Bahir Dar University
Bahir Dar Institute of Technology
Faculty of Computing
Sample Questions on the courses
Requirements Engineering and Software Architecture and Design

Part I. <u>Choose the correct answer for the following questions and write the letter of your choice on the space provided.</u>

1. Which one of the following is not among the factors that influence software architecture?

   A. Background & experience of the architects

   B. The business goals of the organization

   C. Standard industry practices or common SE techniques

   D. Stakeholders

   E. None

2. Which of the following is not among the process recommendations of rules of thumb/observations that should be followed when designing an architecture?

   A. The architecture should be circulated to the system's stakeholders, who should be actively involved in its review.

   B. The architecture should be the product of a single architect or a small group of architects with an identified leader.

   C. The architecture should lend itself to incremental implementation via the creation of a "skeletal" system

   D. The architecture should feature well-defined modules based on the principles of information hiding and separation of concerns.

   E. A & C

3. In the model-view-controller architectural style, the job of a model component is to

   A. Present information to the user

   B. Store information about the state of the program

   C. Change the way a view responds to user input

   D. Make requests of the server

   E. Allow the user to control the view

4. Which of the following statements is not true?

   A. The architecture of the system comprises the assumptions that other elements can make of an element.

   B. An Architecture defines software elements and relationships between them.

   C. Given a set of required functionalities, we can determine the architecture of the system

   D. All of the above

   E. None

5. Among the stages that capture characteristics of an architecture, which one defines a way of mapping functionalities on to architectural elements?

   A. Reference model
   B. Reference Architecture
   C. Architectural pattern
   D. Software architecture
   E. All except D

6. Which group of architectural structures focuses on how the system relates to non-software structures in its environment?

   A. Module structures
   B. Allocation structure
   C. Component and Connector structure
   D. All except C
   E. None

7. Which one of the following structures is odd?

   A. Client server
   B. Shared data
   C. Concurrency
   D. Work assignment
   E. None

Based on the table below answer questions from 8 and 9

AS	Scenario Affected	Scenario weight	Current Utility	Expected Utility	Raw AS Benefit	Normalized AS Benefit	Total AS benefit	Cost	AS ROI	AS Rank
1	1	25	60	70	10	250	250	2000	0.125	4
2	4	20	80	100	20	400				
2	5	15	75	90	15	225	625	1000	0.625	1
3	3	25	80	95	15	375	375	1500	0.25	3
4	5	5	50	75	25	125				
4	2	10	70	90	20	200	325	650	0.5	2

8. According to the given data, which one of the following architectural strategy ranks is correct?

   A. 1,2,3,4
   B. 1,3,2,4
   C. 4,2,3,1
   D. 1,4,3,2
   E. None

9. Which one is the total AS benefit for architectural strategy number 4?

   A. 650
   B. 1340
   C. 3000
   D. 2500

10. Which of the following statement/s is/are not true about data model design decisions that an architect needs to achieve?

   A. It identifies important responsibilities and how they will be allocated to elements
   B. It identifies elements of the system that must coordinate
   C. It aimed at compiling metadata that will be used for interpretation of data
   D. It chooses major data abstractions, their operations and properties.
   E. A and B

11. Which of the following statements/s is/are incorrect about agile manifesto?
   A. Working software is the primary measure of progress

B. It's recommended to respond to changes in requirements over following the plan

C. The best architectures, requirements, and designs emerge from improved processes and CASE tools are preferred over self-organized teams

D. Agile processes promote sustainable development

E. None

12. Given a layered architectural pattern, as depicted in the figure below, which ordering relation is correct?

Presentation layer
Business layer
Persistence layer
Database layer

A. (Presentation layer, Persistence layer)　　D. (Database layer, Presentation layer)

B. (Business layer, Presentation layer)　　　E. None

C. (Presentation layer, Database layer)

13. In which of the architecture pattern multiple components access data through a common data store?

A. Layered architecture pattern
B. Shared data pattern
C. Client-server pattern
D. Multi-tier pattern

14. Among the Kruchten's Four + One Views, which view depicts a system from the standpoint of a programmer and is concerned with software administration?
A. Logical View
B. Process View
C. Development View
D. Scenario View

15. Class diagram and state diagram are used to depict which view?

A. Logical　　　　　　　　　　　　　C. Development
B. Process　　　　　　　　　　　　　D. Physical

16. What is process view in 4+1 view model?
    A. The process view is concerned with the system's functionality as it pertains to end-users.
    B. The process view focuses on the system's run-time behavior
    C. The process view depicts a system from the standpoint of a programmer
    D. The process view portrays the system from the perspective of a system engineer

17. In MVC (Model view controller) what does the model part do?
    A. The controller is used to interface design for displaying the data, like the JSP page
    B. The controller is responsible for forwarding the request
    C. The controller encapsulates business logic and data processing method
    D. None

18. What do you understand about the Architecture trade-off analysis method?
    A. ATAM helps in analyzing user requirements
    B. ATAM helps in analyzing the total cost/ investment of various designs
    C. ATAM helps in investigating the technique for investigating designs that are partially complete
    D. ATAM helps in evaluating/analyzing the quality attributes

19. What factors does a software architecture results in?

    A. Technical
    B. Business
    C. Social
    D. All of the mentioned

20. What does Software architecture means?

    A. It is the structure or structure of systems

    B. It comprises of software components

    C. Relationship among components

    D. All of the mentioned

21. What makes a good architecture?

    A. The architecture may not be the product of a single architect or a small group

    B. The architect should have the technical requirements for the system and an articulated and prioritized list of qualitative properties

    C. The architecture may not be well documented

    D. All of the mentioned

22. Which structure's view shows the mapping of software onto hardware?

    A. Module Structure
    B. Process Structure
    C. Physical Structure
    D. Class Structure

23. Architectural erosion is

    A. The process of determining a software systems architecture from its implementation-level artifacts.
    B. Introduction of architectural design decisions into a system's descriptive architecture that violates prescriptive architecture

C. Introduction of principal design decisions into a system's descriptive architecture that are not included in, encompassed by, or implied by the prescriptive architecture

D. Executable modules are physically placed on the hardware devices on which they are supposed to run.

24. Which architectural pattern allows you to split a system into a number of computationally independent execution structures (groups of software and hardware) such as database, business logic, web interface and client, connected by some communication media?

A. Pipe-and-Filter
B. Peer-to-peer
C. Multi-tier
D. Map-Reduce

25. Which structure describes how the system is to be structured as a set of elements that have runtime behavior and interactions?

A. Allocation structure
B. Component-and-connector structure
C. Module structure
D. None

26. Which structure is odd than others?

A. Layered
B. Model-view-controller
C. Broker
D. Publish-Subscribe

27. Which statement is false about contexts that affect the software architecture?

A. the architecture is affected also by the current technical environment, and the technology and framework used

B. The architecture will limit or dictate what kind of life-cycle model that can be used and vice-versa

C. The business goals will highly affect the software architecture and vice-versa

D. Software architecture is highly affected by knowledge and skills of the architects

E. None of the above

28. If you want to develop a distributed system with a structure that enables that service users do not need to know the nature or location of service providers, which architectural pattern do you prefer to adopt?

A. Broker
B. Client-Server
C. Layered
D. Publish-Subscribe

29. Why software architecture is important?

A. Enabling a systems quality
B. Better communication among stakeholders

C. Platform for educating new members of the software team

D. Platform for estimating time & cost

E. All of the above

30. Which one of the following is an availability tactic for recovering from faults?

A. Ping/Echo

C. Removal from service

B. Heartbeat

D. Rollback

31. Which of the following statement is false regarding requirements validation?

A. There is no way to demonstrate that a requirement specification is correct with respect to some other system representation

B. Validation isn't a single discrete phase that we perform after gathering and documenting all the requirements

C. When using pre-review checking, one person checks the requirement document and looks for straightforward problems

D. Requirement validation focus on "have we got the right requirements?"

32. Which of the following is not among characteristics of a good requirement?

A. Verifiability

C. Modifiability

B. Ambiguity

D. Correctness

33. A requirement in the SRS document is said to be_____if and only if you cannot implement it with the budget, schedule, resources, and other limitations that are available to your project.

A. Complete

C. Feasible

B. Consistent

D. Focused

34. A software requirement specification document should avoid discussing which one of the following?

A. Constraints on the processes used to develop the system.

B. Algorithm for software implementation
C. Definition of other systems which the system must integrate with.

D. Information about the application domain of the system

35. Which one of the following is not among the uses of a requirement document?

A. It is used to verify that an application conforms to the requirements
B. It is used to produce user documentation
C. It is used to track the development progress
D. It helps to schedule resources more efficiently and to plan your project more accurately
E. None of the above

36. Which one of the following is among the factors that contribute to the continuous change occurred on software systems whose effect can be reduced by having better requirement development process?

 A. Evolving customer/end user knowledge of the system

 B. A change in the environment in which the system is to be installed

 C. Changing customer priorities during system development

 D. Emergent of new technology

37. Among the following types of reviews, which one best reflects a review technique on which the inspectors prepare scenarios, then the authors of the reviewed document explain how the system described by the document is assumed to handle these cases. Inspectors follow explanations and look for problems?

 A. Focused inspections

 B. Scenario based reading

 C. Active reviews

 D. Reading and signing off

 E. All of the above

38. Which of the following is not the purpose of requirements validation?

 A. To identify flaws in requirement elicitation, analysis & modeling

 B. To make sure that the requirement document is complete and consistent according to user requirements

 C. To make sure that the system meets its objectives and functions as intended

 D. To make sure that requirements clear enough for others to use

 E. None

39. Which one of the following statements is true related with requirements traceability policies?

 A. The smaller the number of requirements, the more the need for formal traceability policies

 B. If the project team size is very large, we need more formal traceability policies.

 C. Comprehensive traceability policies should not be required to be defined for systems which have a long lifetime

 D. All of the above

 E. None of the above

40. The SRS is said to be traceable if and only if

 A. If you have to change a requirement (create, edit, or delete), you must be able to evaluate the impact of that change on all of the other requirements

 B. No subset of individual requirements described in it conflict with each other

C. You must be able to tie a derived requirement back to its origin, and to the hardware/software that implements it, as well as to the test cases that verify it.

D. B and C

E. All of the above

41. When requirements are stored as a word processor documents, _____.

    A. Good query and navigation facilities are available

    B. Support for change and version management is provided

    C. Not possible to have version control on individual requirements

    D. Readers are required to have the software/skills to access the requirements database

42. Which requirements validation technique is used to get better result as compared with others?

    A. If you provided a list of questions specifying what properties of the document must be checked

    B. If you use your own knowledge and experience identify defects

    C. If you provided a model of possible defects in the requirements document Ans

    D. None of the above

43. When a user places an order on an e-commerce website, the user intends to buy a product and adds it to his Cart. During checkout, the product goes out of stock and subtracts from the Cart. However, the user is not shown any message to tell him what went wrong.

    What kind of risk does the user encounter?

    A. Project risk　　　　B. Product risk answer　　　　C. Business risk　　　　D. All of the above

44. Which types of traceability information links design and implementation components backs to requirements

    A. Forward-to traceability　　　　　　　　C. Backward-from traceability

    B. Forward-from traceability　　　　　　　D. Backward-to traceability

45. Which one of the following is an example of stable requirement?

    A. In market analysis system, the requirement that computes tax which is derived from the tax policy.

    B. Requirements derived from the students' detail when dealing with SIMS

    C. Requirements resulting from government health-care policies

    D. None of the above

46. Which of the following is not among the guidelines to keep in mind as we document better software requirements?

    A. Keep sentences and paragraphs short

B. Avoid stating requirements redundantly

C. Use diagrams appropriately

D. Specify requirements qualitatively

E. None

47. Examine each requirement and choose the well written requirement among others

A. An instructor will log into the system by providing his username, password, and other relevant information

B. Students will be able to enroll to undergraduate and post graduate courses

C. The ATM shall be returned to a blocked state whenever a user enters invalid passwords continuously.

D. The ATM shall allow the user to perform transaction within the minimum amount of time

E. None

48. Which of the following activities involves examining the potential consequence of a specific risk to a project?

A. Risk exposure   B. Risk prioritization   C. Risk analysis   D. Risk resolution

49. Which one of the following is not among the performance tactics that aimed at generating a response to an event arriving at the system within some time constraint?

A. Increase computational efficiency
B. Scheduling policy
C. Authenticate and authorize users
D. None

50. Imagine that you're creating a text editor app. In addition to simple text editing, your editor can format text, insert inline images, etc. At some point, you decided to let users undo any operations carried out on the text. This feature has become so common over the years that nowadays people expect every app to have it. For the implementation, you chose to take the direct approach. Before performing any operation, the app records the state of all objects and saves it in some storage. Later, when a user decides to revert an action, the app fetches the latest snapshot from the history and uses it to restore the state of all objects. Choose the best design pattern that best suits for the problem mentioned?

A. Memento   C. Iterator
B. Observer   D. Mediator

51. Which design model depicts how the software communicates with the system that interprets with it and with the end-users?

A. Design models   C. Procedural design

B. Architectural design   D. Interface design

52. Which one of the following is not true about design priciples that enables software engineers to navigate the design process?

    A. The design process should not suffer from tunnel vision

    B. The design should be traceable to the analysis model

    C. The structure of the problem domain, whenever possible, mimic the structure of the software design

    D. The level of abstraction of the design model is higher than the source code

    E. None

53. Which one of the following statements is not among the pros of design patterns?

    A. Patterns are subjected to different interpretations, misinterpretations and philosophies

    B. It adds consistency to designs by solving similar problems the same way, independent of the language

    C. Patterns add clarity to design and design communication by enabling a common vocabulary

    D. Patterns improve reuse through communication

54. Which design pattern defines an interface or abstract class for creating an object but let the subclasses decide which class to instantiate?

    A. Singleton pattern   C. Adaptor pattern
    B. Factory method pattern   D. Proxy pattern

55. Which level of user interface design determines how the inputs and outputs are actually formed from primitive hardware operation?

    A. Conceptual level   C. Syntactic level
    B. Semantic level   D. Lexical level

56. Which one of the following statements is true?

    A. During designing a software system, an architecture uses and aligns with its design

    B. Design patterns applied to two different problems might be the same but the logic of the implementation would be different

    C. Behavioral design patterns help us compose objects and classes into a larger structure making sure that these structures should be flexible and efficient

    D. When an adapter design pattern is used, an adaptee is a component that converts the requests and responses as required by the two incompatible systems

57. A cheque or credit card is an alternative for what is in our bank account. It can be used in place of cash; and provides a means of accessing that cash when required. Which pattern do you prefer to represent for the problem mentioned?

A. Decorator
C. Chain of responsibility
B. Proxy
D. Template

58. Which of the following describes the Iterator pattern correctly?
    A. This pattern is used to get a way to access the elements of a collection object in sequential manner without any need to know its underlying representation.
    B. This pattern is used to reduce communication complexity between multiple objects or classes.
    C. This pattern is used to restore state of an object to a previous state.
    D. This pattern is used when there is one-to-many relationship between objects such as if one object is modified, its dependent objects are to be notified automatically.

59. Which of the following describes the Behavioral pattern correctly?
    A. This type of pattern provides a way to create objects while hiding the creation logic, rather than instantiating objects directly using new operator
    B. This type of pattern concern class and object composition. Concept of inheritance is used to compose interfaces and define ways to compose objects to obtain new functionalities.
    C. This type of pattern is specifically concerned with communication between objects.
    D. This type of pattern is specifically concerned with the presentation tier.

60. Which pattern prevents one from creating more than one instance of a variable?
    A. Factory Method
    C. Observer
    B. Singleton
    D. None of the mentioned

61. Which of the following statement is false?
    A. Facade pattern promotes weak coupling between subsystem and its clients
    B. Design pattern is a solution to a problem that occurs repeatedly in a variety of contexts.
    C. Design patterns does not follow the concept of software reuse.
    D. All of the above

62. Imagine that you're creating a stock market monitoring app. The app downloads the stock data from multiple sources in XML format and then displays nice-looking charts and diagrams for the user. At some point, you decide to improve the app by integrating a smart 3rd-party analytics library. But there's a catch: the analytics library only works with data in JSON format. You could change the library to work with XML. However, this might break some existing code that relies on the library. And worse, you might not have access to the library's source code in the first place, making this approach impossible. Which pattern will you choose to use to solve the above problem?
    A. Bridge
    C. Adapter
    B. Composite
    D. Decorator

63. Which one of the following is not among the concerns of qualities directly related to the architecture itself?
    A. Buildability
    C. Conceptual integrity
    B. Correctness and completeness
    D. Rollout schedule

64. Among the Quality Attribute Workshop (QAW) steps which one focused on merging similar scenarios where reasonable?
    A. Scenario Brainstorming
    C. Scenario Prioritization
    B. Scenario Consolidation
    D. Scenario Refinement

65. Among the parts of the representation of quality attribute scenarios, which one is a condition that requires a response when it arrives at a system.?

    A. Environment   C. Artifact

    B. Stimulus   D. Response

66. Which one of the following is not considered during preparing documentation beyond views?

    A. The Primary Presentation

    B. How a View Is Documented?

    C. Mapping Between Views

    D. Directory

67. Which of the following is/are among the techniques to help keep the code and the architecture consistent?

    A. Avoid architecture erosion   C. Use code templates

    B. Embedding the design in the code   D. All of the above

68. Which of the following pattern is used to restore state of an object to a previous state?

    A. Iterator Pattern   C. Memento Pattern

    B. Mediator Pattern   D. Observer Pattern

69. Which of the following pattern features a client that needs a service from a supplier, but there is some problem with the supplier providing the service directly to the client and solves the problem by separating users of services (clients) from providers of services (servers) by inserting an intermediary?

    A. Broker   C. Pipe-and-filter

    B. Iterator   D. MVC

70. Which group of architectural structures focus on the way the system's functionality is divided up and assigned to implementation teams?

    A. Module structures   C.   Component and Connector structure

    B. Allocation structure   D.   None

71. When you want to compose object and classes into a larger structure by making sure that these structures should be flexible and efficient, you would prefer design patterns of which classification?

    A. Creational   C. Behavioral

    B. Structural   D. J2EE

72. Among the phases in the design process, which one focuses on specifying sub-systems?

A. Interface design

B. Component design

C. Data structure design

D. Abstract specification

73. Which one of the following is among the inputs of requirements engineering process?

A. Requirements document

B. System models

C. Domain information

D. Agreed set of requirements

74. Which statement is true regarding requirement engineering process?

A. A single process model gives you a complete understanding of the process

B. There is no ideal requirements engineering process

C. Course-grain activity model reflects detailed model of a specific process

D. All of the above

75. Which one of the following is not true about requirements engineering?

A. It provides a way to understand what the customer desires

B. It focused on validating the specification

C. It aimed at managing the requirements as changes emerge

D. It provides a mechanism to implement a system as intended

76. Which one of the following is among the disadvantages of background reading requirement elicitation technique?

A. It helps to prepare for other types of fact finding
B. It provides detailed requirements of the current system
C. Written documents will not match up reality
D. None

77. Which non-functional requirement best reflects the extent to which the software system continues to function and recover from system failure ?

A. Efficiency   B. Reliability   C. Survivability   D. Adaptability

78. Which one of the following is among the disadvantages of using a participant observation as a requirement elicitation technique?

A. Mostly used to verify and validate requirements
B. Results may be wrong as the customer problems cannot be understand as they are being watched during observations and adjust themselves
C. Highly authentic requirements engineering tool
D. None of the above.

79. Which of the following requirement elicitation technique is applicable when a person uses mental thoughts to imagine what kind of system he/she would want if he/she were doing a job using the system?

   A. Introspection   C. Joint Application Development

   B. Brainstorming   D. Prototyping

80. Among the syndromes that further complicated requirements elicitation, which one best reflects finding requirements that no one has thought of?

   A. Yes, But syndrome   C. User and Developer syndrome

   B. Undiscovered ruins syndrome   D. None of the above

81. Given the following levels of maturity for improving a software process by adopting Capability Maturity Model (CMM), arrange with their precedence order?

        I. Repeatable
       II. Optimizing
     III. Defined
     IV. Initial
      V. Managed

   A. IV, III, I, II, V   C. IV, I, III, V, II

   B. V, IV, III, II, I   D. I, V, II, III, IV

82. Which one of the following is not among the components of requirements elicitation?
   A. Knowledge of the general area where the system is applied

   B. Defining elements of a system like modules, architecture, components and their interfaces

   C. Understand how systems interact and contribute to overall business goals

   D. Understanding the needs and constraints of system stakeholders

82. Which one is odd according to McCall factor model Non-functional requirement (NFR) classification?
   A. Usability   B. Efficiency   C. Reliability   D. Portability

83. Felege Hiwot Hospital wants to replace their old IT systems. The hospital wanted a system to support payroll and staff planning (duty roster) for all health staff. The hospital has signed an agreement with a software company called "Click IT Solution". For the purpose of reimbursement, after the software have been developed by the software

company, it will be sold for Tibebe Ghion Hospital. According to the above statements which mapping of stakeholders of the system is not correct?

    A. Client: Felege Hiwot Hospital

    B. Customer:Tibebe Ghion Hospital

    C. Users: Doctors

    D. Supplier: Click IT Solution

    E. None

84. Which process characteristic is exhibited by organizations at the CMMI's Defined Level?

    A. Processes are unpredictable, poorly controlled and reactive

    B. Processes are reactive and meant for projects

    C. Processes are proactive and meant for organizations

    D. Focused on continuous process improvement

    E. All of the above

85. Consider a system where its database withstands growing numbers of queries" What kind of NFR the system is providing?

    A. Maintainability   B. Reliability   C. Portability   D. Scalability

86. Which of the following is/are not among the inputs to Requirements Engineering process?
    A. Existing system information
    B. Stakeholder needs
    C. Organizational standards
    D. Agreed requirements
    E. C and D

87. "Patients shall be medically aided within less than eight minutes on average". From which type of requirements does the above example best reflected?
    A. User requirement   B. Domain requirement   C. System requirement   D. All

88. Which of the following process model considered as a more detailed model of a specific process, which is used for understanding and improving existing process?
    A. Coarse-grain activity models
    B. Role-action models
    C. Entity-relation models
    D. Fine-grain activity models

89. Which one of the following is not considered as a design principle?
    A. Increase reusability where possible
    B. Increase cohesion where possible
    C. Increase coupling where possible

D. Design defensibly

90. Which design strategy consider a system as a collection of interacting objects?

A. Functional design   C. Structural design
B. Object-oriented design   D. All of the above

91. Which design model depicts how the software communicates with the system that interoperate with it and with the end users?

A. Data design   C. Component design
B. Architectural design   D. Interface design

92. Which of the following is/are among ways of finding missing requirements?

A. Having a checklist of the kinds of requirements you have created on similar projects
B. Having domain experts review your requirements
C. Include all possible stakeholders from that area to include on your project teams as much as possible
D. All of the above

93. _____is the process of discussing requirements conflicts and reaching a compromise that all stakeholders agree with.

A. Requirement elicitation   C. Requirement analysis
B. Requirement negotiation   D. Requirement validation

94. An approach to software design which takes reusable low level utilities and put those together to create high level constructs?

A. Top-down design   C. Hybrid design
B. Bottom-up design   D. None of the above

95. Which requirement is specified correctly?

A. The system shall accept valid employee ID numbers from 1 to 999.
B. The meter shall display a minimum of -999 and a maximum of 999 volts.
C. The treadmill shall have a sufficiently long ramp.
D. The treadmill shall run continuously for 5,000 hours at 5 mph without failing.
E. None of the above

96. A requirement is said to _____, if you can implement it with the budget, schedule, resources, and other limitations that are available to your project.

A. Verifiable   D. Focused
B. Feasible   E. None
C. Precise

97. Which one of the following statement is false?

A. Design uses and aligns with architecture
B. Architecture uses and aligns with design
C. Architecture is the plan for the structure of something
D. Design is the plan to create something

98. Which statement is false about users of the Requirements Document and the intent behind their usage?

A. Development project leader uses the requirement document for dividing the project into phases

B. Requirement analyst uses the requirement document for eliciting and documenting user needs

C. Legacy support specialist uses the requirement document for verifying the application whether it conforms to the requirements

D. Development team uses the requirement document for developing and coding the application

E. Project sponsor uses the requirement document for motivating the project

99. Which statement is false regarding requirement validation?

A. During translate requirements to an alternative form, if the translation process fails (rewriting turns out to be partially impossible), it points to problems

B. Requirements validation is a single discrete phase that you perform after gathering and documenting all the requirements.

C. If translation of requirement to other forms is successful, the requirement is believed to be better understandable to a specific group of reviewers

D. If the requirements document or some part of it is in a sufficiently formal language, some properties can be automatically checked by software

E. None of the above

100. A game running on Windows 8 is said to be_____if the same game can be run on Windows 11 without any change in the behavior of the game.

A. reliable   B. portable   C. reusable D. interoperable   E. None

101. What is a Reference Model?
   A. It is a description of element and relation types together with a set of constraints on how they may be used
   B. It is a description of component types
   C. It is the mapping of the functionality onto a system decomposition
   D. It is a division of functionality together with data flow between the pieces, It is standard decomposition of a known problem into parts that cooperatively solve a problem

102. Which one of the following is not a step of requirement engineering?
   A. Elicitation
   B. Design
   C. Analysis
   D. Documentation
   E. None

103. Which of the following statements is true?
   A. The more we invest in upfront design work on software architecture, the more rework is needed
   B. When documenting the architecture of a system, the dynamic view aims at recovering the structure of a software system, while static view focuses on its run time behavior.
   C. The earlier in the life cycle reuse is applied, the greater the benefit that can be achieved.
   D. Architecture, by itself, is able to achieve the desired qualities of the system.
   E. None

104. Which of the following describes the Decorator pattern correctly?
   A. This pattern allows a user to add new functionality to an existing object without altering its structure.
   B. This pattern is used where we need to treat a group of objects in similar way as a single object.
   C. This pattern hides the complexities of the system and provides an interface to the client using which the client can access the system.
   D. This pattern is primarily used to reduce the number of objects created and to decrease memory footprint and increase performance.

105. Why is software architecture important?
   A. Software architecture manifests the earliest design decisions
   B. The Architecture Enables More Accurate Cost and Schedule Estimates
   C. Software architecture can serve as the basis for reuse of requirements, development-support artifacts (templates, tools, etc.), code / components and experience
   D. Software architecture can be used as a basis for mutual understanding, negotiation, consensus, and communication among stakeholders.
   E. All of the above

106. Why document an architecture?
   A. Documentation speaks for the architect, today, tomorrow, and 20 years from now.
   B. Establishes the set of design decisions that must be made along the way to establishing/maintaining the architecture
   C. Documentation also clarifies the line between architectural and non-architectural design decisions
   D. Architecture structures the system and the project that develops it
   E. All of the above

107. Which of the following statements is/are correct?
    A. An architecture may or may not defines components
    B. An architecture is not dependable on requirements
    C. Every software system may not have an architecture
    D. An architecture is foremost an abstraction of a system that suppresses details of the components that do not affect how they are used
    E. All of the mentioned
108. Which of the following property does not correspond to a good Software Requirements Specification (SRS)?
    A. Verifiable   C. Traceable
    B. Ambiguous   D. Complete
109. Which among the following are valid questions raised for the top level architectural model?
    A. What is the nature of components?
    B. What is the significance of the links?
    C. What is the significance of the layout?
    D. All of the mentioned
110. Which of the following describes the Observer pattern correctly?
    A. This pattern is used to get a way to access the elements of a collection object in sequential manner without any need to know its underlying representation.
    B. This pattern is used to reduce communication complexity between multiple objects or classes.
    C. This pattern is used to restore state of an object to a previous state.
    D. This pattern is used when there is one-to-many relationship between objects such as if one object is modified, its dependent objects are to be notified automatically.
    E. All of the above
111. Consider the following Statement: "The product should have a good human interface" What characteristic of SRS is being depicted here?
    A. Consistent   C. Ambiguous
    B. Non-Verifiable   D. Correct
112. What is the first step of requirement elicitation?
    A. Identifying Stakeholder   C. Requirements Gathering
    B. Listing out Requirements   D. All of the mentioned
113. According to a statistical report: "over 30% of all software projects are cancelled before completion and over 70% of the remainder fail to deliver expected features". What must be the reason for such a situation?
    A. Poor change management
    B. Poor requirements management
    C. Poor quality control
    D. All of the mentioned
114. Which of the following pattern is used to reduce communication complexity between multiple objects or classes?
    A. Iterator Pattern   C. Memento Pattern
    B. Mediator Pattern   D. Observer Pattern

115. Considering the example of issue/return of a book, cataloging etc. in a library management system. What type of management requirement is being depicted here?
   A. Enduring
   B. Volatile
   C. Stable
   D. A and C
   E. All of the above

116. Which one of the following is not among the scenarios during requirement elicitation?
   A. As-is Scenario
   B. Visionary Scenario
   C. Evaluation Scenario
   D. Training Scenario
   E. All of the above

117. Why is Requirements Elicitation a difficult task?
   A. Problem of scope
   B. Problem of understanding
   C. Problem of volatility
   D. All of the mentioned

118. Which of the following is included in SRS?
   A. Cost
   B. Design solutions
   C. External interfaces
   D. Delivery Schedule
   E. Staffing

119. Which of the following pattern is used when there is one-to-many relationship between objects such as if one object is modified, its dependent objects are to be notified automatically?
   A. Iterator Pattern
   B. Mediator Pattern
   C. Memento Pattern
   D. Observer Pattern

120. Select the user-specific requirement?
   A. Portability
   B. Maintainability
   C. Availability
   D. Both Portability and Maintainability

121. Which of the following describes the State pattern correctly?
   A. In this pattern, a class behavior changes based on its state.
   B. In this pattern, a null object replaces check of NULL object instance.
   C. In this pattern, a class behavior or its algorithm can be changed at run time.
   D. In this pattern, an abstract class exposes defined ways/templates to execute its methods.

122. The importance of software design can be summarized in a single word which is:
   A. Efficiency
   B. Accuracy
   C. Quality
   D. Complexity

123. Which of the following is among the potential ways/sources to identify architecturally significant requirements?
   A. Requirements document
   B. Interviewing stakeholders
   C. Understanding business goals
   D. Utility tree
   E. All of the above

124. Which of the following is not among the steps of Attribute Driven design method in Software architecture?

   A. Confirm there is sufficient requirements information.
   B. Choose an element of the system to decompose.

C. Identify candidate architectural drivers.

D. Choose a design concept that satisfies the architectural drivers.

E. None of the above

125. What benefits does patterns provide?

A. Novice designers can benefit from learning solution patterns that experts use, without needing design experience

B. Expert designers can benefit from studying patterns too: They can broaden their repertoire of patterns and deepen their understanding of the patterns they already know

C. They capture expert design knowledge

D. All of the above

E. None of the above