COMSATS University Islamabad, Wah Campus

First Sessional Examinations (Spring 2021)

Department of: **COMPUTER SCIENCE**

Class/Program: **BSE-4B/4C**   Date: **29-03-2021   Time: 60 minutes**

Subject: **Object Oriented Software Engineering (Theory)**

Instructor: **Mahwish Naz**   Maximum Marks: **40**

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Question No. 1:   (30)

Choose the best Answer and fill the box with options i.e. A**/B/C/D** which is given at the end of the question:

1: Software engineering focuses on producing:

A: Good quality Product
B: Defect-free product
C: High performance product
D: Reusable product
Ans:

A

2: Which of the following is **not** a part of documentation?

A: Software Requirement specification document
B: System overview
C: Test plan
D: Source code
Ans:

D

3: Stakeholders consist of:

A: Developers
B: Management
C: Users
D: All of the above
Ans:

D

4: Encapsulation is known as:

A: Data sharing concept
B: Data hiding concept
C: Data retrieval concept
D: Data transfer concept
Ans:

B

5: A method is:

A: The sequence of steps to be performed to fulfill the assigned task

B: The set of operations for a particular task

C: Both (A&B)

D: None of the Above

Ans:

C

6: The Literal meaning of polymorphism is:

A: Few forms

B: Many forms

C: No form

D: Different things with the same meaning

Ans:

B

7: Function Overriding is a type of:

A: Encapsulation

B: Inheritance

C: Polymorphism

D: Reusability

Ans:

C

8: Abstraction is:

A: Elimination of relevant details

B: Elimination of irrelevant details

C: Getting distracted by thoughts

D: Reducing the understanding of the system

Ans:

B

9: What are the benefits of inheritance:

A: Lower the numbers of lines of code

B: Lowers effort

C: Remove redundancy

D: All of the above

Ans:

D

10: Software consists of:
A: Programs
B: Programs and documentation
C: Set of instruction and operating system
D: Programs, documentation, and operating procedure manuals
Ans:
A

11: Generalization & specialization relationship between two classes is known as:
A: has-a-relationship
B: uses-a-relationship
C: is-a-relationship
D: includes-a-relationship
Ans:
C

12: Which of the following objects are identified in the analysis model:
I: Analysis Objects   II: Entity Objects   III: Control objects   IV: Interface Objects
A: I, III, IV
B: I, II, IV
C: II, III, IV
D: All of the above
Ans:
C

13: Use case scenarios depicts:
A: Functionality of the use case
B: Internal detail of the use case s
C: Path of the use case
D: None of the above
Ans:
C

14: Which of the following is **not** a factor of software quality?
A: Reliability
B: Maintainability
C: Usability
D: Invisibility
Ans:
D

15: UML is related to:
A: Object-oriented concepts
B: Operation-oriented concepts
C: Procedure -oriented concepts
D: All of the above
Ans:

A

16: Reliability is related to:
A: Objects
B: Classes
C: Failures
D: Operations
Ans:

C

17: Testing is related to:
A: Verification
B: Validation
C: Both (A & B)
D: None of the above
Ans:

C

18: Object-oriented approach is:
A: Non-iterative
B: Iterative
C: Highly Iterative
D: None of the above
Ans:

C

19: Requirements are described as:
A: How of a system
B: What of a system
C: When of a system
D: All of the above
Ans:

D

20: Which of the following is **not** a non-functional requirement?
A: Correctness
B: Functionality
C: Reliability
D: Portability
Ans:
B

21: The structured interview method includes the creation of:
A: Use case diagram
B: Data flow diagram
C: Prototype
D: Questionnaire
Ans:
D

22: The role of facilitator is to:
A: Handle conflicts
B: Ensure smooth conduct of meeting
C: Prepare detailed report
D: All of the above
Ans:
B

23: A use case scenario is:
A: An instance of a class
B: An instance of a use case
C: An instance of an actor
D: A path through a process
Ans:
D

24: A requirement should be:
A: Correct
B: Unambiguous
C: Verifiable
D: All of the above
Ans:
D

25: IRD stands for
A: Initial Request Document
B: Initial Required Document
C: Initial Requirements Document
D: Interactive Requirements Document
Ans:
C

26: RAD stands for:
A: Requirements Analysis Document
B: Required Analysis Document
C: Requirements Actor Document
D: None of the above
Ans:
D

27: A use case scenario may generate:
A: At most one test case
B: At least one test case
C: No test case
D: None of the above
Ans:
B

28: Objects can be categorized into:
A: Entity, Boundary, Monitor
B: Entity, Control, Abstract
C: Virtual, Abstract, Template
D: Entity, Control, Boundary
Ans:
D

29: The purpose of Entity objects is to:
A: Store Temporary Variables
B: Store Persistent data
C: Store control information
D: None of the above
Ans:
B

30: Control objects are responsible for:
A: Storing persistent data
B: Handling interaction in the system
C: Coordinating and managing entity and boundary objects
D: None of the above
Ans:

C

Question # 2: (10)

Consider the following use case description of issue book use case.

Introduction: This use case documents the steps that must be followed in order to get a book issued.
Actors   Administrator   Library Staff   Librarian
Precondition: The administrator/library staff must be logged onto the system before the use case begins.
Postcondition: If the use case is successful, a book is issued to the student to the student/faculty/employee and the database is updated, else the system state remains unchanged.

Event Flow
     Basic Flow
       1. The student/faculty/employee membership number is read through the bar code reader.
       2. The system displays information about the student/faculty/employee.
       3. Book information is read through the bar code reader.
       4. The book is issued for the specified number of days and the return date of the book is calculated and stamped on the book.
       5. The book and student/faculty/employee information are saved into the database.

Alternative Flows   **Alternative Flow 1: Unauthorized student/faculty/employee**   If the system does not validate the student/faculty/employee membership number (due to membership expiry or any other reason), then an error message is flagged, and the use case returns to the beginning of the basic flow.   **Alternative Flow 2: Account is full**   If the student/faculty/employee ha requested a book and the account if full i.e., he/she has already maximum number of books issued on his/her name, then the request for

issue is denied and the use case ends. **Alternative Flow 3: User exits** This allows the user to exit at any time during the use case. The use case ends.
Special requirement None
Associated use case Login

    a) Identify entity objects, Boundary objects and control objects for "issue book" use case also mention object name, object type and description in a summary table. Also depicted Diagrammatic convention for object types. **(6+4)**

Answer:
Entity Objects:
- Login
- Faculty
- Student
- Employee
- Bar code reader

Boundary Objects:
- Login
- Book

Control Objects:
- Good calculation
- Data domain
- Admin

Object description:

      The designing use case diagram for the library management system. Some scenarios of the system are as follows :

1. User who registers himself as a new user initially is regarded as staff or student for the library system.
   - For the user to get registered as a new user, registration forms are available that is needed to be fulfilled by the user.
   - After registration, a library card is issued to the user by the librarian. On the library card, an ID is assigned to cardholder or user.
2. After getting the library card, a new book is requested by the user as per there requirement.
3. After, requesting, the desired book or the requested book is reserved by the user that means no other user can request for that book.
4. Now, the user can renew a book that means the user can get a new due date for the desired book if the user has renewed them.

5. If the user somehow forgets to return the book before the due date, then the user pays fine. Or if the user forgets to renew the book till the due date, then the book will be overdue and the user pays fine.
6. User can fill the feedback form available if they want to.
7. Librarian has a key role in this system. Librarian adds the records in the library database about each student or user every time issuing the book or returning the book, or paying fine.
8. Librarian also deletes the record of a particular student if the student leaves the college or passed out from the college. If the book no longer exists in the library, then the record of the particular book is also deleted.
9. Updating database is the important role of Librarian.

Good Luck
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