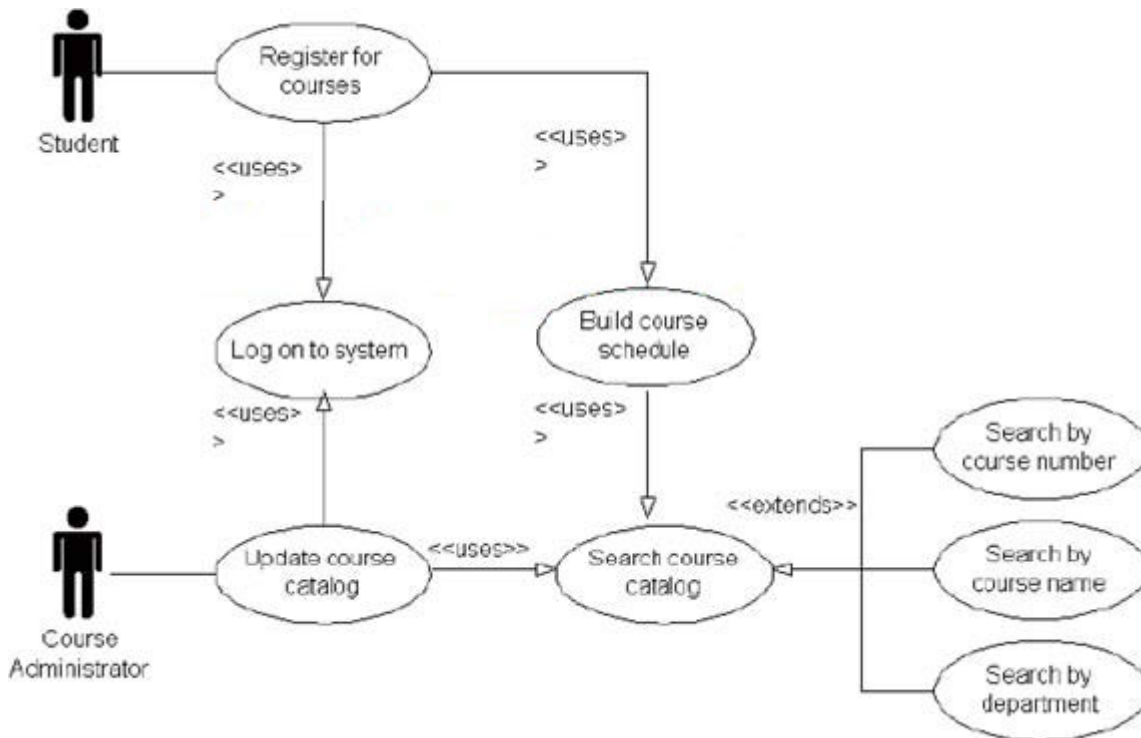
Select the correct answers concerning subclassing and subtyping. (Select all correct answers)

- A. Subtyping focuses on interface inheritance from a design perspective.
- B. Delegation is one way to implement subtyping.
- C. Subtyping is one way to implement subclassing.
- D. Subclassing focuses on inheritance from an implementation perspective.

Answer: A,B,D

QUESTION 71

Refer to the Exhibit



University X has a registration system that allows students to register for courses online. The university currently has over 1000 students and 100 courses. The system keeps an online catalog of courses for the upcoming semester. The catalog contains information such as course names, numbers, descriptions, pre-requisites, available sections, times, locations and enrollment fees. The catalog is managed by the Course Administrator.

Scenario 2: Course Administrator schedules a section for a course

Before a course section for course can be scheduled, the course must be approved by the Curriculum Committee, the department chairman and the Dean of Education. It is then placed in the university course catalog. To schedule a section of a course, the course administrator locates a specific course via its full name or number. He is then presented with the currently scheduled sections for that course. He can then create a new section or select one of the existing sections, and update its relevant information, including section number, time, location, and enrollment limit.

If a use case named "Add Course to Schedule" needs to be added to the supplied use case diagram, which of the following existing use cases should it be related to and what type of relationship should be selected?

- A. Register for Courses includes Add Course to Schedule.
- B. Add Course to Schedule extends Register for Courses.
- C. Build Course Schedule includes Add Course to Schedule.

D. Add Course to Schedule extends Build Course Schedule.

Answer: C

QUESTION 72

To satisfy a new requirement "a department can find the students who have completed a specific course it offered", select all that are appropriate to add to the CRC card in the Exhibit (Select 3 answers)

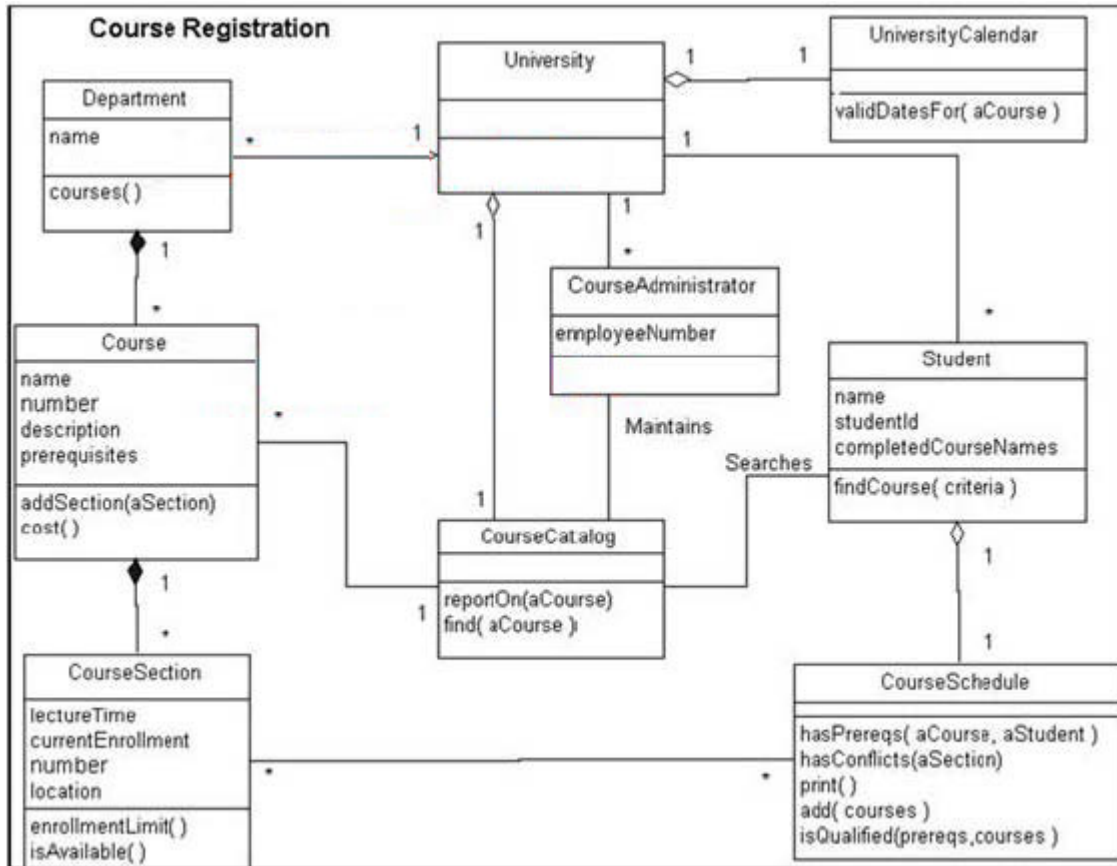
CLASS	RESPONSIBILITY	COLLABORATOR
Course	Add/update sections of a course Knows cost for enrolling in a specific course	CourseSection
CourseAdministrator	Creates/updates course catalog information	CourseCatalog
CourseCatalog	Creates/updates courses and sections Provides a formatted report of courses and sections for a given <ul style="list-style-type: none"> - department - course name - course number 	Course Department Course Course
CourseSchedule	Checks whether pre-requisites are satisfied Checks for time conflicts in current schedule Checks for course section availability Prints itself	Course, Student CourseSection CourseSection CourseSection, Student
Department	Knows the courses it offers Provides information about the courses it offers	Course
CourseSection	Knows/sets current enrollment Knows/sets enrollment limit Sets lecture times	UniversityCalendar
Student	Searches for course information Creates/updates course schedule Knows the completed courses	CourseCatalog CourseSchedule
University	Knows/sets departments belonging to it	
UniversityCalendar	Determines valid dates and times for offering courses	

- A. Department has a responsibility "find students who completed a specific course".
- B. Department collaborates with Student.
- C. Department collaborates with Student and CourseSection.
- D. CourseSection has a new responsibility "Keep track of all enrolled students".
- E. Student has the responsibility to "know what courses were completed".

Answer: ABE

QUESTION 73

Refer to the Exhibits



University X has a registration system that allows students to register for courses online. The university currently has over 1000 students and 100 courses. The system keeps an online catalog of courses for the upcoming semester. The catalog contains information such as course names, numbers, descriptions, pre-requisites, available sections, times, locations and enrollment fees. The catalog is managed by the Course Administrator.

Scenario 1: Student builds course schedule and registers

A student searches for courses in the catalog using a department name, course name or course number. The student can then select the courses that he is interested in and add them to his schedule. The system will check his schedule for time conflicts and course availability problems. Because the system does not provide any form of automatic problem resolution, the student must resolve any problem(s) that are reported. This process is repeated for all the courses that a student wants to enroll in. Once the student is satisfied with his schedule, he submits it for online registration by supplying a credit card number and its expiration date. The credit card company's system will perform payment authorization and then the university's system will generate a confirmation or report any problems found

A Singleton is a class with only one instance. Based on the scenario description and the class diagram, which of the following are possible Singletons? (Select 3 answers)

- A. CourseSchedule.
- B. University.
- C. CourseCatalog.
- D. UniversityCalendar.

Answer: BCD

QUESTION 74

Certkiller .com wants to develop a new system using an OOAD approach. Their users are mostly non-technical clerical staff. Their management has a tight budget and is thus very cost-conscious. Which of the following should be recommended in this situation? (Select 2 answers)

- A. Understand as many of the requirements as possible and prioritize them. Then, develop the use case(s) for the high-priority requirements to start with.
- B. Focus on developing a class diagram with as much detail as possible. This helps users and developers understand all the static characteristics of the system, making it easier to accommodate any requirement changes.
- C. Focus on developing as many use cases and interaction diagrams as possible. Review with the users so that they have a complete picture of all the dynamic characteristics of

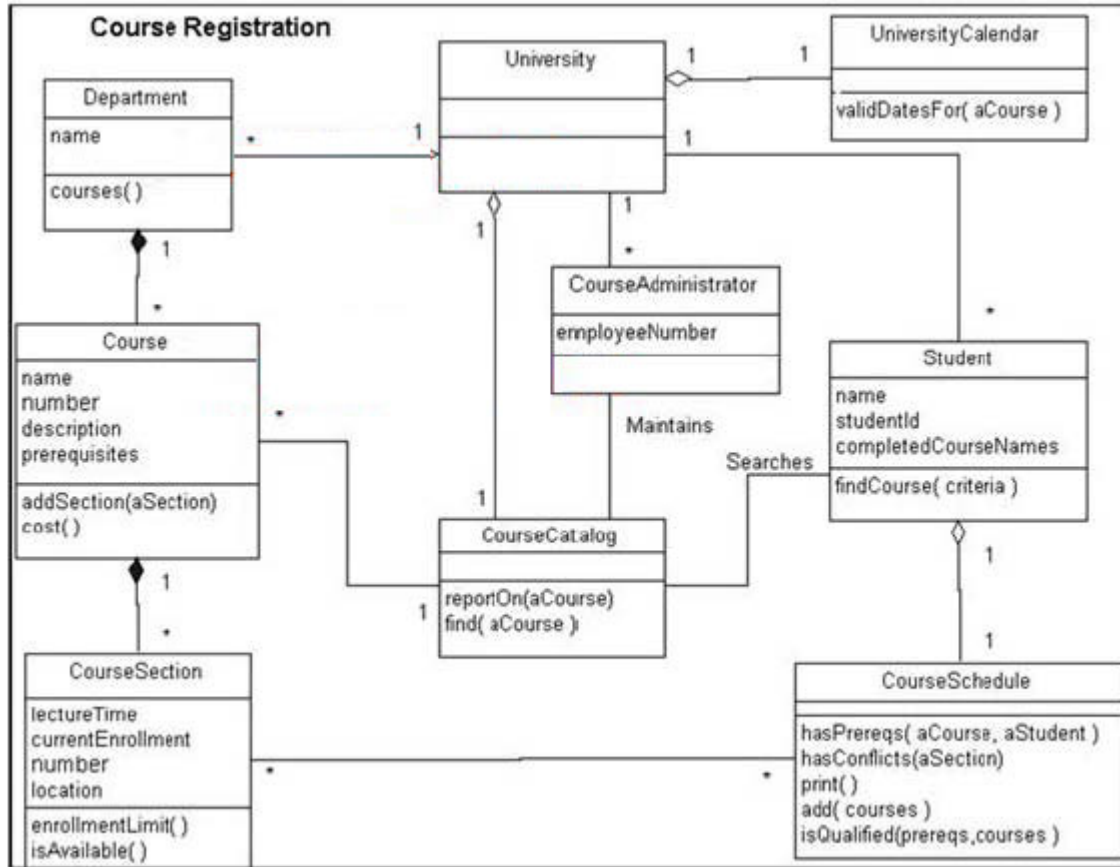
the system. This focus on behavior up-front ensures that the system being developed meets their requirements.

D. Quickly develop prototypes to satisfy some high-priority requirements and illustrate the user interfaces. Review with users to obtain feedback and changes for further development.

Answer: AD

QUESTION 75

Refer to the Exhibit



If a large number of students are taking a specific course, several professors are assigned to teach different sections of the course. Using the conceptual model shown in the Exhibit, what is the BEST candidate class that client objects would collaborate with to find out who teaches the course sections, and at what time?

- A. Course.
- B. CourseSchedule.
- C. Student.
- D. CourseSection.

Answer: A

QUESTION 76

Refer to the Exhibit

MISSING

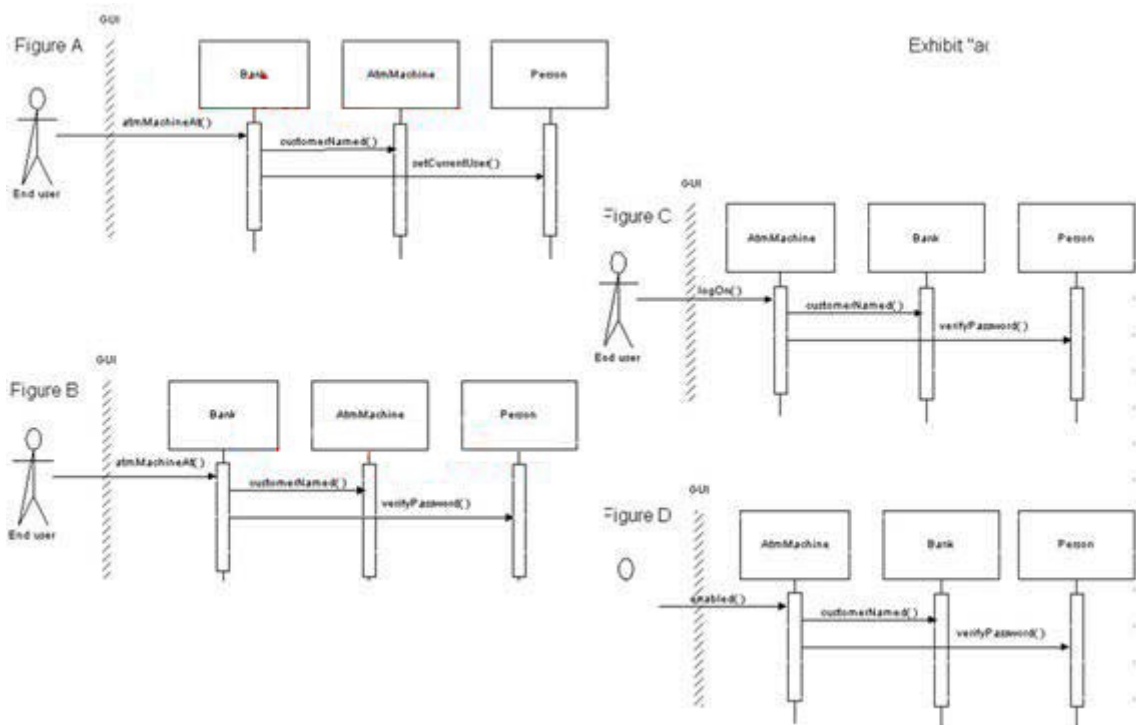
To implement the responsibility "Add/update sections of a course" by Course, which of the following are correct? (Select 2 answers)

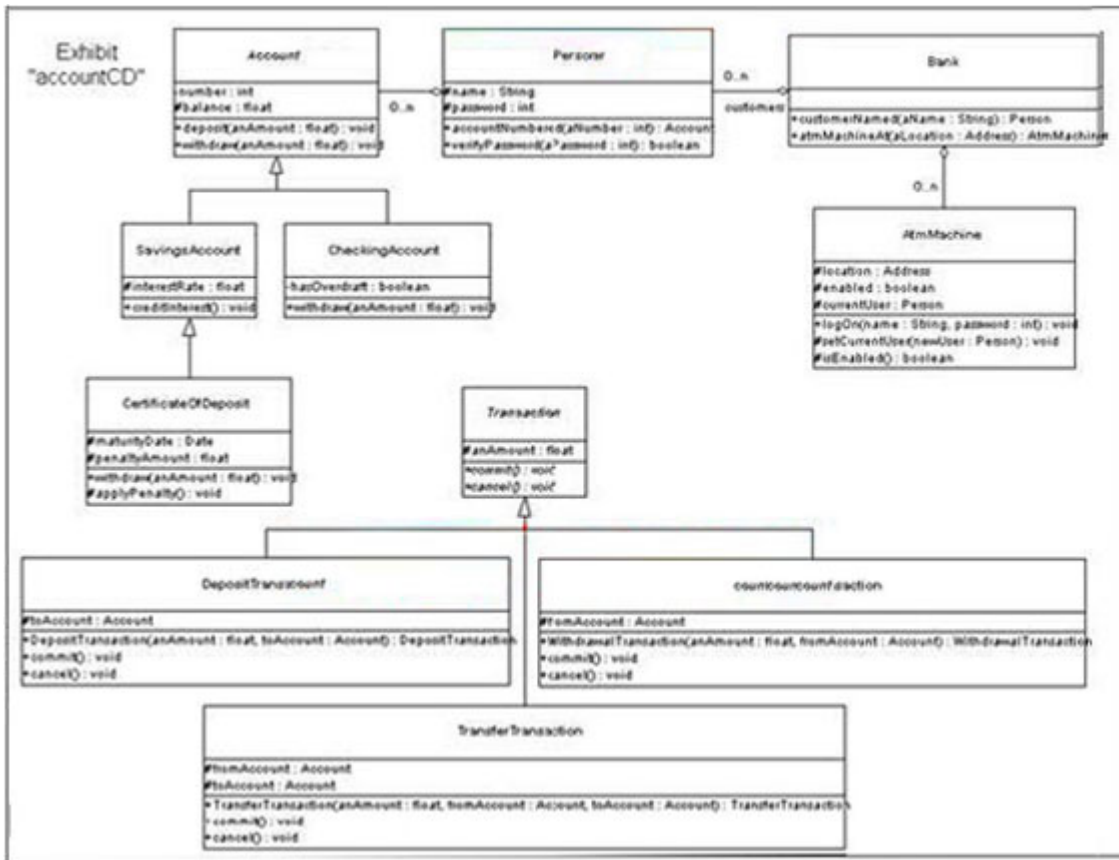
- A. Course has a sections attribute.
- B. Course has a sections class attribute.
- C. Course has a method addSection (number, lectureTime, enrollmentLimit, currentEnrollment, location).
- D. CourseSection has a method addsection (number, lectureTime, enrollmentLimit, currentEnrollment, location).

Answer: AC

QUESTION 77

Exhibit:





Certkiller .com is logging onto an ATM machine. Given the class diagram in the Exhibits , which one of the following BEST completes the interaction diagram in the Exhibits to accomplish this task?

- A. Figure A
- B. Figure B
- C. Figure C
- D. Figure D

Answer: C

QUESTION 78

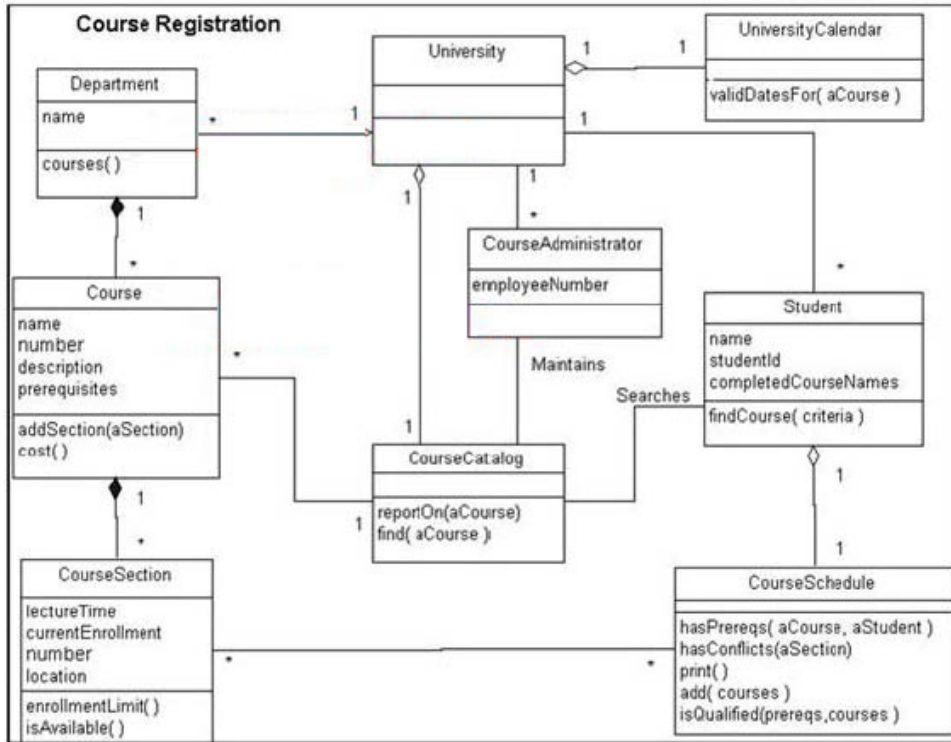
A coordinator delegates operations to its collaborating objects. It often mediates between them. A controller has complete operational control over the objects it collaborates with. It usually uses only the getters and setters of the collaborating objects. Which of the stereotypes, <<coordinator>> or <<controller>>, should be modeled in a class that manages a number of collaborating classes?

- A. Coordinator
- B. Controller.
- C. Coordinator or Controller, they are equivalent.

Answer: A

QUESTION 79

Refer to the Exhibit



Suppose there is a new requirement to keep track of which instructors teach what courses and sections as well as students' evaluations of the instructor. A new Instructor class has just been added. Which of the following is the BEST approach for handling the information and processing requirements?

- A. Add the new attributes and methods in Course Section.
- B. Add the new attributes and methods in Instructor.
- C. Add an association relationship between course Section and Instructor. Add some new attributes and methods in Course Section and some in Instructor.
- D. Add an association class called Teaching Assignment between CourseSection and Instructor. Add the new attributes and methods in TeachingAssignment.

Answer: D

QUESTION 80

If there is a business rule that there must be at least one Instructor associated with every CourseSection, how could it be BEST enforced in the system?

- A. Write the object creation code in the course section class so that it is not possible to create a course section object without its required association with Instructor in place.
- B. When any method in a client class creates a course section, have the line immediately following the creation set its Instructor attribute.
- C. Draw an association between course section and Instructor on the class diagram.

D. Write a test case based on the use case requirement.

Answer: A

QUESTION 81

Class A is dependent on class B if: (Select 3 answers)

- A. A sends a message to B.
- B. A has a reference to B.
- C. B is used as a parameter for sent by A.
- D. B sends a message to A

Answer: ABC

QUESTION 82

Actors are defined in a use case diagram in order to identify their:

- A. job title.
- B. role.
- C. name.
- D. experience level.

Answer: B

QUESTION 83

In a well-designed, layered architecture, which layer(s) should the model layer know about?

- A. A persistence layer that hides the details of the storage systems.
- B. A view layer that displays the model.
- C. A controller layer that responds to user inputs.
- D. An Object Request Broker (ORB) layer that directs the messages to objects on remote devices.

Answer: A

QUESTION 84

Based on the Exhibit

University X has a registration system that allows students to register for courses online. The university currently has over 1000 students and 100 courses. The system keeps an online catalog of courses for the upcoming semester. The catalog contains information such as course names, numbers, descriptions, pre-requisites, available sections, times, locations and enrollment fees. The catalog is managed by the Course Administrator.

Scenario 2: Course Administrator schedules a section for a course

Before a course section for course can be scheduled, the course must be approved by the Curriculum Committee, the department chairman and the Dean of Education. It is then placed in the university course catalog. To schedule a section of a course, the course administrator locates a specific course via its full name or number. He is then presented with the currently scheduled sections for that course. He can then create a new section or select one of the existing sections, and update its relevant information, including section number, time, location, and enrollment limit.

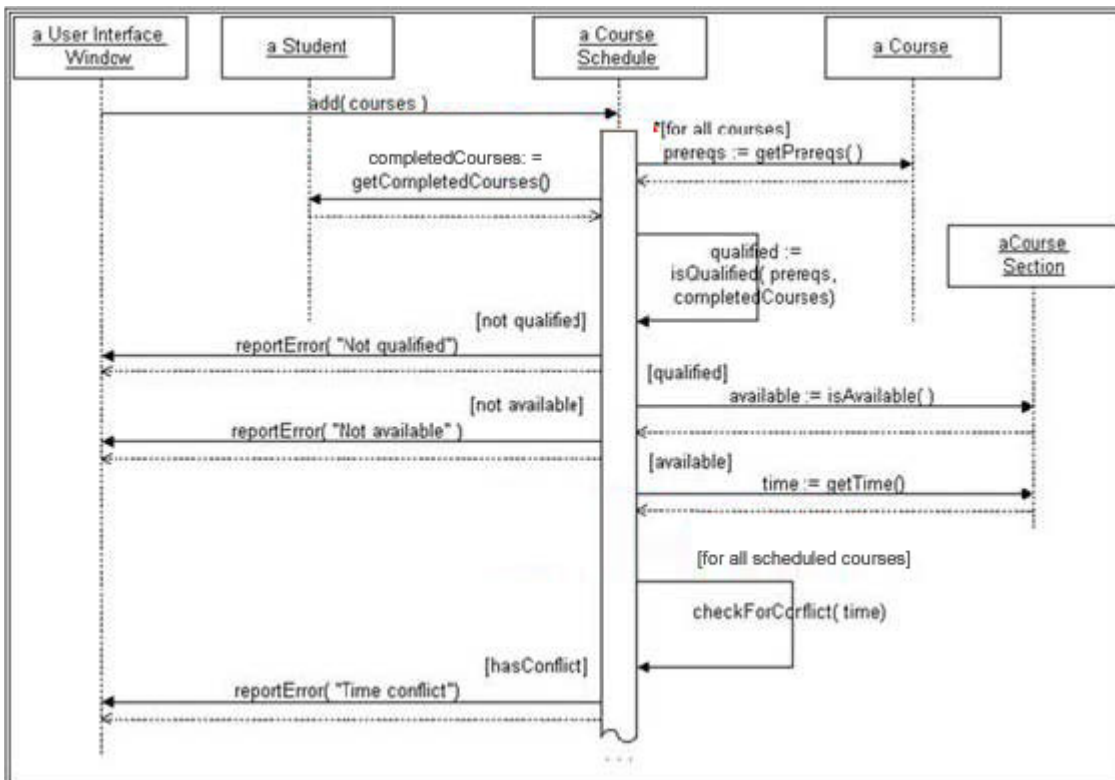
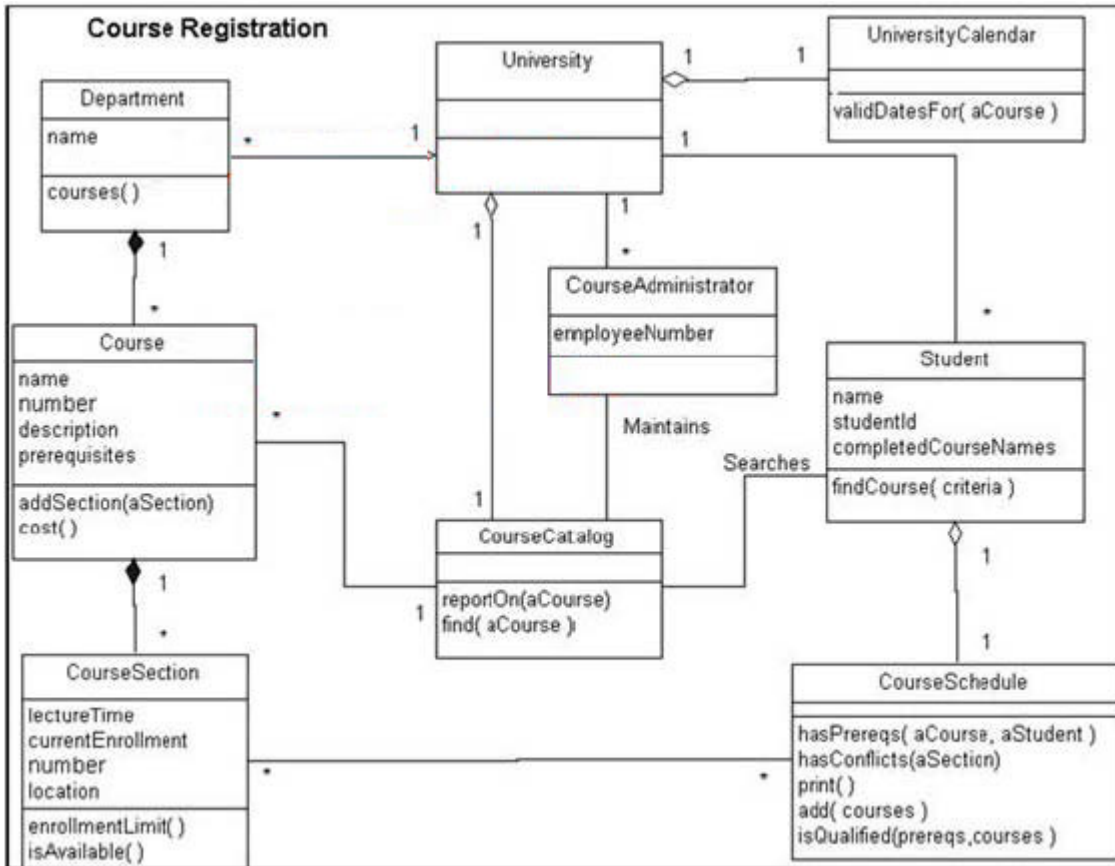
For which class would a state diagram give the MOST value?

- A. Department.
- B. CourseCatalog.
- C. CourseAdministrator.
- D. Course.

Answer: D

QUESTION 85

Based on the conceptual model as shown in the Exhibit



Which is the BEST grouping for creating packages for this system?

- A. The classes should be grouped according to the Course Registration use case diagram to synchronize with the requirements. Create eight packages for the eight use cases, each containing the classes (or interfaces to them) required to satisfy that corresponding use case.
- B. All classes should be grouped in one package for simplicity, performance and due to the small application size.
- C. Group into two packages based on "ownership" or aggregation concept: Package UniversityDomain consists of University, UniversityCalendar, Department, CourseAdministrator, Course, CourseSection and CourseCatalog. Package StudentCourseScheduling consists of Student and CourseSchedule.
- D. Group into three packages based on inter-dependencies: Package UniversityDomain consists of University, Department, UniversityCalendar. Package UserDomain consists of Student, CourseAdministrator. Package CourseDomain consists of CourseCatalog, Course, CourseSection, CourseSchedule.

Answer: D

QUESTION 86

Which one of the following is the LEAST important to document? Every class':

- A. superclass.
- B. life cycle.
- C. description.
- D. public operations.

Answer: B

QUESTION 87

What is the MOST significant source of input for creating interaction diagrams?

- A. State diagrams.
- B. Use cases.
- C. Class diagrams.
- D. Package diagrams.

Answer: B

QUESTION 88

When writing the initial interaction diagrams for a project, it is BEST to concentrate on:

- A. Higher level object collaborations.
- B. Detailed low level object collaborations.
- C. Parallel object behavior.

D. Only those interactions between an actor and the system.

Answer: A

QUESTION 89

The BEST use of an interface is to:

- A. logically support multiple inheritance.
- B. utilize objects located across the inheritance hierarchy in the same role.
- C. specify the full API of an application for use by other systems.
- D. define constants to coordinate semantics across the system.

Answer: B

QUESTION 90

Refer to the Exhibit

MISSING

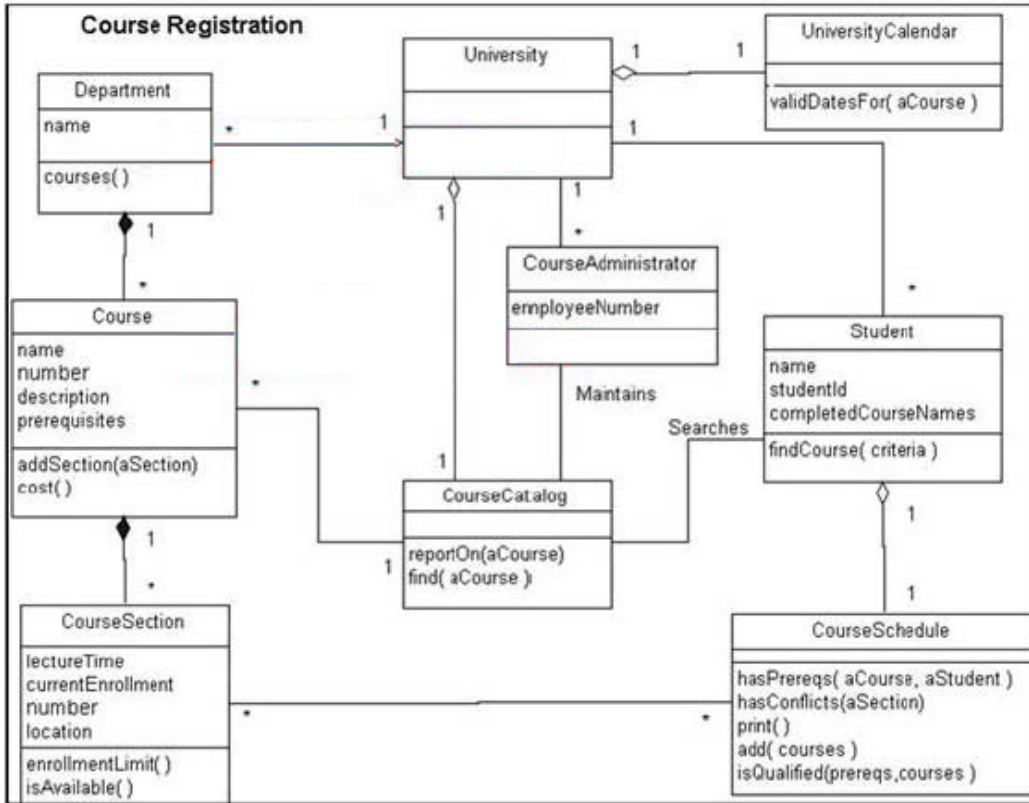
To fulfill the requirement that a course administrator can update any information in the catalog, which of the following classes are involved? (Select 3 answers)

- A. Course.
- B. CourseSection.
- C. CourseSchedule.
- D. CourseCatalog.

Answer: ABD

QUESTION 91

Refer to the Exhibit.



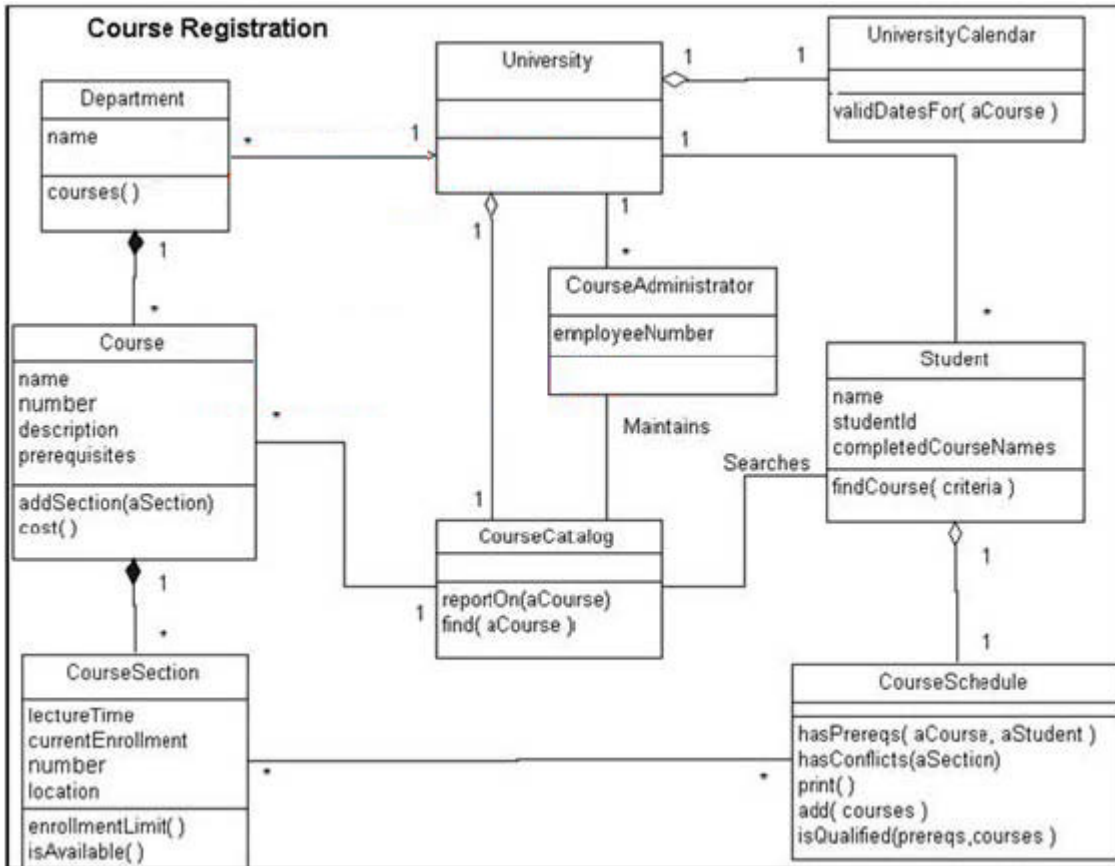
aCourseSection can be added to, deleted from and retrieved from aCourseSchedule. What is the BEST way to model the relationship between aCourseSchedule and aCourseSection?

- A. Course schedule delegates the management of Course sections to student.
- B. Course schedule delegates the adding, deleting and retrieving of the Course sections to a collection it holds.
- C. Course schedule is defined as a subclass of a collection type and inherits the adding, deleting and retrieving capabilities for Course Sections.
- D. Course section has a schedule number attribute by which it can identify the Course schedule to which it belongs

Answer: B

QUESTION 92

Refer to the Exhibit



If a course administrator can also be a student and vice versa (for example a part-time worker that also studies at the University), what is the BEST approach for accommodating this situation?

- A. Make no changes to the class diagram. All necessary processing can be handled by adding methods to both Course Administrator and Student.
- B. Create Role as a superclass of CourseAdministrator and Student. Then create class Person (which has the common attributes of student and CourseAdministrator) and a many-to-many association relationship between Person and Role
- C. Create a "many-to-many" association relationship between CourseAdministrator and Student.
- D. Create Person as a superclass of CourseAdministrator and Student. Move their existing relationships with other classes to Person.

Answer: B

QUESTION 93

The requirements for a system include a large number of concurrent clients, high volume of service requests, and guaranteed execution of sets of actions as one atomic action. Which of the following should be considered by an analyst? (Select 2 answers)

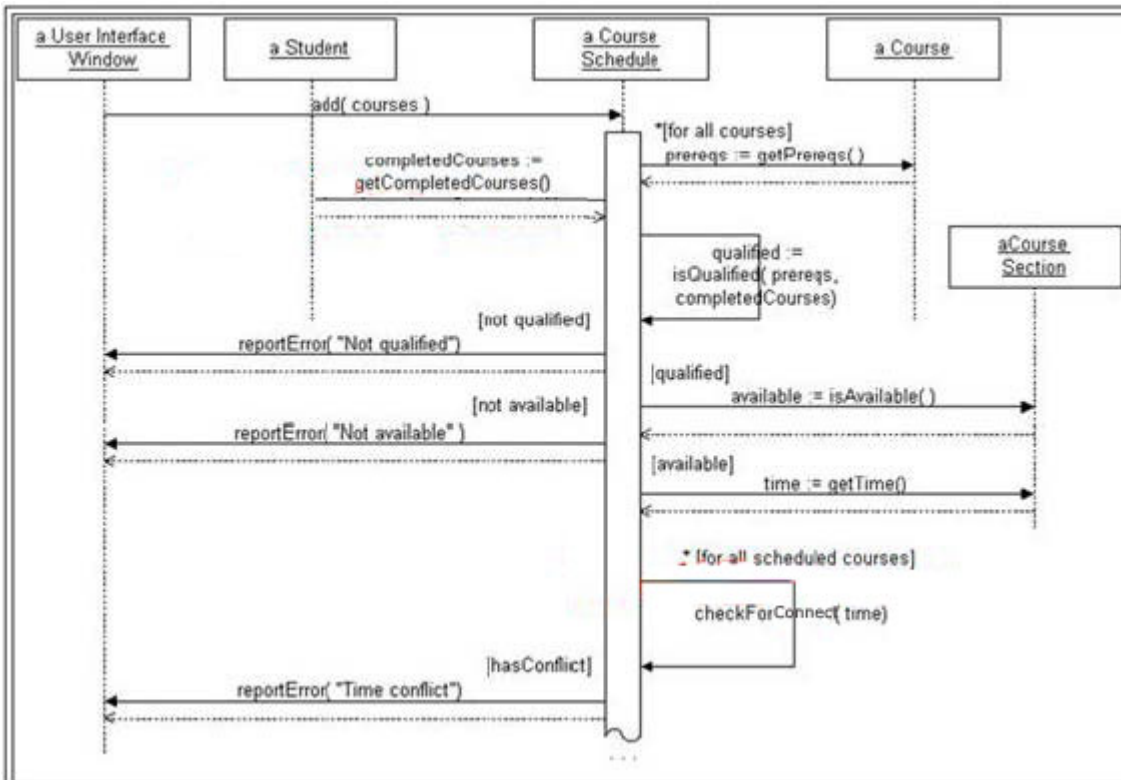
- A. Use a 3+ tier architecture to facilitate the scalability of the system.

- B. Turn off auto commit and leverage a DBMS' transaction facilities.
- C. Install the client and server portions of the system onto each client system.
- D. Enable security to guarantee the safe transmission of concurrent requests.

Answer: AB

QUESTION 94

Refer to the Exhibit



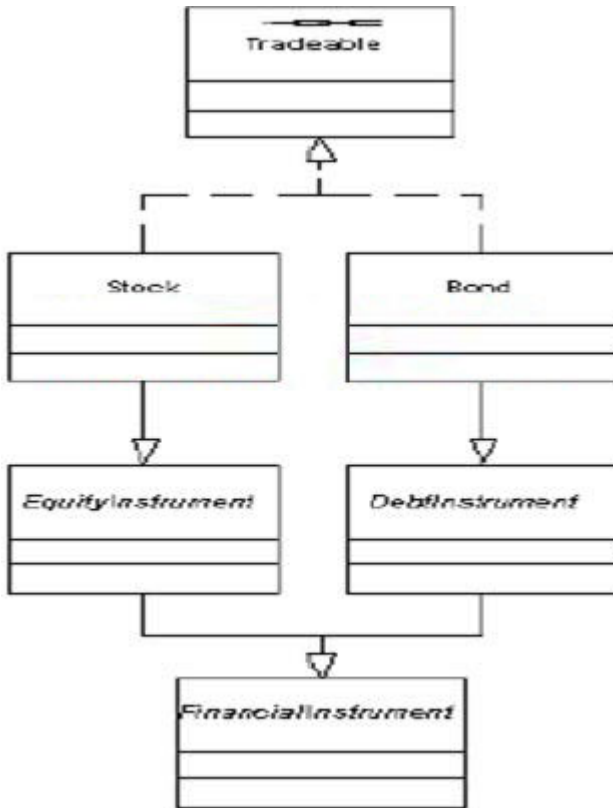
Which of the following is true about the sequence diagram in the Exhibit?

- A. Whenever one of the reportError messages is executed, the system reports an error and then continues to add() any other courses requested.
- B. * [for all courses] illustrates the use of multiple concurrent conditions.
- C. [available] time := getTime () illustrates the use of a condition.
- D. [qualified] and [not qualified] together illustrate how to describe concurrent processing in an interaction diagram.

Answer: C

QUESTION 95

Refer to the Exhibit.



Given that the system supports trading stocks and Bonds, which one of the following is appropriate to fill in all of the missing parts of the code snippets?

```

Position position;
Portfolio aPortfolio;
aPortfolio = new Portfolio ( "Fred Mertz" );
_____ instrument;
instrument = new Stock ( "XXXX" );
aPortfolio.buy ( new Position ( 100, instrument );
instrument = new Bond ( "YYYY" );
aPortfolio.buy ( new Position( 50, instrument );
---
public class Portfolio {
public void buy( int anAmount, anInstrument ) {
---
}
public void sell(int anAmount, anInstrument ) {
---
}}
  
```

- A. Stock
- B. Bond
- C. EquityInstrument
- D. DebtInstrument
- E. Tradeable

Answer: E

QUESTION 96

During implementation, the design is refactored to improve reuse and achieve more effective placement of responsibilities. This refactoring results in a public method being moved from one class to another. What OOAD artifacts potentially need to be updated? (Select 2 answers)

- A. Class diagrams
- B. Interaction diagrams
- C. State diagrams
- D. Use cases
- E. Activity diagrams

Answer: AB

QUESTION 97

Class A has a method called report() which prints itself as a formatted report. Class B is a subclass of

- A. It also has the responsibility of printing itself but generates more details and includes data specific to B. Based on good OO design principles such as encapsulation, inheritance, and polymorphism, which of the following are appropriate? (Select 2 answers)
- A. B's reporting method should be named report () .
 - B. B's reporting method should be named CK portDetails () so that requesting classes can easily distinguish which method they are invoking.
 - C. B's report () method should invoke A's report () method.
 - D. Naming of B's reporting method makes no difference to the overall design.
 - E. If class c is not a subclass of A, then its reporting method should be named differently to avoid confusion among developers.

Answer: AC

QUESTION 98

Which UML diagrams can be used to show parallel or concurrent behavior? (Select 3 answers)

- A. Deployment diagram.
- B. Activity diagram.
- C. State diagram.
- D. Sequence diagram.

Answer: BCD

QUESTION 99

Which of the following are useful when identifying the candidate classes for an OO system? (Select 3 answers)

- A. Use cases.
- B. Nouns in requirements documents.
- C. Discussion with domain experts
- D. Classes in an external system that is interfacing with this OO system.

Answer: ABC

QUESTION 100

Refer to the Exhibit

University X has a registration system that allows students to register for courses online. The university currently has over 1000 students and 100 courses. The system keeps an online catalog of courses for the upcoming semester. The catalog contains information such as course names, numbers, descriptions, pre-requisites, available sections, times, locations and enrollment fees. The catalog is managed by the Course Administrator.

Scenario 2: Course Administrator schedules a section for a course

Before a course section for course can be scheduled, the course must be approved by the Curriculum Committee, the department chairman and the Dean of Education. It is then placed in the university course catalog. To schedule a section of a course, the course administrator locates a specific course via its full name or number. He is then presented with the currently scheduled sections for that course. He can then create a new section or select one of the existing sections, and update its relevant information, including section number, time, location, and enrollment limit.

What is the BEST set of use cases for Scenario 1?

- A. Search Course Catalog, Add Course to Schedule, Check Schedule for Conflicts, Submit Schedule for Registration.
- B. Add Course to Schedule, Check Schedule for Conflicts, Generate Conflict Alternatives, Submit Schedule for Registration.
- C. Add Course to Schedule, Check Schedule for Conflicts, Generate Conflict Alternatives, Authorize Credit Card Payment.
- D. Search Course Catalog, Check Schedule for Conflicts, Submit Schedule for Registration, Authorize Credit Card Payment.

Answer: A

QUESTION 101

What is necessary in order to create use cases?

- A. Database modeling skills.
- B. OO programming skills.
- C. Application architecture expertise
- D. Business domain knowledge.
- E. Object design expertise.

Answer: D

QUESTION 102

Referring to the "Trade stock" use case in the Exhibit, which of the following is the BEST list of candidate interaction diagrams to directly or indirectly support the use case?

Use case:	Trade stock
Description:	The end user can enter stock trades over the Internet.
Actors:	End user
Preconditions:	The user has an active brokerage account.
Postconditions:	The user's brokerage account has been modified according to the trades executed.
End User Requirements:	
1. A user with an Internet browser shall be able to log onto his account at any time. This logon will require a user ID and password.	
2. Once logged on, the user can view his account balance, both in funds and stocks. Bonds will not be traded at this time. Deposits and withdrawals can be made via checks via mail or direct wires. Funds will only be in U.S. dollars. Stocks will only be those traded on U.S. exchanges.	
3. The user can request quotes for any stocks available for trade. These quotes will be delayed by 15 minutes from current market prices.	
4. The user can place buy and sell orders at any time, but they will only be executed when the market is open. The user's portfolio will be updated to reflect the orders.	
5. Orders can be cancelled before they have been executed. Cancellations received at least 5 minutes before execution will be successfully cancelled.	
Detailed requirements:	
6. The supported markets will be the NASDAQ and NYSE. Only stocks on these markets will be traded at this time.	
7. Quotes will be provided by the Automated Trading System (ATS). The protocol to work with this system will comply with the XML-based standard Equity Markup Language (EML) as defined in RFC9999.	
Future requirements:	
8. 24 hour trading.	
9. Foreign markets.	
10. Real-time quotes.	

- A. Open an account, Close an account, Receive a deposit, Withdraw funds, Buy a stock, Sell a stock, View a portfolio, Log on, Log off, View a quote
- B. Open an account, Close an account, Receive a deposit by wire, Receive a deposit by check, Buy a stock, Sell a stock, View a portfolio, Successful log on, Failed log on, Log off, View a quote
- C. Receive a deposit, Withdraw funds, Buy a stock, Sell a stock, Cancel an order, View a portfolio, Log on, Log off, Connect to the ATS quote system, View a quote using the EML protocol
- D. Manage accounts, Handle deposits and withdrawals, Trade stocks, View a portfolio, Get a quote.

Answer: C

QUESTION 103

Which of the following need to be done to structure and organize the architecture of a large, complex system with many classes? (Select 2 answers)

- A. Put some view classes, model classes and infrastructure classes in every package.
- B. Group classes with similar purpose into cohesive packages and define each package's

public interface.

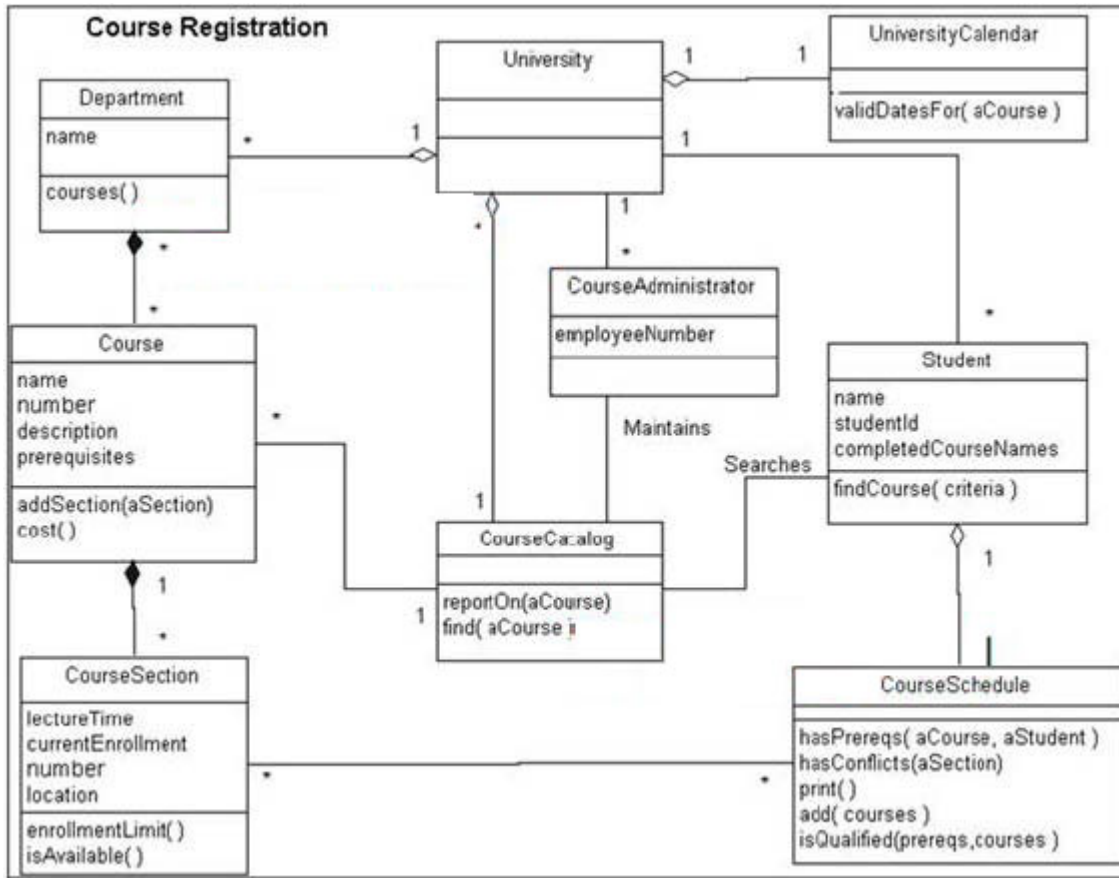
C. Maximize the dependencies between packages for better performance.

D. Layer the design (e.g. View Layer- Model Layer- Infrastructure Layer) - so common types of packages are in the same layer.

Answer: BD

QUESTION 104

Refer to the Exhibit.



A new application requirement is to keep track of a student's credit card information for payment of course fees and student loans. Using the Class Diagram in the Exhibit and good design principles, what is the BEST approach to satisfy this requirement?

CourseAdministrator- The individual(s) responsible for creating and maintaining the course catalog.

CourseCatalog- An entity that provides students with the ability to locate courses in which they may register for the upcoming semester.

CourseSchedule- The CourseSections that a Student is enrolled in.

Department - A division within the university that is responsible for satisfying its assigned responsibilities. Some divisions are responsible for organizing and delivering educational courses.

Student - An individual that is registered to attend courses at the university.

UniversityCalendar- An entity that knows valid days and times on which courses may be scheduled.

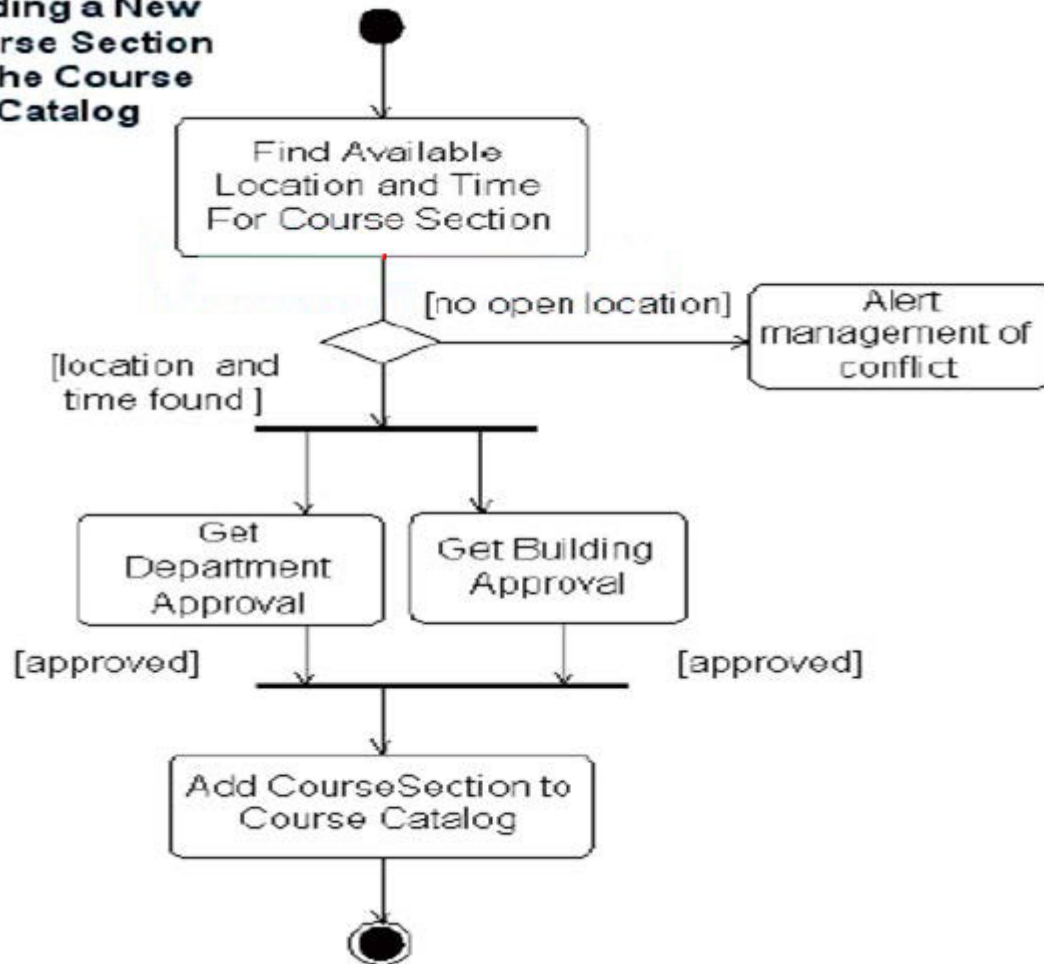
- A. A new class called CreditCard is added, and an aggregate relationship between Department and CreditCard is created because each department plans its budget based on fees collected from students majoring in that department's course curriculum.
- B. Two new classes, CreditCard and Payment, are added. An aggregate relationship between Student and CreditCard is created since the student owns and is authorized to use the credit card(s). An association relationship between Payment and CreditCard is also added.
- C. The student class is modified so that whenever some system, for example the Student Loan system, requires credit card information, this application will prompt the user and send the credit card information to that system.
- D. A method is added to the Student class that will directly access the database in which credit card information of all students is stored.

Answer: B

QUESTION 105

Which of the following are true about the activity diagram in the exhibit? (Select 2 answers)

Adding a New Course Section to the Course Catalog

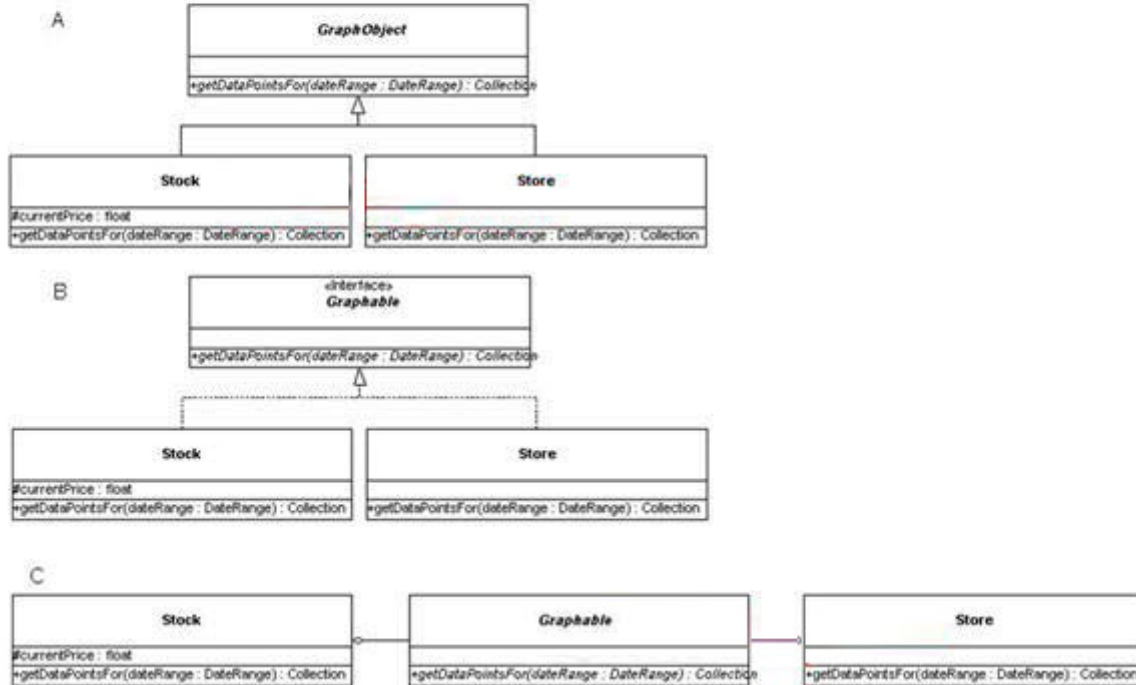
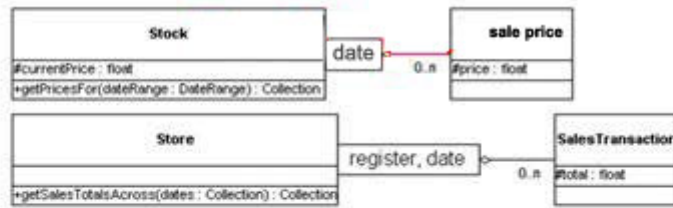


- A. A CourseSection can be added to the CourseCatalog with just department approval.
- B. Alerting management of a conflict and getting building approval can be done simultaneously.
- C. Getting departmental approval and getting building approval can be done simultaneously.
- D. Getting departmental approval and getting building approval can be done in any order.

Answer: CD

QUESTION 106

Refer to the Exhibit.



The system includes classes as shown in the Exhibit, with each separately providing information that is graphed. Two examples are shown, for Stock prices and Store transactions. What is the BEST refactoring to improve the system design?

- A. Create a common superclass, as shown in A, to create a graphing framework.
- B. Create a Graphable interface, as shown in B, to create a graphing type.
- C. Create a common Graphobject class, as shown in C, to be responsible for the graphing functionality.
- D. No redesign is needed, since these capabilities are very different and should thus remain separate as currently designed.

Answer: B

QUESTION 107

The developer should be able to trace a class' public operations back to its:

- A. public attributes.
- B. associations.
- C. states.
- D. responsibilities.

Answer: D

QUESTION 108

Which one of the following OOAD artifacts would be MOST useful in helping to plan the content of iterations in a project plan?

- A. State diagrams.
- B. Collaboration diagrams.
- C. Use cases.
- D. CRC cards.

Answer: C

QUESTION 109

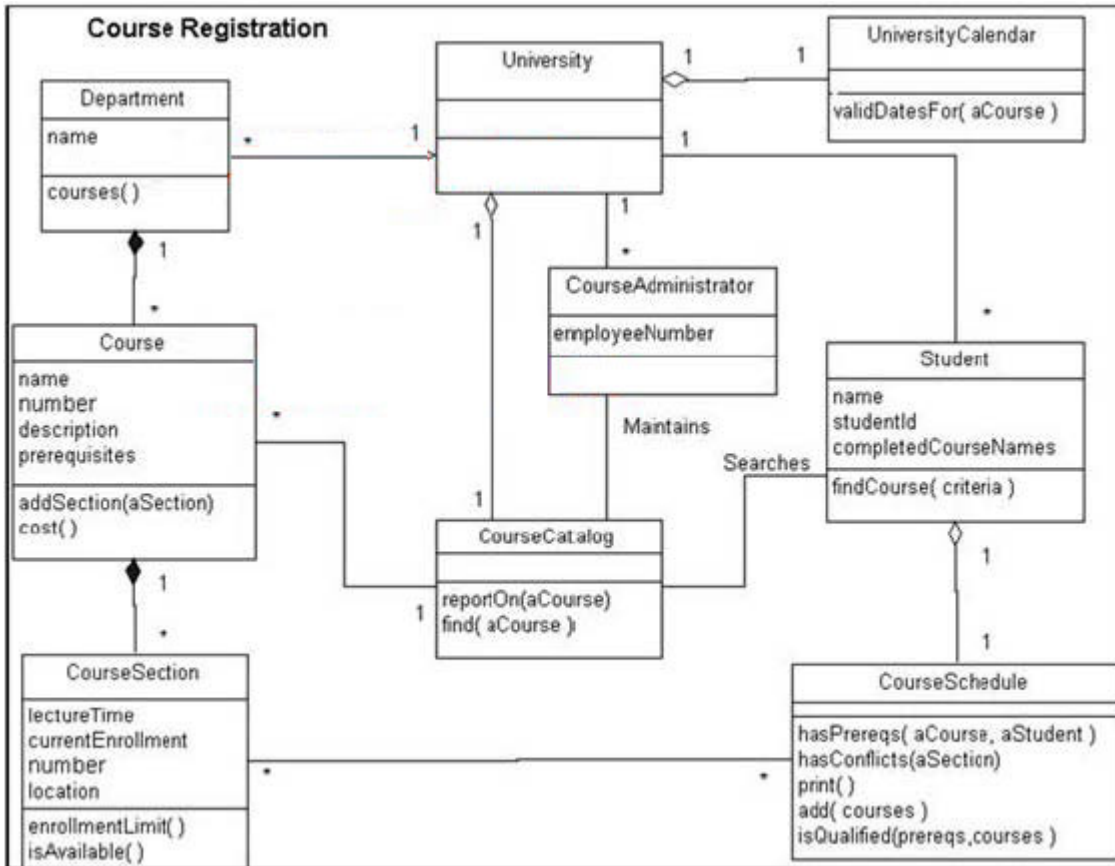
Which of the following OOAD artifacts can be effectively used to organize a project team's responsibilities? (Select 2 answers)

- A. Package diagrams, because they represent a logical partitioning of the conceptual model
- B. Use cases, because they drive the development process
- C. Deployment diagrams, because they correspond to the different layers of the software architecture.
- D. Activity diagrams, because they identify areas of parallel development.

Answer: AB

QUESTION 110

Refer to the Exhibit



Given that course administrators manage the course catalog and that students then search it for course descriptions, pre-requisites and section enrollment limit, which one of the following statements BEST enforces good OO design principles?

- A. Attributes in course and Course section should be moved to the class Coursecatalog.
- B. Attributes in course and Course section should be made private or protected. They should be accessed by other objects via messages to Course and CourseSection.
- C. Attributes in course and Course section should be made public so that they can be accessed by methods in Coursecatalog.
- D. Since the course catalog is heavily used by students and course administrators, Coursecatalog should implement all the required responsibilities instead of delegating to other classes.

Answer: B

QUESTION 111

Use cases are BEST utilized to:

- A. capture the requirements from users in meaningful chunks.
- B. describe when and how a given functionality should be implemented.
- C. document what services the system must provide.
- D. gather insights into how the system components interact.

Answer: A,C

QUESTION 112

The following are the requirements for a Report-generation module in an application:

1. When new data is generated, the user-interface should be refreshed automatically to reflect the latest values
2. Multiple view types are possible

Which of the following Model and View interactions BEST satisfies the above requirements?

- A. Establish a subscribe/notify mechanism between the view and model layers so that the views get notified of the change.
- B. Develop intelligence within the model so that it decides which views are to be refreshed based on the view type.
- C. Combine the view and model layers into a single entity so that the interactions are localized and notifications are instantaneous.
- D. Establish subscribe/notify mechanism between view and model, with the model updating the view based upon the view type.

Answer: A

QUESTION 113

Consider the following statements from a domain expert on a project:

An automated bill-payment functionality needs to be added to our online banking application. The bank's customer can make online bill payments to vendors (such as the electric company, telephone company, rental agency). Only vendors who have already signed up with the bank can be paid. There are two ways to make payments:

1. Specify a one-time payment for a specific amount, or
2. Establish regular payments to be made on a specific interval such as monthly or weekly.

Customers are notified of the details of successful payments via email. Their email addresses are already available.

Which of the following are requirements that MUST be reflected in use cases?

- A. When a payment attempt succeeds, the customer must be notified of the details via email.
- B. The customer must be given a choice of notification modes, via email or surface mail.
- C. The customer must be given a choice of adding a new vendor to the bank's list of payees.
- D. The customer must be given a choice of payment modes, one-time payment mode and recurring payment mode.

Answer: A,D

QUESTION 114

As use cases are being written, the analyst notes the following within the requirements: "The system shall be capable of providing specific processing commands for up to 50 devices concurrently, each of which must control up to 10,000 items per minute." The analyst knows that this requirement is for more throughput than previous systems and is key to the success of the system as a whole.

What action BEST reduces risk on the project?

- A. Develop a feasibility prototype as soon as practical.
- B. Continue to develop use cases and related designs, scheduling the use cases related to the throughput earlier in the overall schedule.
- C. Work with end users to prepare a contingency plan in case the throughput cannot be achieved.
- D. Take no special action. It is too early to consider performance issues during the analysis phase.

Answer: A

QUESTION 115

What should be done when a class has a larger number of responsibilities, and consequently more operations and attributes, than the other classes in the domain?

- A. Have the class keep its responsibilities and delegate the implementation to other classes, so the behavior is more distributed.
- B. Add multiple subclasses to the class and distribute the operations and attributes evenly among the class and subclasses.
- C. Refactor the class into several classes to better distribute the responsibilities and operations.
- D. Merge code to reduce the number of operations.

Answer: A,C

QUESTION 116

What happens during the execution of an OO application?

- A. Model objects are instantiated from the database as needed to support the current view objects, and then discarded.
- B. A portion of the object model will be in memory, with requests "traversing" the model.
- C. The business model, as drawn on class diagrams, will be in memory upon startup.
- D. The last set of running objects is brought into memory.

Answer: B

QUESTION 117

Which of the following statements about designing an enterprise application is TRUE?

- A. In modelling a system that will have many concurrent users, collaboration diagrams are more useful than sequence diagrams.
- B. Due to the realities of a commercial system, performance requirements should be resolved in the analysis phase of the project.
- C. A three or more tier architecture should be considered in order to facilitate scalability.
- D. By definition, each use case represents a set of actions that are performed atomically; it therefore maps directly to a transaction.

Answer: C

QUESTION 118

When considering OOAD artifacts and the resulting software, how far should one be able to trace specific user requirements?

- A. Interaction diagrams
- B. Use cases
- C. Private methods
- D. Class diagrams
- E. Public methods

Answer: E

QUESTION 119

If there is a business rule that there must be at least one Person associated with every Account, how could it be BEST enforced in the system?

- A. Write a test case based on the use case requirement.
- B. Draw an association between Account and Person on the class diagram.
- C. When any method in a client class creates an Account, have the line immediately following the creation set its Person attribute.
- D. Write the object creation code in the Account class so that it is not possible to create an Account object without its required association with Person in place.

Answer: D

QUESTION 120

In a well-designed application that implements to Model-View-Persistence layering, what layers should the model be aware of?

- A. Persistence and view are responsible for driving the model so the model is isolated and aware of neither.
- B. The model is responsible for updating the view and must be aware of it, but is not aware of persistence.
- C. The model is aware of both view and persistence and is responsible for keeping them synchronized.

D. The model knows about and initiates the activities of persistence but is isolated from the view.

Answer: D

QUESTION 121

During the analysis phase of a project, a new class "Course" was assigned the responsibility "Add/update sections of a course." To accomplish this, the "Course" class needs to collaborate with a new "CourseSection" class. To implement this responsibility, which of the following are TRUE?

- A. Course requires a sections class attribute.
- B. Course requires a method addSection (number, lectureTime, enrollmentLimit, currentEnrollment, location).
- C. CourseSection requires a method addSection (number, lectureTime, enrollmentLimit, currentEnrollment, location).
- D. Course requires a sections attribute.

Answer: B,D

QUESTION 122

The BEST use of an interface is to:

- A. allow different classes to assume the same role.
- B. logically support multiple inheritance.
- C. define constants to coordinate semantics across the system.
- D. specify the full API of an application for use by other systems.

Answer: A

QUESTION 123

Which of the following is the BEST way to increase reuse?

- A. Hold educational meetings to explain the services.
- B. Provide more services for the client classes.
- C. Reduce message parameters and simplify services.
- D. Document available services.

Answer: C

QUESTION 124

The skills and knowledge of which individual are MOST important for creating use cases?

- A. Business domain expert
- B. Process engineer

- C. Software architect
D. UML Modeling expert

Answer: A

QUESTION 125

Which of the following statements about actors are TRUE?

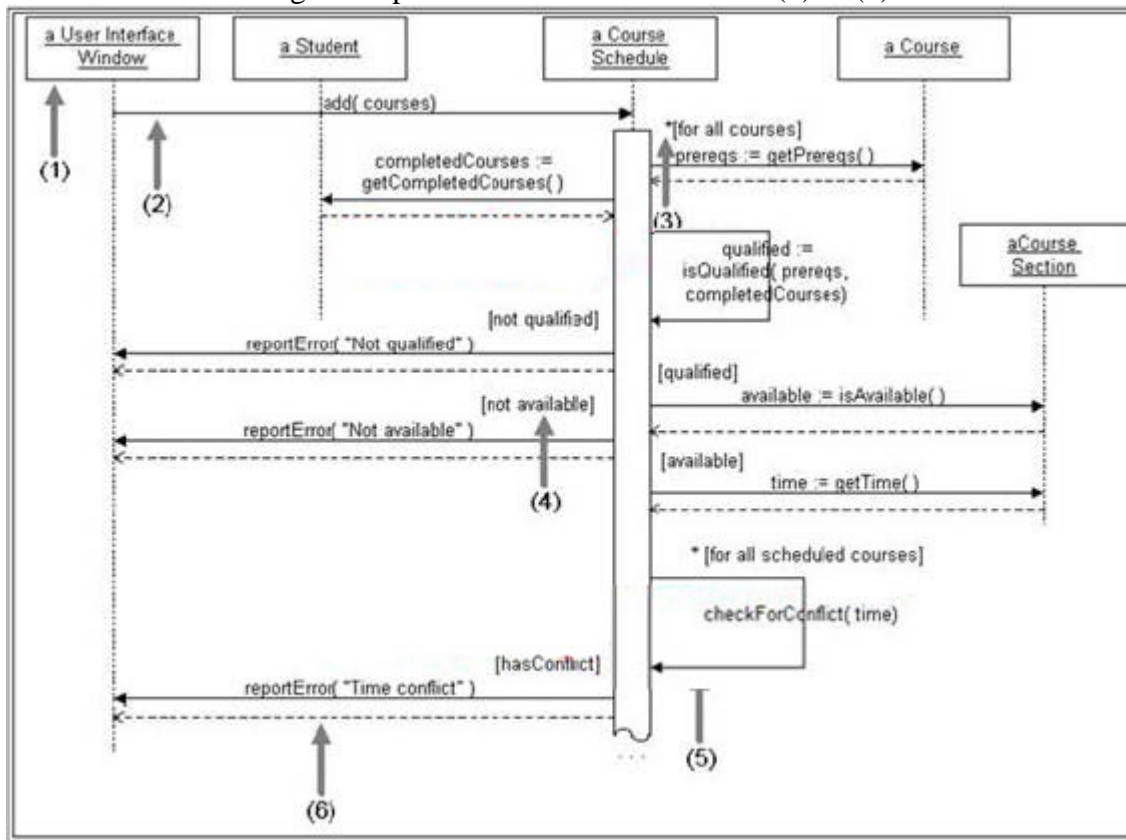
- A. A user can take on the role of more than one actor in a system.
B. An actor is a single user that interacts with the system.
C. An actor that represents an external system is not included in a use case diagram.
D. A use case can be associated with more than one actor.

Answer: A,D

QUESTION 126

Refer to the exhibit to answer the question.

Which of the following correspond to the numbered arrows (1) to (6)?



- A. Object, message, iteration, condition, self-delegation, return
B. Class, method, iteration, condition, private method, return
C. Class, message, iteration, condition, self-delegation, error
D. Object, method, cardinality, condition, private method, return
E. Object, message, iteration, case, self-delegation, return

Answer: A

QUESTION 127

Refer to the exhibit to answer the question.

CLASS	RESPONSIBILITY	COLLABORATOR
Course	Add/update sections of a course Knows cost for enrolling in a specific course	CourseSection
CourseAdministrator	Creates/updates course catalog information	CourseCatalog
CourseCatalog	Creates/updates courses and sections Provides a formatted report of courses and sections for a given - department - course name - course number	Course Department Course Course
CourseSchedule	Checks whether pre-requisites are satisfied Checks for time conflicts in current schedule Checks for course section availability Prints itself	Course, Student CourseSection CourseSection CourseSection, Student
Department	Knows the courses it offers Provides information about the courses it offers	Course
CourseSection	Knows/sets current enrollment Knows/sets enrollment limit Sets lecture times	UniversityCalendar
Student	Searches for course information Creates/updates course schedule Knows the completed courses	CourseCatalog CourseSchedule
University	Knows/sets departments belonging to it	
UniversityCalendar	Determines valid dates and times for offering courses	

To satisfy a new requirement "a department can find the students who have completed a specific course", which of the following are TRUE? Select two

- A. Department collaborates with Student.
- B. CourseSection has a new responsibility "Keep track of all enrolled students".
- C. Department has a new responsibility "find students who completed a specific course".
- D. Department collaborates with Student and CourseSection.

Answer: A,C

QUESTION 128

What are the MAIN reasons to build use cases?

- A. To verify the system as development progresses.
- B. To define the class dictionary for the system.
- C. To assist customers and developers in reaching a common understanding.
- D. To show how objects work together.
- E. To specify the actions that users will perform.

Answer: A,C,E

QUESTION 129

Refer to the following extract from a requirements document for an online book store:
Users need not be registered with the store to be able to search for a particular book or browse through the store. They can also add items to the shopping cart. When they wish to check-out the shopping cart, the application must verify if they are already registered. If so, they should be allowed to login and continue with the check-out. If they have already purchased in the store they should be given a default choice of shipping address. Unregistered users should be given a choice to register with the store or continue shopping.

Which of the following business rules can be extracted from the above requirements?

- A. Users must be registered to be able to search for a book.
- B. Users must be registered to be able to add items to their shopping cart.
- C. All registered users should be given a default choice of shipping address.
- D. Users need to be authenticated before they can make a purchase.
- E. Users must be registered before they can make a purchase.

Answer: D,E

QUESTION 130

Which of the following statements are TRUE?

- A. An abstract class is the same as an interface.
- B. Substitutability means the superclass can be used anywhere the subclass can.
- C. Subclassing and delegation are BOTH ways of implementing subtyping.
- D. Subtyping means the same as specialization.

Answer: C,D

QUESTION 131

Which of the following is NOT a UML mechanism used to organize use cases?

- A. Extend
- B. Include
- C. Override
- D. Generalization

Answer: C

QUESTION 132

Refer to the exhibit to answer the question.

Which of the following classes is MOST likely to be responsible for calculating the total amount to be paid by the customer?

Class Dictionary for Event Scheduling and Ticketing System	
Agent	A Person role in which to Events.
CreditCard	Information holder with credit card number, type and expiration date.
Customer	The profile of a customer buying tickets including the customer address and credit card information.
Event	An activity, such as a concert or a hockey game, that occurs during a period of time and is attended by multiple people who sit in Seats in a Facility.
EventPlanner	A Person role in which she schedules and configures a Facility to hold an Event at a particular time.
Facility	A building, park, or other venue that can be used to schedule Events in.
Level	A portion of a Facility that contains Sections.
Person	An individual that can be a Customer, EventPlanner, or TicketAgent and has a name and Address.
Reservation	Allocation of a Seat for an Event.
Row	A collection of adjoining Seats in a Section of a Level of a Facility.
SalesTransaction	A Transaction in which Tickets for Seats are sold for an Event to a Customer.
Schedule	The calendar of upcoming Events that will occur at Facilities.
Seat	A Location in a Facility where a Person can sit during an Event.
Section	Contains Rows.
Ticket	The pass that gives a Person the right to attend an Event and sit in a Seat.
Ticket System	Handles ticket sales to Customers for Events. It is the main application interface for servicing ticket sales requests, delegating connection to business objects.

- A. Ticket
- B. SalesTransaction
- C. CreditCard
- D. Customer

Answer: B