

MIDTERM EXAMINATION
Spring 2010
CS504- Software Engineering - I (Session - 6)

Time: 60 min
Marks: 38

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Question No: 1 (Marks: 1) - Please choose one

By following modern system engineering practices simulation of reactive systems is no longer necessary

▶ True

▶ **False**

Question No: 2 (Marks: 1) - Please choose one

The state transition diagram

- ▶ depicts relationships between data objects
- ▶ depicts functions that transform the data flow

▶ **indicates how data are transformed by the system**

▶ indicates system reactions to external events

Question No: 3 (Marks: 1) - Please choose one

Control flow diagrams are

▶ needed to model event driven systems.

▶ required for all systems

▶ used in place of data flow diagrams

▶ **useful for modeling user interfaces**

Question No: 4 (Marks: 1) - Please choose one

A change becomes ----- because of close presence of data and functions

▶ **Localized**

▶ Private

▶ Global

▶ Accessible

Question No: 5 (Marks: 1) - Please choose one

A complex System evolves from a

▶ **smaller system**

▶ medium sysetem

▶ bigger system

▶ non of the given

Question No: 6 (Marks: 1) - Please choose one

Coupling is a measure of -----of a module or component.

- ▶ **Independent**
- ▶ Dependent
- ▶ Closeness
- ▶ All of the given

Question No: 7 (Marks: 1) - Please choose one

Software Maintenance phase involves

- ▶ **Debugging**
- ▶ Adding new features
- ▶ making changes
- ▶ all of the given

Question No: 8 (Marks: 1) - Please choose one

The hardest single part of building a software system is deciding precisely ----- to build.

- ▶ **what**
- ▶ How
- ▶ When
- ▶ Why

Question No: 9 (Marks: 1) - Please choose one

Interaction Diagrams depict the ----- Behavior of the system

- ▶ Static
- ▶ **Dynamic**
- ▶ Active
- ▶ Non of the above

Question No: 10 (Marks: 1) - Please choose one

In Sequence Diagrams the time required by the receiver object to process the message is denoted by an-----

- ▶ **Activation Box**

- ▶ Simple Box
- ▶ Arrow
- ▶ Non of the above

Question No: 11 (Marks: 1) - Please choose one

A poorly designed interface can cause a user to make catastrophic errors is one of the motivations for GUI.

- ▶ **True**
- ▶ False

Question No: 12 (Marks: 1) - Please choose one

Identifying x include -----

- ▶ log important information
- ▶ conduct business
- ▶ analyze business results
- ▶ **all of the above**

Question No: 13 (Marks: 1) - Please choose one

Establishing responsibilities for objects includes

- ▶ Generalization Relationships
- ▶ Specialization Relationships
- ▶ **all of the above**
- ▶ identifying Association relationships

Question No: 14 (Marks: 1) - Please choose one

Which of the following is a fact finding method?

- ▶ Site visits
- ▶ **Prototyping**
- ▶ Study of similar systems
- ▶ All of given

Question No: 15 (Marks: 1) - Please choose one

Windows mobile is a popular mobile operating system which seen commonly on PDAs.

Which of the following category pair(s) best describe(s) it?

- ▶ **application software, embedded software**
- ▶ system software, web-based software
- ▶ application software, scientific software
- ▶ system software, embedded software

Question No: 16 (Marks: 1) - Please choose one

The Object Oriented approach

- ▶ **improves the reusability of codes.**
- ▶ makes objects less independent.
- ▶ increases testing time.
- ▶ complicates mapping of a system model to an implementation model.

Question No: 1 (Marks: 1) - Please choose one

Most software continues to be custom built because

- ▶ **Software is easier to build without using someone else's components.**
- ▶ Off the shelf software components are not commonly available
- ▶ Component reuse is common in the software world
- ▶ Reusable components are too expensive to use

Question No: 2 (Marks: 1) - Please choose one

Which of the items listed below is not one of the software engineering layers?

- ▶ Tools
- ▶ Process
- ▶ **Manufacturing**
- ▶ Methods

Question No: 3 (Marks: 1) - Please choose one

Which of these people would not be likely to part of the FAST team?

- ▶ hardware and software engineers
- ▶ manufacturing representative
- ▶ marketing representatives
- ▶ **senior financial officers**

Question No: 4 (Marks: 1) - Please choose one

An state transition can only occur when triggered by a(n)_____

- ▶ actor
- ▶ collaboration attempt
- ▶ **event**
- ▶ none of the given

Question No: 5 (Marks: 1) - Please choose one

A change becomes ----- because of close presence of data and fuctions

- ▶ **Localized**
- ▶ Private
- ▶ Global
- ▶ Accessible

Question No: 6 (Marks: 1) - Please choose one

A process which does not take input is called

- ▶ **miracle process**
- ▶ core porcess
- ▶ secondary process
- ▶ all of the above

Question No: 7 (Marks: 1) - Please choose one

Data Store notation in DFDs presents.

- ▶ Data input
- ▶ Data output
- ▶ **Data input and Data output**
- ▶ non of the given

Question No: 8 (Marks: 1) - Please choose one

Coupling is a measure of -----of a module or component.

- ▶ **Independent**
- ▶ Dependent
- ▶ Closeness
- ▶ All of the given

Question No: 9 (Marks: 1) - Please choose one

If a problem is identified and fixed at a -----stage in the software development process, it will cost much more than if it was fixed at and -----stage.

- ▶ eralier & lator
- ▶ after & before
- ▶ none of the above
- ▶ **lator and earlier**

Question No: 10 (Marks: 1) - Please choose one

Once these requirements have been finalized, the ----- process starts.

- ▶ **Construction**
- ▶ Development
- ▶ Mentainance phase
- ▶ Construction and Development

Question No: 11 (Marks: 1) - Please choose one

Identifying Whole-Part structures (Aggregations) means what are my -----

- ▶ **Components**
- ▶ Structures
- ▶ Objec
- ▶ Classes

Question No: 12 (Marks: 1) - Please choose one

Data design actually begins during the creation of the analysis model, not the architectural model.

- ▶ **True**
- ▶ False

Question No: 13 (Marks: 1) - Please choose one

System Architecture is important to consider because it helps in making -----

- ▶ **Mutual communication.**
- ▶ **Early design decisions.**
- ▶ **Reusable abstraction of a system.**
- ▶ **All of the above**

Question No: 14 (Marks: 1) - Please choose one

Software architecture is "the ----- of the components of a program/system, their interrelationships, and principles and guidelines governing their design and evolution over time."

- ▶ combination
- ▶ collection
- ▶ **structure**

- ▶ unification

Question No: 15 (Marks: 1) - Please choose one

Cohesion is about making sure each component does _____ thing and does it well.

- ▶ three
- ▶ two
- ▶ infinite
- ▶ **one**

Question No: 16 (Marks: 1) - Please choose one

Following are some statements associated with data flow diagrams. Identify the correct statement from among them.

- ▶ DFDs are used to model complex interfaces.
- ▶ **DFDs are used to represent only functional processing, data stores and data movements between functions.**
- ▶ DFDs depict only processes which can be decomposed.
- ▶ DFDs do not show external data sources and external data sinks.

Question No: 1 (Marks: 1) - Please choose one

Control flow diagrams are.

- Needed to model event driven systems.
- Required for all systems.
- Used in place of data flow diagrams.
- **Useful for modeling user interfaces.**

Question No: 2(Marks: 1) - Please choose one

The Data dictionary contain description of each software.

- Configuration item.
- Data object
- Diagram

Notation

Question No: 3(Marks: 1) - Please choose one
a cohesion class is one which emphasize -----unit of-----.

- Single and multiple.
- Multiple and functionality
- Functional and single
- **Single and functional**

Question No: 4(Marks: 1) - Please choose one

Flow charts represent.

- **Sequence.**

- Random
- Parallel
- Non of above

Question No: 5(Marks: 1) - Please choose one
----- gives OO the ability to handle essential

- **Decentralization**
- Centralization
- Decentralization and Centralization
- Non of above

Question No: 6(Marks: 1) - Please choose one
In sequence Diagram events are organized in a-----time line

- **vertical**
- horizontal
- Vertical and Horizontal
- Non of above

Question No: 7(Marks: 1) - Please choose one
Asynchronous messages are denoted

- **Half Arrow**
- Simple Line
- Full Arrow

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- Non of above

Question No: 8(Marks: 1) - Please choose one

Software crisis came in 1960 what is the main reason to for the crisis

- **Software development technique**
- Hardware
- Software
- Non of above

Question No: 10 (Marks: 1) - Please choose one

central role of the software requirement Document in entire development process is related to

- Project planning
- Project tracing
- Change control
- **All of above**

Question No: 11 (Marks: 1) - Please choose one

The scope description establishes the ----- between the system we are developing and everything else in the universe. Project planning

- **Boundary**
- System
- limitation
- None of above

Question No: 12 (Marks: 1) - Please choose one

which one is not the type of message which sequence diagram depict

- Synchronous
- asynchronous
- **Create (may be this)**
- Update

Question No: 13 (Marks: 1) - Please choose one

cohesion is about making sure each component does----- thing and does it well

- Three
- infinite
- **one**
- two

Question No: 14 (Marks: 1) - Please choose one

Non function requirement can divided

- -----
- -----
- **-----**
- -----

Question No: 15 (Marks: 1) - Please choose one

what is the most important software quality of a web based transaction

- efficiency
- Modularity
- **usability (may be this)**

➤ Security

Question No: 16 (Marks: 1) - Please choose one
which one of the following is good design principle of software

➤ Coupling

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➤ Structured programming (may be)

➤ -----

➤ -----

MC090400220 : Rana Sohail Saleem

Time Left 34 sec(s)

Quiz Start Time: 12:04 AM

Question # 1 of 10 (Start time: 12:04:49 AM) Total Marks: 1

In "Point of Sale system", the term "Payment" represents

Select correct option:

Participant

Transaction

Container

▶ Saving...

All of the given options

Quiz Start Time: 12:04 AM

Question # 2 of 10 (Start time: 12:05:46 AM)

Total Marks: 1

While establishing the services for an object, the following fundamental questions should be asked

Select correct option:

- Why does the system need this object any way?
- What useful questions can it answer?
- What useful action can it perform?
- All of the given options

[Click here to Save Answer & Move to Next Question](#)

Quiz Start Time: 12:04 AM

Question # 3 of 10 (Start time: 12:07:06 AM)

Total Marks: 1

If Dog derives from Mammal, and Mammal derives from Animal, then:

Select correct option:

- Dog inherits Animal's functions and data
- Dog does not inherit Animal's functions and data
- Mammal inherits functions and data of both Dog and Animal
- None of the given options

Quiz Start Time: 12:04 AM

Question # 4 of 10 (Start time: 12:08:21 AM)

Total Marks: 1

Generalization forms a broader concept from a more narrow concept and Specialization forms a narrow concept from a broader concept.

Select correct option:

- TRUE
- FALSE

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Quiz Start Time: 12:04 AM

Question # 5 of 10 (Start time: 12:09:34 AM)

Total Marks: 1

Identify the TRUE statement(s)

Select correct option:

- An attribute that may have a number of values should be replaced by a new class and an object connection
- An attribute that varies over time, e.g., price of an item, should be replaced by an additional class with an effective date and value
- Replace [yes/no] type attributes with [status] type attributes for flexibility

Quiz Start Time: 12:04 AM

Question # 6 of 10 (Start time: 12:10:55 AM)

Total Marks: 1

In order to achieve system goals, objects cooperate and interact with each other.

Select correct option:

- TRUE
- FALSE

Quiz Start Time: 12:04 AM

Question # 7 of 10 (Start time: 12:12:09 AM)

Total Marks: 1

A cohesive Class is one which emphasizes on ____ unit of functionality

Select correct option:

- Single
- Multiple
- Static
- None of the given options

Quiz Start Time: 12:04 AM

Question # 8 of 10 (Start time: 12:13:24 AM)

Total Marks: 1

Some functions , features , processes are better understood if the domain in which system operates is also understood in the first place.

Select correct option:

- TRUE
- FALSE

Quiz Start Time: 12:04 AM

Question # 9 of 10 (Start time: 12:14:41 AM)

Total Marks: 1

_____ has become a standard notation for object oriented system modeling.

Select correct option:

- UML
- C++
- OCL (object Constraint Language)
- None of the given options

Quiz Start Time: 12:04 AM

Question # 10 of 10 (Start time: 12:16:08 AM)

Total Marks: 1

Selecting Objects (in a domain) include:

Select correct option:

- Selecting Actors
- Selecting Participants
- Select Places
- All of the above

In _____ The objects are organized in a horizontal line and the events in a vertical time line.

Sequence diagram

Question No: 17 (Marks: 2)

To manage the complexity of the system we need to apply the principles of separation of concern. Discuss briefly.

Separation of concern, modularity, and abstraction are different but related principles. Separation of concern allows us to deal with different individual aspects of a problem by considering these aspects in isolation and independent of each other.

WHAT is MODULES :

complex system may be divided into smaller pieces of lesser complexity called modules.

Question No: 18 (Marks: 2)

What is elaborated Usecase? Explain it

Elaborated Use Cases

After the derivation of the use case model, each use is elaborated by adding detail of interaction between the user and the software system. An elaborated use case has the following components:

- Use Case Name
- Implementation Priority: the relative implementation priority of the use case.
- Actors: names of the actors that use this use case.
- Summary: a brief description of the use case.

Question No: 19 (Marks: 2)

What is Software Architecture?

Garlan and Perry, guest editorial to the *IEEE Transactions on Software Engineering*, April 1995:

Software architecture is "the structure of the components of a program/system, their interrelationships, and principles and guidelines governing their design and evolution over time."

Question No: 20 (Marks: 3)

What notation is used for Sequence Diagrams? Draw it graphically.

. The objects are organized in a horizontal line and the events in a vertical time line.

The Notation

Following diagram illustrates the notation used for drawing sequence diagrams.

: Professor

CourseManager

Math 101 - Section

1 : CourseOffering

Add professor (Professor)

Lifeline Message

Question No: 21 (Marks: 3)

How can we decrease Coupling explain it.

we can reduce the coupling of a system by minimizing the number of messages in the protocol of a class. The problem with large public interfaces is that you can never find what you are looking for...smaller public interfaces make a class easier to understand and modify. This can be further elaborated with the help of the following example. Suppose we have two functions defined for setting the desired temperature in the room:

Question No: 22 (Marks: 5)

Narrate some of the architectural design guidelines that can help in addressing non-functional requirements challenges. (PSSAM)

- **Performance:**
Performance can be enhanced by localising operations to minimise subsystem communication. That is, try to have self-contained modules as much as possible so that inter-module communication is minimized.
- **Security**
Security can be improved by using a layered architecture with critical assets put in inner layers.
- **Safety**
Safety-critical components should be isolated
- **Availability**
– Availability can be ensured by building redundancy in the system and having redundant components in the architecture.
- **Maintainability**
– Maintainability is directly related with simplicity. Therefore, maintainability can be increased by using fine-grain, self-contained components.

Question No: 23 (Marks: 5)

What is the importance of Classification in identifying Classes and objects ?

The most important and critical stage in the OOA and OOD is the appropriate classification of objects into groups and classes. Proper classification requires looking at the problem from different angles and with an open mind. When looked at from different perspectives and analyzed with different set of characteristics, same object can be classified into different categories.

Question No: 17 (Marks: 2)

Define abstraction ?

Abstraction is an extremely powerful technique for dealing with complexity. Unable to master the entirety of a complex object, we ignore its essential details, dealing instead with generalized, idealized model of the object. An abstraction focuses on the outside view of an object, and hence serves to separate an objects external behavior from its implementation. Deciding upon the right set of abstractions for a given domain is the central problem in object oriented design.

Question No: 18 (Marks: 2)

Is the design of software architecture a creative process?

yes

Question No: 19 (Marks: 2)

Suppose you are working as a software engineer involved in the development of an e-commerce website.

What are the 2 most important characteristics your software must have?

- Provides the required functionality
- Maintainable
- Reliable
- Efficient
- User-friendly

- Cost-effective

Question No: 20 (Marks: 3)

What is the purpose of collaboration diagrams?

Collaboration Diagrams which provide an organization-based view of the system's dynamics.

Collaboration diagrams can also be used to depict the dynamic behaviour of a system. They show how objects interact with respect to organizational units (boundaries!).

Question No: 21 (Marks: 3)

What is the difference between Aggregation and Association?

Object Creation and Life Time

Coupling and Linkages

Ownership and visibility

Database persistence

Question No: 22 (Marks: 5)

what parameters are used to measure and analyze design quality?

Efficiency,
Compactness
Reusability
maintainability

Question No: 23 (Marks: 5)

How the objects are identified in Peter codd's technique?

Select Objects – who am I?
Select actors
Select Participants
Select Places
Select Transactions
Select Container Objects
Select Tangible things

Question No: 16 (Marks: 2)

Adding user interface detail in the SRS is controversial a creative process i.e by adding GUI detail to the SRS document, focus e shift from what to how (analysis design) do you agree

GUI is definitely part of the solution. On the other hand many people think that, it is still what not how and hence it should be made part of the SRS document

Question No: 17 (Marks: 2)

Is the design software of architecture a creative process?

yes

Question No: 18 (Marks: 3)

What is the architecture design process explain briefly.

1. Collect scenarios.
2. Elicit requirements, constraints, and environment description.
3. Describe the architectural styles/patterns that have been chosen to address the scenarios and requirements. These views include module view, process view, and data flow view.
4. Evaluate quality attributes by considered each attribute in isolation.
5. Identify the sensitivity of quality attributes to various architectural attributes for a specific architectural style.

Question No: 19 (

Marks: 3) What is textual analysis?

The first object-orientation technique that we will study is one of the oldest techniques to identify objects and their relationships. This technique is called Textual Analysis. In this technique different parts of speech are identified within the text of the Specification and these parts are modeled using different components.

Question No: 20 (

Marks: 5)

What should be the consideration for the maintainable design?

Since, in general, maintenance contributes towards a major share of the overall software cost, the objective of the design activity, in most cases, is to produce a system that is easy to maintain. A maintainable design is the one in which cost of system change is minimal and is flexible enough so that it can be easily adapted to modify existing functionality and add new functionality.

In order to make a design that is maintainable, it should be understandable and the changes should be local in effect. That is, it should be such that a change in some part of the system should not affect other parts of the system. This is achieved by applying the principles of modularity, abstraction, and separation of concern. If applied properly, these principles yield a design that is said to be more cohesive and loosely coupled and thus is easy to maintain.

Question No: 21 (Marks: 5)

Discusses the relation between sequence diagram & logical complexity.

It is important to judiciously use the sequence diagrams where they actually add value. The golden principle is to keep it small and simple. It is important to understand that the diagrams are meant to make things clear. Therefore, in order to keep them simple, special attentions should be paid to the conditional logic. If it is simple then there is no harm in adding it to the diagram. On the other hand if the logic is complex then we should draw separate diagrams like flow charts.