

CS504

Software Engineering – 1

Important mcqs

Lec 1 - Introduction to Software Engineering

What is software engineering? a) Developing software without following any process b) Applying engineering principles to software development c) Designing hardware systems d) Managing software maintenance only **Answer: b) Applying engineering principles to software development**

Which of the following is not a software development process model? a) Waterfall model b) Agile model c) Spiral model d) Parallel model **Answer: d) Parallel model**

What is the purpose of requirements engineering? a) To design the software architecture b) To analyze and document user requirements c) To write the source code d) To perform software testing **Answer: b) To analyze and document user requirements**

What is the main goal of software testing? a) To eliminate all bugs from the software b) To ensure the software meets user requirements c) To write test cases for documentation purposes d) To verify the software development process **Answer: b) To ensure the software meets user requirements**

Which type of software maintenance involves fixing bugs and errors in the software? a) Corrective maintenance b) Adaptive maintenance c) Perfective maintenance d) Preventive maintenance **Answer: a) Corrective maintenance**

What is the purpose of a software development life cycle (SDLC)? a) To manage software projects b) To document software requirements c) To plan software testing activities d) To provide a structured approach to software development **Answer: d) To provide a structured approach to software development**

What does the acronym 'CI/CD' stand for in software engineering? a) Continuous Integration/Continuous Deployment b) Complete Installation/Complete Deployment c) Continuous Improvement/Continuous Deployment d) Complete Integration/Complete Deployment **Answer: a) Continuous Integration/Continuous Deployment**

Which software engineering approach focuses on breaking a large software system into smaller, manageable modules? a) Waterfall model **What is software engineering?** a) Developing software without following any process b) Applying engineering principles to software development c) Designing hardware systems d) Managing software maintenance only **Answer: b) Applying engineering principles to software development** **Which of the following is not a software development process model?** a) Waterfall model b) Agile model c) Spiral model d) Parallel model **Answer: d) Parallel model** **What is the purpose of requirements engineering?** a) To design the software architecture b) To analyze and document user requirements c) To write the source code d) To perform software testing **Answer: b) To analyze and document user**

requirements

Lec 2 - Introduction to Software Development

Which of the following is not a programming language? a) Python b) HTML c) SQL d) CSS

Solution: d) CSS **What does IDE stand for in software development?** a) Integrated Development Environment b) Interactive Development Environment c) Intelligent Design Environment d) Integrated Design Environment

Solution: a) Integrated Development

Environment **Which programming paradigm focuses on "objects" that encapsulate data and behavior?** a) Procedural programming b) Functional programming c) Object-oriented programming d) Logical programming

Solution: c) Object-oriented programming **Which of the**

following is a version control system? a) Git b) Java c) MySQL d) Linux **Solution: a) Git** **What**

does API stand for in software development? a) Application Program Interface b) Automated Programming Interface c) Advanced Programming Interface d) Application Programming Interface

Solution: d) Application Programming Interface **Which phase of the software development life cycle involves identifying user requirements?** a) Design b) Implementation c) Testing d) Requirements gathering

Solution: d) Requirements gathering **Which of the following is a**

popular agile software development methodology? a) Waterfall b) Scrum c) Spiral d) RAD

(Rapid Application Development) **Solution: b) Scrum** **Which programming language is widely**

used for developing Android applications? a) Swift b) C++ c) Java d) Ruby **Solution: c) Java**

What is the purpose of unit testing in software development? a) To test the entire system's functionality b) To validate user requirements c) To test individual units of code d) To perform performance testing

Solution: c) To test individual units of code **Which software**

development approach emphasizes the early delivery of working software? a) Waterfall b)

Agile c) RAD (Rapid Application Development) d) Spiral **Solution: b) Agile**

Lec 3 - Requirement Engineering-1

What is the primary goal of requirement engineering? a) To develop software prototypes b) To manage software development teams c) To gather, analyze, and define software requirements d) To conduct usability testing **Solution: c) To gather, analyze, and define software requirements**

Which of the following is not a requirement type? a) Functional requirement b) Non-functional requirement c) Design requirement d) Performance requirement **Solution: c) Design requirement**

Which requirement engineering technique involves observing users in their natural environment? a) Interviews b) Questionnaires c) Use case modeling d) Ethnography

Solution: d) Ethnography **What is the purpose of a use case diagram in requirement engineering?** a) To describe the behavior of a system b) To depict the interaction between system components c) To specify the system architecture d) To represent the system's user interface

Solution: a) To describe the behavior of a system **Which technique is used to**

prioritize requirements based on their importance? a) Prototyping b) Risk analysis c) Impact analysis d) MoSCoW prioritization **Solution: d) MoSCoW prioritization**

What is the main advantage of using a requirements traceability matrix? a) It helps in identifying software bugs b) It ensures that all requirements are met c) It improves user satisfaction d) It speeds up the software development process

Solution: b) It ensures that all requirements are met **Which of the following is an example of a non-functional requirement?** a) The system must allow users to create an account b) The system must process requests within 2 seconds c) The system must be compatible with Windows and macOS d) The system must generate weekly reports

Solution: b) The system must process requests within 2 seconds **What does the acronym SMART stand for in the context of requirement specification?** a) Specific, Measurable, Achievable, Relevant, Time-bound b) Simple, Modifiable, Acceptable, Realistic, Timely c) Structured, Managed, Accurate, Reliable, Thorough d) Scalable, Maintainable, Adaptable, Robust, Testable

Solution: a) Specific, Measurable, Achievable, Relevant, Time-bound **Which of the following is a requirement validation technique?** a) Use case modeling b) User story mapping c) Requirements review d) Requirement prioritization

Solution: c) Requirements review **What is the purpose of requirements elicitation?** a) To document software requirements b) To prioritize requirements c) To gather requirements from stakeholders d) To analyze and refine requirements

Solution: c) To gather requirements from stakeholders

Lec 4 - Requirement Engineering-2

What is the purpose of stakeholder analysis in requirement engineering? a) To prioritize requirements based on stakeholder preferences b) To identify and understand the stakeholders involved in the project c) To validate requirements with stakeholders d) To document stakeholder feedback **Solution: b) To identify and understand the stakeholders involved in the project**

Which technique is commonly used for requirement prioritization? a) MoSCoW prioritization b) Fishbone diagram c) Pareto analysis d) Decision tree analysis **Solution: a) MoSCoW**

prioritization **What does the term "traceability" refer to in requirement engineering?** a) The ability to track changes made to requirements b) The process of capturing user feedback on requirements c) The technique used to validate requirements d) The mapping between requirements and other artifacts **Solution: d) The mapping between requirements and other**

artifacts **What is the purpose of a requirements traceability matrix (RTM)?** a) To manage changes in requirements b) To document stakeholder analysis findings c) To track the status of requirements throughout the project d) To prioritize requirements based on business value

Solution: c) To track the status of requirements throughout the project **Which technique helps in identifying and managing conflicts among requirements?** a) Impact analysis b) Prototyping c) Requirements review d) Negotiation and compromise **Solution: d) Negotiation**

and compromise **What is the purpose of a change control process in requirement engineering?** a) To prevent any changes to requirements b) To approve and manage changes to requirements c) To document stakeholder feedback d) To prioritize requirements based on importance **Solution: b) To approve and manage changes to requirements**

What is the goal of requirements validation? a) To document stakeholder requirements b) To prioritize requirements c) To ensure that requirements are correct, complete, and consistent d) To track changes in requirements **Solution: c) To ensure that requirements are correct, complete, and**

consistent **Which technique is used to ensure that requirements are testable and**

verifiable? a) Prototyping b) Use case modeling c) Requirement elicitation d) Requirements review **Solution: b) Use case modeling**

What is the purpose of a requirements review? a) To prioritize requirements b) To document stakeholder feedback c) To validate requirements with stakeholders d) To identify issues or errors in requirements **Solution: d) To identify issues or**

errors in requirements **Which technique is used to manage conflicts between conflicting requirements?** a) Stakeholder analysis b) Negotiation and compromise c) Prototyping d) MoSCoW prioritization **Solution: b) Negotiation and compromise**

Lec 5 - Relation of Several components of Software Requirements

Which component of software requirements focuses on the overall behavior and functionality of the system? a) User stories b) Functional requirements c) Non-functional requirements d) Use cases **Answer: b) Functional requirements**

Which component of software requirements describes specific actions that a user can perform in the system? a) User stories b) Functional requirements c) Non-functional requirements d) Use cases **Answer: d) Use cases**

Which component of software requirements emphasizes the performance, security, and scalability aspects of the system? a) User stories b) Functional requirements c) Non-functional requirements d) Use cases **Answer: c) Non-functional requirements**

User stories are typically written from the perspective of: a) Developers b) Testers c) Project managers d) End users **Answer: d) End users**

Which component of software requirements is often used to prioritize and plan the development process? a) User stories b) Functional requirements c) Non-functional requirements d) Use cases **Answer: a) User stories**

Use cases are primarily used for: a) Identifying user needs b) Validating system functionality c) Defining system constraints d) Estimating project costs **Answer: b) Validating system functionality**

Which component of software requirements is concerned with how the system should respond to exceptional situations? a) User stories b) Functional requirements c) Non-functional requirements d) Use cases **Answer: b) Functional requirements**

Non-functional requirements are often related to: a) User interface design b) Database schema c) System architecture d) Business logic **Answer: c) System architecture**

Which component of software requirements helps capture the desired end-to-end user interactions with the system? a) User stories b) Functional requirements c) Non-functional requirements d) Use cases **Answer: d) Use cases**

User stories are typically written in the format of: a) Use cases b) Feature requests c) Test cases d) Agile epics **Answer: b) Feature requests**

Lec 6 - Use Case Diagram for a Library System

Which of the following is not an actor in a library system? a) Librarian b) Patron c) Book d) Administrator **Solution: c) Book**

Which use case represents the process of a patron returning a book? a) Borrow Book b) Manage Reservations c) Return Book d) Search Catalog **Solution: c) Return Book**

Which actor is responsible for managing the library's collection? a) Librarian b) Patron c) Administrator d) Publisher **Solution: a) Librarian**

Which use case involves a patron renewing a borrowed book? a) Borrow Book b) Renew Book c) Return Book d) Manage Reservations **Solution: b) Renew Book**

Which actor is responsible for making reservations for books? a) Librarian b) Patron c) Administrator d) Publisher **Solution: b) Patron**

Which use case represents the process of searching for books in the library catalog? a) Borrow Book b) Renew Book c) Return Book d) Search Catalog **Solution: d) Search Catalog**

Which actor is responsible for managing user accounts and system settings? a) Librarian b) Patron c) Administrator d) Publisher **Solution: c) Administrator**

Which use case involves a librarian adding new books to the library's collection? a) Borrow Book b) Add Book c) Return Book d) Manage Reservations **Solution: b) Add Book**

Which actor is responsible for publishing books? a) Librarian b) Patron c) Administrator d) Publisher **Solution: d) Publisher**

Which use case involves a patron requesting a book that is currently unavailable? a) Borrow Book b) Renew Book c) Reserve Book d) Return Book **Solution: c) Reserve Book**

Lec 7 - Source and Sink Analysis

In Source and Sink Analysis, what does a "source" refer to? a) Where information is originated b) Where information is stored c) Where information is processed d) Where information is transmitted **Solution: a) Where information is originated**

Which of the following is a potential source of sensitive information? a) Database server b) Firewall c) Intrusion detection system d) Load balancer **Solution: a) Database server**

What is the main goal of Sink Analysis? a) Identifying sources of information b) Analyzing data flows within a system c) Identifying potential vulnerabilities d) Designing security measures **Solution: c) Identifying potential vulnerabilities**

Which of the following is an example of a sink in a web application? a) Web server b) Database server c) User input field d) API endpoint **Solution: c) User input field**

Why is Source and Sink Analysis important for security? a) To identify potential attackers b) To identify potential vulnerabilities and data leaks c) To prevent unauthorized access to systems d) To monitor network traffic **Solution: b) To identify potential vulnerabilities and data leaks**

Which of the following can be considered a sink in a network communication? a) Router b) Switch c) Firewall d) Web browser **Solution: d) Web browser**

What does a "sink" represent in Source and Sink Analysis? a) Where information is originated b) Where information is stored c) Where information is processed d) Where information is consumed or received **Solution: d) Where information is consumed or received**

Which of the following is a common vulnerability related to sources in Source and Sink Analysis? a) SQL injection b) Cross-Site Scripting (XSS) c) Buffer overflow d) Denial-of-Service (DoS) attack **Solution: a) SQL injection**

What is the purpose of analyzing data flows in Source and Sink Analysis? a) To identify potential bottlenecks b) To ensure efficient data transmission c) To understand how information moves through the system d) To monitor network traffic **Solution: c) To understand how information moves through the system**

Which of the following is an example of a source in a mobile application? a) User interface b) Database c) GPS sensor d) Encryption algorithm **Solution: c) GPS sensor**

Lec 8 - State Transition Diagrams

In a state transition diagram, what do the arrows represent? a) States b) Transitions c) Inputs d) Outputs **Answer: b) Transitions** Which of the following describes a state in a state transition diagram? a) An action or event b) A condition or decision c) A stable situation d) A result or output **Answer: c) A stable situation** What is a self-loop transition in a state transition diagram? a) Transition between different states b) Transition between initial and final states c) Transition from one state to the same state d) Transition with multiple inputs **Answer: c) Transition from one state to the same state** What is the purpose of a guard condition in a state transition diagram? a) To determine the next state b) To indicate the starting state c) To specify the order of transitions d) To validate an input for a transition **Answer: d) To validate an input for a transition** Which type of state is used to indicate the start of a state transition diagram? a) Initial state b) Final state c) Active state d) Passive state **Answer: a) Initial state** What does a final state represent in a state transition diagram? a) The termination of the system b) A decision point c) A stable state d) An error condition **Answer: a) The termination of the system** What is a composite state in a state transition diagram? a) A state with multiple inputs b) A state with substates c) A state with no outgoing transitions d) A state with concurrent execution **Answer: b) A state with substates** Which notation is commonly used to represent actions or events in a state transition diagram? a) Rectangles b) Circles c) Arrows d) Diamonds **Answer: a) Rectangles** What is the purpose of a fork in a state transition diagram? a) To merge multiple transitions b) To create parallel paths c) To terminate the system d) To indicate a decision point **Answer: b) To create parallel paths** How are concurrent states represented in a state transition diagram? a) With dashed lines b) With solid lines c) With a dotted rectangle d) With a double circle **Answer: c) With a dotted rectangle**

Lec 9 - Typical Processes

What is the purpose of a typical process? a) To define unique workflows b) To increase complexity c) To achieve specific goals efficiently d) To hinder productivity **Answer: c) To achieve specific goals efficiently**

What are sequential steps in a typical process? a) Steps performed simultaneously b) Steps performed randomly c) Steps performed in a specific order d) Steps performed without any order **Answer: c) Steps performed in a specific order**

What is the role of standard practices in typical processes? a) To introduce complexity b) To decrease efficiency c) To ensure consistency and quality d) To encourage deviation from established norms **Answer: c) To ensure consistency and quality**

Why are defined roles important in typical processes? a) To create confusion b) To hinder collaboration c) To assign responsibility and accountability d) To promote anarchy **Answer: c) To assign responsibility and accountability**

How do typical processes contribute to productivity? a) By introducing unnecessary steps b) By increasing complexity c) By optimizing workflows and reducing waste d) By impeding progress **Answer: c) By optimizing workflows and reducing waste**

What is the purpose of documenting a typical process? a) To create ambiguity b) To hinder understanding c) To provide clear instructions and guidelines d) To discourage adherence to established procedures **Answer: c) To provide clear instructions and guidelines**

What happens when a typical process is well-defined and followed? a) Increased efficiency and consistency b) Decreased productivity and quality c) Heightened complexity and confusion d) Reduced accountability and responsibility **Answer: a) Increased efficiency and consistency**

How does a typical process differ from an ad-hoc process? a) Ad-hoc processes have defined steps and roles b) Typical processes are less structured and defined c) Ad-hoc processes are more efficient and productive d) Typical processes lack standard practices and guidelines **Answer: b) Typical processes are less structured and defined**

What is the purpose of continuous improvement in typical processes? a) To maintain status quo b) To discourage innovation c) To identify areas for enhancement and optimization d) To hinder growth and progress **Answer: c) To identify areas for enhancement and optimization**

How do typical processes contribute to organizational success? a) By promoting chaos and disorder b) By impeding decision-making c) By providing a structured framework for efficient operations d) By hindering collaboration and communication **Answer: c) By providing a structured framework for efficient operations**

Lec 10 - Prototyping and GUI Design

What is the primary goal of prototyping in software development? a) To create a final working version of the software b) To gather user feedback and validate design choices c) To document the software requirements d) To perform system testing **Answer: b) To gather user feedback and validate design choices**

Which of the following is NOT a benefit of prototyping? a) Early identification of design flaws b) Enhanced user involvement and satisfaction c) Decreased development time and cost d) Elimination of the need for documentation **Answer: d) Elimination of the need for documentation**

What is the purpose of GUI design in software development? a) To define the software architecture b) To gather user requirements c) To create a visual representation of the user interface d) To perform system testing **Answer: c) To create a visual representation of the user interface**

Which of the following is a characteristic of a well-designed GUI? a) Cluttered layout and complex navigation b) Inconsistent color scheme and font usage c) Intuitive and user-friendly interface d) Lack of responsiveness and interactivity **Answer: c) Intuitive and user-friendly interface**

What does the term "wireframe" refer to in GUI design? a) A prototype with functioning features b) A visual representation of the software architecture c) A simplified layout of the user interface d) A detailed design document **Answer: c) A simplified layout of the user interface**

Which of the following is a key consideration in GUI design? a) Maximizing system performance b) Minimizing user involvement c) Ensuring accessibility for users with disabilities d) Eliminating the need for user training **Answer: c) Ensuring accessibility for users with disabilities**

What is the purpose of usability testing in GUI design? a) To evaluate the performance of the software system b) To gather user feedback on the GUI design c) To identify security vulnerabilities d) To validate the software requirements **Answer: b) To gather user feedback on the GUI design**

Which of the following is NOT a commonly used GUI design element? a) Buttons b) Dropdown menus c) Pop-up ads d) Input fields **Answer: c) Pop-up ads**

What is the role of color in GUI design? a) To make the interface visually appealing b) To confuse users and hinder navigation c) To increase system performance d) To eliminate the need for text labels **Answer: a) To make the interface visually appealing**

Which design principle emphasizes consistency in GUI design? a) Minimalism b) Progressive disclosure c) Affordance d) Consistency **Answer: d) Consistency**

Lec 11 - Software Design

Which of the following is NOT a software design principle? a) Encapsulation b) Abstraction c) Polymorphism d) Inheritance **Solution: c) Polymorphism**

Which design pattern is used to decouple objects and promote loose coupling? a) Observer b) Singleton c) Factory d) Prototype **Solution: a) Observer**

Which software design principle states that software entities should have only one reason to change? a) Single Responsibility Principle (SRP) b) Open-Closed Principle (OCP) c) Liskov Substitution Principle (LSP) d) Interface Segregation Principle (ISP) **Solution: a) Single Responsibility Principle (SRP)**

Which design pattern is used to create objects without specifying their exact class? a) Adapter b) Prototype c) Builder d) Abstract Factory **Solution: b) Prototype**

Which design principle promotes the idea of coding to an interface rather than an implementation? a) Dependency Inversion Principle (DIP) b) Interface Segregation Principle (ISP) c) Liskov Substitution Principle (LSP) d) Open-Closed Principle (OCP) **Solution: b) Interface Segregation Principle (ISP)**

Which design pattern is used to provide a simple interface to a complex subsystem? a) Facade b) Decorator c) Proxy d) Composite **Solution: a) Facade**

Which design principle suggests that classes should be open for extension but closed for modification? a) Interface Segregation Principle (ISP) b) Liskov Substitution Principle (LSP) c) Single Responsibility Principle (SRP) d) Open-Closed Principle (OCP) **Solution: d) Open-Closed Principle (OCP)**

Which design pattern is used to encapsulate the creation of an object into a single function call? a) Singleton b) Abstract Factory c) Builder d) Factory Method **Solution: d) Factory Method**

Which software design principle suggests that high-level modules should not depend on low-level modules but both should depend on abstractions? a) Dependency Inversion Principle (DIP) b) Liskov Substitution Principle (LSP) c) Interface Segregation Principle (ISP) d) Single Responsibility Principle (SRP) **Solution: a) Dependency Inversion Principle (DIP)**

Which design pattern is used to encapsulate a request as an object, thereby allowing users to parameterize clients with queues, requests, and operations? a) Iterator b) Command c) Strategy d) Memento **Solution: b) Command**

Lec 12 - Coupling and Cohesion

Coupling in software design refers to: a) The degree of relatedness within a module b) The degree of interdependence between modules c) The degree of encapsulation within a class d) The degree of inheritance in an object-oriented system **Solution: b) The degree of interdependence between modules**

Cohesion in software design refers to: a) The degree of relatedness within a module b) The degree of interdependence between modules c) The degree of encapsulation within a class d) The degree of inheritance in an object-oriented system **Solution: a) The degree of relatedness within a module**

Which of the following is an example of low coupling? a) A module that relies on another module's internal implementation details b) A module that communicates with other modules through well-defined interfaces c) A module that shares global variables with other modules d) A module that directly modifies the internal state of another module **Solution: b) A module that communicates with other modules through well-defined interfaces**

Which type of coupling is considered the most desirable? a) Content coupling b) Stamp coupling c) Control coupling d) Data coupling **Solution: d) Data coupling**

Which type of cohesion is considered the most desirable? a) Coincidental cohesion b) Logical cohesion c) Sequential cohesion d) Functional cohesion **Solution: d) Functional cohesion**

Which type of cohesion indicates that a module performs multiple unrelated functions? a) Coincidental cohesion b) Logical cohesion c) Sequential cohesion d) Functional cohesion **Solution: a) Coincidental cohesion**

Which type of coupling indicates a strong dependency between modules? a) Loose coupling b) Tight coupling c) External coupling d) Control coupling **Solution: b) Tight coupling**

Which type of cohesion indicates that a module performs functions in a specific order? a) Coincidental cohesion b) Logical cohesion c) Sequential cohesion d) Functional cohesion **Solution: c) Sequential cohesion**

Which type of coupling indicates that one module directly modifies the internal state of another module? a) Message coupling b) Data coupling c) Content coupling d) Control coupling **Solution: c) Content coupling**

Which type of cohesion indicates that a module groups together functions that operate on the same data? a) Coincidental cohesion b) Logical cohesion c) Sequential cohesion d) Functional cohesion **Solution: b) Logical cohesion**

Lec 13 - Object Oriented Analysis and Design

Which of the following is NOT a key principle of Object-Oriented Analysis and Design? a) Inheritance b) Encapsulation c) Abstraction d) Procedural Programming **Solution: d) Procedural Programming**

Which UML diagram is used to visualize the dynamic behavior of a system? a) Class Diagram b) Use Case Diagram c) Sequence Diagram d) Activity Diagram **Solution: c) Sequence Diagram**

In OOAD, what is the purpose of the "Aggregation" relationship between classes? a) It represents a whole-part relationship where a part can exist independently. b) It represents a strong association between classes. c) It represents a one-to-many relationship between classes. d) It represents a many-to-many relationship between classes. **Solution: a) It represents a whole-part relationship where a part can exist independently.**

What does the term "Polymorphism" mean in OOAD? a) It allows objects to hide their internal state. b) It allows a class to inherit from multiple superclasses. c) It allows a class to have multiple constructors. d) It allows objects of different classes to be treated as objects of the same class. **Solution: d) It allows objects of different classes to be treated as objects of the same class.**

Which design pattern is used to ensure that a class has only one instance and provides a global point of access to that instance? a) Singleton Pattern b) Factory Pattern c) Observer Pattern d) Prototype Pattern **Solution: a) Singleton Pattern**

Which of the following is an advantage of using interfaces in OOAD? a) Interfaces allow multiple inheritance in Java. b) Interfaces provide concrete implementations of methods. c) Interfaces enable loose coupling between classes. d) Interfaces can have private data members. **Solution: c) Interfaces enable loose coupling between classes.**

In OOAD, what does the term "Abstraction" mean? a) It represents a relationship between two classes where one class inherits from another. b) It allows objects to hide their internal state and only reveal relevant information. c) It represents a relationship between two classes where one class contains objects of another. d) It allows a class to inherit from multiple superclasses. **Solution: b) It allows objects to hide their internal state and only reveal relevant information.**

What is the purpose of the "CRC cards" technique in OOAD? a) It is used to model the static structure of a system using class diagrams. b) It is used to document the responsibilities of classes in a system. c) It is used to model the flow of activities in a system using activity diagrams. d) It is used to visualize the sequence of interactions between objects in a system. **Solution: b) It is used to document the responsibilities of classes in a system.**

Which OOAD principle is violated if a subclass overrides a method of its superclass but does not call the superclass method in the overridden method? a) Polymorphism b) Abstraction c) Encapsulation d) Inheritance **Solution: d) Inheritance**

Which OOAD activity involves refining use cases and identifying the classes and their relationships? a) Design Patterns b) Object-Oriented Design c) Use Case Analysis d) Object-Oriented Analysis **Solution: d) Object-Oriented Analysis**

Lec 14 - Object Oriented Analysis and Design-2

Q: What is the primary goal of Object-Oriented Analysis and Design (OOAD)? a) Code optimization b) Writing pseudocode c) Developing modular and maintainable software d) Testing and debugging **Solution: c) Developing modular and maintainable software**

Q: Which UML diagram is used to depict the dynamic behavior of a system? a) Class Diagram b) Sequence Diagram c) Use Case Diagram d) State Diagram **Solution: b) Sequence Diagram**

Q: What does the term "Encapsulation" mean in OOAD? a) Hiding the implementation details of a class b) Creating multiple objects from a class c) Representing a whole-part relationship between classes d) Defining relationships between classes **Solution: a) Hiding the implementation details of a class**

Q: In OOAD, what is the purpose of the "Factory Method" design pattern? a) To allow a class to have multiple constructors b) To ensure a class has only one instance c) To provide an interface for creating objects, allowing subclasses to decide which class to instantiate d) To define a one-to-many dependency between objects **Solution: c) To provide an interface for creating objects, allowing subclasses to decide which class to instantiate**

Q: Which principle of OOAD states that a class should have only one reason to change? a) Abstraction b) Polymorphism c) Single Responsibility Principle d) Inheritance **Solution: c) Single Responsibility Principle**

Q: What is the purpose of the "Observer" design pattern in OOAD? a) To define a one-to-many dependency between objects b) To hide the internal state of an object c) To ensure a class has only one instance d) To allow objects of different classes to be treated as instances of the same class **Solution: a) To define a one-to-many dependency between objects**

Q: Which UML diagram is used to model the static structure of a system? a) Activity Diagram b) Object Diagram c) State Diagram d) Class Diagram **Solution: d) Class Diagram**

Q: What is the purpose of "Abstraction" in OOAD? a) To allow multiple inheritance in Java b) To hide the internal state of an object c) To represent a relationship between classes d) To hide unnecessary details and show only relevant information **Solution: d) To hide unnecessary details and show only relevant information**

Q: In OOAD, what is the key principle violated if a subclass does not call the superclass method in the overridden method? a) Encapsulation b) Polymorphism c) Inheritance d) Abstraction **Solution: c) Inheritance**

Q: What does the "CRC cards" technique in OOAD stand for? a) Class-Responsibility-Collaboration cards b) Class-Relationship-Configuration cards c) Collaboration-Responsibility-Configuration cards d) Collaboration-Relationship-Creation cards **Solution: a) Class-Responsibility-Collaboration cards**

Lec 15 - UML Object Model Notations

Q: Which UML diagram is used to depict the static structure of a system? a) Use Case Diagram b) Class Diagram c) Activity Diagram d) Sequence Diagram **Solution: b) Class Diagram**

Q: What does the rectangle in a Class Diagram represent? a) Attribute b) Method c) Object d) Association **Solution: a) Attribute**

Q: In UML notation, what symbol is used to represent an association between two classes? a) Solid line b) Dashed line c) Arrowhead d) Diamond **Solution: a) Solid line**

Q: What does the diamond symbol at the end of an association line indicate? a) Aggregation b) Composition c) Inheritance d) Dependency **Solution: b) Composition**

Q: In UML, what multiplicity notation "1..*" represents in an association? a) Zero or one b) Zero or more c) One or more d) Exactly one **Solution: c) One or more**

Q: Which UML diagram is used to show the dynamic behavior of objects during runtime? a) State Diagram b) Object Diagram c) Activity Diagram d) Sequence Diagram **Solution: d) Sequence Diagram**

Q: What does a solid vertical line in an Object Diagram represent? a) Association b) Inheritance c) Lifeline d) Dependency **Solution: c) Lifeline**

Q: In a Class Diagram, what is the purpose of a stereotype, such as <<interface>> or <<abstract>>? a) To represent an association b) To show a dependency c) To specify the visibility of attributes d) To indicate special class types or properties **Solution: d) To indicate special class types or properties**

Q: What does the "<<extend>>" stereotype represent in an Activity Diagram? a) Decision point b) Loop c) Synchronization bar d) Conditional execution **Solution: d) Conditional execution**

Q: In UML notation, how are classes representing abstract types denoted? a) Italic text b) Underlined text c) Bold text d) Dashed border **Solution: a) Italic text**

Lec 16 - Derivation of Object Model-Coad Methodology

Q: What is the first step in the derivation of the Object Model in Coad Methodology? a) Identifying classes and their relationships b) Creating CRC cards for each class c) Analyzing use cases d) Defining attributes and methods for classes **Solution: c) Analyzing use cases**

Q: What are CRC cards used for in the derivation of the Object Model? a) To identify classes and their relationships b) To define attributes and methods for classes c) To document responsibilities and collaborations of classes d) To represent the dynamic behavior of the system **Solution: c) To document responsibilities and collaborations of classes**

Q: In Coad Methodology, what is the purpose of the scenario analysis? a) To determine the attributes of each class b) To identify use cases and actors c) To define the associations between classes d) To validate and refine the Object Model **Solution: d) To validate and refine the Object Model**

Q: How are classes derived from CRC cards in Coad Methodology? a) By identifying their associations with other classes b) By defining their attributes and methods c) By analyzing use cases and scenarios d) By identifying their relationships with actors **Solution: b) By defining their attributes and methods**

Q: What is the purpose of defining associations between classes in Coad Methodology? a) To identify the responsibilities of each class b) To establish relationships between objects c) To create use case diagrams d) To represent the dynamic behavior of the system **Solution: b) To establish relationships between objects**

Q: What do the navigational arrows in associations indicate in Coad Methodology? a) The direction of information flow between classes b) The presence of composition relationships c) The dependency between classes d) The presence of aggregation relationships **Solution: a) The direction of information flow between classes**

Q: In Coad Methodology, what is the significance of multiplicity in associations? a) It defines the number of attributes in each class. b) It determines the number of instances related to another class. c) It defines the methods available in each class. d) It specifies the number of use cases involving each class. **Solution: b) It determines the number of instances related to another class.**

Q: How does Coad Methodology ensure a comprehensive and accurate Object Model? a) By conducting scenario analysis and CRC card refinement b) By defining inheritance relationships between classes c) By creating use case diagrams for each class d) By establishing associations between all classes **Solution: a) By conducting scenario analysis and CRC card refinement**

Q: What is the final step in the derivation of the Object Model in Coad Methodology? a) Creating class diagrams b) Writing pseudocode for the system c) Implementing the software system d) Validating the Object Model with stakeholders **Solution: a) Creating class diagrams**

Q: In Coad Methodology, what does the Object Model primarily focus on? a) The dynamic behavior of the system b) The interaction between classes and actors c) The static structure and attributes of classes d) The system's performance and scalability **Solution: c) The static structure and attributes of classes**

Lec 17 - Derivation of Object Model-Coad Methodology -2

Q: What is the first step in the derivation of the Object Model in Coad Methodology? a) Defining associations between classes b) Analyzing use cases c) Creating CRC cards d) Implementing the software system **Solution: b) Analyzing use cases**

Q: What is the purpose of CRC cards in the derivation of the Object Model? a) To define attributes and methods for classes b) To create use case diagrams c) To document responsibilities and collaborations of classes d) To validate the Object Model with stakeholders **Solution: c) To document responsibilities and collaborations of classes**

Q: Scenario analysis is performed in Coad Methodology for what purpose? a) To identify use cases and actors b) To determine the attributes of each class c) To validate and refine the Object Model d) To define the associations between classes **Solution: c) To validate and refine the Object Model**

Q: How are classes derived from CRC cards in Coad Methodology? a) By defining their attributes and methods b) By identifying their relationships with actors c) By analyzing use cases and scenarios d) By identifying their associations with other classes **Solution: a) By defining their attributes and methods**

Q: What is the purpose of defining associations between classes in Coad Methodology? a) To establish relationships between objects b) To identify the responsibilities of each class c) To create use case diagrams d) To represent the dynamic behavior of the system **Solution: a) To establish relationships between objects**

Q: What do the navigational arrows in associations indicate in Coad Methodology? a) The presence of composition relationships b) The direction of information flow between classes c) The dependency between classes d) The presence of aggregation relationships **Solution: b) The direction of information flow between classes**

Q: In Coad Methodology, what is the significance of multiplicity in associations? a) It specifies the number of use cases involving each class. b) It defines the methods available in each class. c) It determines the number of instances related to another class. d) It defines the number of attributes in each class. **Solution: c) It determines the number of instances related to another class.**

Q: How does Coad Methodology ensure a comprehensive and accurate Object Model? a) By defining inheritance relationships between classes b) By establishing associations between all classes c) By conducting scenario analysis and CRC card refinement d) By creating use case diagrams for each class **Solution: c) By conducting scenario analysis and CRC card refinement**

Q: What is the final step in the derivation of the Object Model in Coad Methodology? a) Writing pseudocode for the system b) Creating class diagrams c) Implementing the software system d) Validating the Object Model with stakeholders **Solution: b) Creating class diagrams**

Q: In Coad Methodology, what does the Object Model primarily focus on? a) The interaction between classes and actors b) The system's performance and scalability c) The dynamic behavior of the system d) The static structure and attributes of classes **Solution: d) The static structure and attributes of classes**

Lec 18 - CASE STUDY: Connie's Convenience Store

Q: What type of business is Connie's Convenience Store? a) Restaurant b) Supermarket c) Retail Store d) Clothing Boutique **Solution: c) Retail Store**

Q: What challenges did Connie's Convenience Store face? a) Declining sales and profits b) Overstocked inventory c) Lack of parking space d) Increased competition **Solution: a) Declining sales and profits**

Q: What strategies did Connie implement to attract more customers? a) Offering free home delivery b) Increasing product prices c) Expanding the store's floor area d) Reducing product variety **Solution: a) Offering free home delivery**

Q: How did Connie address the overstocked inventory issue? a) Offering clearance sales b) Expanding the product range c) Reducing store opening hours d) Implementing stricter return policies **Solution: a) Offering clearance sales**

Q: What impact did the implementation of home delivery have on the store's sales? a) Decreased sales b) No significant impact c) Increased sales d) Home delivery was not implemented **Solution: c) Increased sales**

Q: What role did technology play in the improvement of Connie's store operations? a) It led to a decrease in customer satisfaction. b) It enabled better inventory management. c) It resulted in higher product prices. d) Technology was not utilized. **Solution: b) It enabled better inventory management.**

Q: What measures did Connie take to retain customer loyalty? a) Offering discount coupons to new customers only b) Improving customer service and staff training c) Increasing product prices to accommodate loyalty rewards d) Offering loyalty rewards only to long-time customers **Solution: b) Improving customer service and staff training**

Q: How did Connie handle the competition from larger supermarkets? a) Decreasing product variety to lower prices b) Implementing loyalty programs for selected customers c) Focusing on unique products and personalized service d) Closing the store during peak hours **Solution: c) Focusing on unique products and personalized service**

Q: What was the impact of Connie's customer service improvements? a) No noticeable change in customer satisfaction b) Decreased customer satisfaction c) Increased customer satisfaction and loyalty d) Customer service improvements were not implemented **Solution: c) Increased customer satisfaction and loyalty**

Q: What important lesson can be learned from Connie's Convenience Store case study? a) Home delivery services are not effective in increasing sales. b) Personalized service and unique products help in staying competitive. c) Reducing product variety leads to better inventory management. d) Technology is not essential for retail store success. **Solution: b) Personalized service and unique products help in staying competitive.**

Lec 19 - Identify Structure

Q: What does "Identify Structure" refer to in organizational management? a) Defining the company's vision and mission b) Analyzing the market competition c) Analyzing the hierarchical framework and reporting lines d) Developing marketing strategies **Solution: c) Analyzing the hierarchical framework and reporting lines**

Q: What is the primary purpose of identifying the structure in an organization? a) Increasing employee satisfaction b) Enhancing product quality c) Promoting cost reduction d) Clarifying roles and responsibilities **Solution: d) Clarifying roles and responsibilities**

Q: Which term describes the hierarchical arrangement of different roles in an organization? a) Reporting lines b) Job descriptions c) Organizational culture d) Strategic planning **Solution: a) Reporting lines**

Q: What is the benefit of a well-defined organizational structure? a) Decreased employee turnover b) Increased financial profitability c) Enhanced decision-making process d) Improved marketing campaigns **Solution: c) Enhanced decision-making process**

Q: In an organization, who is responsible for defining the reporting lines and roles? a) Human Resources department b) Marketing department c) Finance department d) Top management and executives **Solution: d) Top management and executives**

Q: What does a flat organizational structure imply? a) Fewer layers of management and wide spans of control b) Many layers of management and narrow spans of control c) No defined reporting lines d) A highly centralized decision-making process **Solution: a) Fewer layers of management and wide spans of control**

Q: What type of organizational structure promotes quick decision-making and adaptability? a) Matrix structure b) Hierarchical structure c) Functional structure d) Divisional structure **Solution: a) Matrix structure**

Q: Which organizational structure is suitable for large organizations with diverse product lines? a) Flat structure b) Divisional structure c) Project-based structure d) Functional structure **Solution: b) Divisional structure**

Q: In a matrix organizational structure, employees report to: a) Only one supervisor b) Multiple supervisors c) The CEO d) The board of directors **Solution: b) Multiple supervisors**

Q: What does a decentralized organizational structure entail? a) Decision-making authority concentrated at the top b) Decision-making authority distributed among various levels c) Decision-making outsourced to external consultants d) No defined structure **Solution: b) Decision-making authority distributed among various levels**

Lec 20 - Interaction Diagrams

Q: What do Interaction Diagrams in UML illustrate? a) Static structure of classes and objects
b) Dynamic behavior of the system over time c) Use cases and actors in the system d)

Relationships between classes and objects **Solution: b) Dynamic behavior of the system over time**

Q: Which type of Interaction Diagram shows the chronological sequence of message exchanges between objects? a) Class Diagram b) Communication Diagram c) State Diagram d) Sequence Diagram **Solution: d) Sequence Diagram**

Q: What is the primary purpose of using Sequence Diagrams? a) To depict the static relationships between classes b) To model the concurrency of the system c) To visualize object interactions over time d) To represent the inheritance hierarchy of classes **Solution: c) To visualize object interactions over time**

Q: In a Sequence Diagram, what do the vertical dotted lines represent? a) Control flow of the program b) Activation lifeline of an object c) Communication between objects d) Creation of new objects **Solution: b) Activation lifeline of an object**

Q: What does the arrowhead in a Sequence Diagram indicate? a) The end of a message b) The direction of message flow c) The start of a new object's lifeline d) The activation of an object **Solution: b) The direction of message flow**

Q: Which Interaction Diagram emphasizes the relationships between objects rather than the time sequence of messages? a) Communication Diagram b) State Diagram c) Collaboration Diagram d) Deployment Diagram **Solution: a) Communication Diagram**

Q: In a Communication Diagram, how are objects represented? a) With boxes b) With rectangles c) With circles d) With triangles **Solution: a) With boxes**

Q: What is the purpose of the numbering on messages in a Communication Diagram? a) To indicate the order of message exchanges b) To represent the priority of messages c) To show the types of messages being exchanged d) To indicate the number of objects in the system **Solution: a) To indicate the order of message exchanges**

Q: Which Interaction Diagram emphasizes the dynamic behavior of a single object? a) State Diagram b) Sequence Diagram c) Communication Diagram d) Use Case Diagram **Solution: a) State Diagram**

Q: What do Interaction Diagrams provide in the context of software development? a) Visualization of static class relationships b) Illustration of the software architecture c) Dynamic representation of object interactions and behavior d) Description of the hardware configuration **Solution: c) Dynamic representation of object interactions and behavior**

Lec 21 - Sequence Diagrams (Message Types)

Q: Which type of message in a Sequence Diagram waits for a response before continuing?

a) Synchronous message b) Asynchronous message c) Return message d) None of the above

Solution: a) Synchronous message **Q: What does an asynchronous message indicate in a**

Sequence Diagram? a) The message is sent to itself b) The message waits for a response c)

The message proceeds without waiting for a response d) The message represents a loop

Solution: c) The message proceeds without waiting for a response **Q: Which message type**

indicates the response from the called object in a Sequence Diagram? a) Synchronous

message b) Asynchronous message c) Return message d) None of the above **Solution: c)**

Return message **Q: In a Sequence Diagram, how are synchronous messages represented?**

a) With a dashed arrow b) With a solid arrow c) With a dashed line d) With a solid line **Solution:**

d) With a solid line **Q: What does a return message look like in a Sequence Diagram?** a) A

dashed line with an arrowhead b) A solid line with an arrowhead c) A dashed line without an

arrowhead d) A solid line without an arrowhead **Solution: a) A dashed line with an arrowhead**

Q: Which message type indicates a one-way communication without waiting for a

response? a) Synchronous message b) Asynchronous message c) Return message d) Callback

message **Solution: b) Asynchronous message** **Q: How are messages representing loops**

depicted in a Sequence Diagram? a) With a solid line and an arrowhead b) With a dashed line

and an arrowhead c) With a solid line and a loop arrow d) With a dashed line and a loop arrow

Solution: d) With a dashed line and a loop arrow **Q: What is the primary purpose of using**

message types in a Sequence Diagram? a) To indicate the object's name b) To represent the

message content c) To show the direction of message flow d) To specify the message timing

Solution: d) To specify the message timing **Q: In a Sequence Diagram, how do you**

differentiate between synchronous and asynchronous messages? a) By the presence of an

arrowhead b) By the presence of a loop arrow c) By the type of line used d) By the position of the

object's name **Solution: c) By the type of line used** **Q: What message type is used to**

indicate a method call from one object to another in a Sequence Diagram? a) Synchronous

message b) Asynchronous message c) Return message d) Callback message **Solution: a)**

Synchronous message

Lec 22 - Software and System Architecture

Q: What does software architecture refer to? a) The programming languages used in software development. b) The high-level design and organization of a software application. c) The hardware components of a computer system. d) The process of software testing and debugging. **Solution:**

b) The high-level design and organization of a software application. **Q: What is the primary goal of software architecture?** a) Maximizing the number of features in the software. b)

Minimizing the development cost of the software. c) Ensuring scalability, maintainability, and reliability of the software. d) Reducing the size of the software codebase. **Solution: c) Ensuring**

scalability, maintainability, and reliability of the software. **Q: Which type of architecture is characterized by dividing the system into smaller, independent components?** a) Monolithic architecture b) Microservices architecture c) Client-server architecture d) Peer-to-peer architecture

Solution: b) Microservices architecture **Q: In a client-server architecture, which component**

requests services from the server? a) Server b) Client c) Database d) Router **Solution: b)**

Client **Q: Which architecture style involves a single, self-contained application?** a)

Microservices architecture b) Monolithic architecture c) Distributed architecture d) Component-based architecture **Solution: b) Monolithic architecture** **Q: What is the main advantage of**

using a microservices architecture? a) Reduced development complexity b) Centralized control over all components c) Easier communication between components d) Better scalability and flexibility **Solution: d) Better scalability and flexibility** **Q: What does system architecture**

refer to? a) The high-level design of a single software application. b) The arrangement of hardware components in a computer system. c) The interaction between different software applications. d) The high-level design and organization of an entire system. **Solution: d) The**

high-level design and organization of an entire system. **Q: Which architecture style involves breaking down a system into reusable and interchangeable components?** a)

Component-based architecture b) Client-server architecture c) Peer-to-peer architecture d) Distributed architecture **Solution: a) Component-based architecture** **Q: What is the purpose**

of system architecture? a) Optimizing software code for faster execution. b) Ensuring effective communication between hardware components. c) Defining the interactions and structure of the entire system. d) Providing user interface design for software applications. **Solution: c) Defining**

the interactions and structure of the entire system. **Q: Which architectural pattern ensures that each component performs a specific function and can be replaced without affecting**

the entire system? a) Component-based architecture b) Client-server architecture c) Monolithic architecture d) Distributed architecture **Solution: a) Component-based architecture**

Solution: a) Component-based architecture

