Final Examination Cover Sheet

First Semester: *1436-1437 / 2015-2016*

Course Instructor:		**Exam Date:**	**4/1/2015**
Course Title:	System Analysis and Design	**Course Code:**	**IT243**
Exam Duration:	**60 Minutes**	**Number of Pages:** (including cover page)	**11**

Marking Scheme	
Questions	**Score**
Part 1	**/ 25**
Part 2	**/ 25**
Part 3	**/ 30**
Part 4	**/ 20**
	/
	/
Exam Score	**/ 100**
Final Score	**/ 50**

Student Name: **Student ID:**

1. Systems Integration refers to:

   a. The process of synching all computers to the mainframe

   b. The delivery of systems to the final destination office

   c. Combining packaged software, the legacy system and new software

   d. Adding the original hard drives to a newer system

   e. Creating a new software to monitor power consumption

2. When only a price is needed from a vendor, the following will likely be requested from the possible vendors:

   a. Request for Proposal (RFP)

   b. Request for Information (RFI)

   c. Request for Quote (RFQ)

   d. Request for Efficient Information Distribution (REID)

   e. More Optimal Desires (MOD)

3. This type of file is used to update a master file:

   a. Roster Files

   b. Training files

   c. Master files

   d. Transaction files

   e. Integrated file

4. What information-gathering strategy enables the analyst to see the reality of the situation rather than listen to others describe it?
   a. Document analysis

   b. Interviewing

   c. Joint application design (JAD) sessions

   d. Observation

   e. Questionnaires

5. Arianna has a superclass called 'Person', an abstract subclass called 'Student' and a concrete class called 'Information Systems Student'. Which of the following would be correct?

   a. Person is 'a-kind-of' student; student is 'a-kind-of' information systems student

   b. Information system student is 'a-kind-of' student; student is 'a-kind-of' person

   c. Person is 'a-kind-of' information system student; student is 'a-kind-of' person

   d. Information system student is 'a-kind-of' person; person is 'a-kind-of' student

6. Which Data Flow Diagram shows the entire system with its environment with only one process?
   a. Context Diagram

   b. Level 0 diagrams

   c. Level 1 diagrams

   d. Level 2 diagrams

   e. All DFDs show this

7. Which would normally NOT be a part of the implementation phase?
   a. System construction

   b. Testing

   c. Installation

   d. Documentation

   e. Creating database and file specifications

8. One of the following is NOT a common Interface Evaluation technique?
   a. Interactive evaluation

   b. Walk-through evaluation

   c. Heuristic evaluation

   d. Use scenario normalization

e. Formal usability testing

9. Which is not an element of a CRUD matrix?

    a. Combine or join

    b. Update or refresh

    c. Read or retrieve

    d. Make or create

10. Requests for Proposals (RFPs) serve what purpose?

    a. Integrate systems with one another

    b. Create synergy amongst staff members

    c. Solicit information from providers

    d. Engage mobile computers with mainframe technology

11. For the most efficient storage we should remove: _____ and _____.

    a. Primary keys and foreign keys
    b. International keys and redundancy
    c. Adjectives and adverbs
    d. Redundancy and null values

12. One common method to increase access speed is to:

    a. Use legacy databases in a indexed sequential access method
    b. Denormalize the tables
    c. Delete all primary keys
    d. Only use alphabetic data

13. Information in the data dictionary is called: _____

    a. Metadata

    b. Cached information

    c. Compiled data

    d. Data repository

14. It is better to make menus _____.

    a. Broad and shallow

b. Narrow and deep
c. Broad and deep
d. Narrow and shallow

15. Value-added projects are:

    a. When the outsourcer earns a percentage of the completed systems benefits

    b. Not a feasible option for any project at any time

    c. Gaining popularity

    d. A and C

16. When normalizing data models, if you take attributes that have multiple values for a single instance of an entity and create separate entities for those attributes you are moving from:

    a. Normal form to 1st normal form (1NF)
    b. 1st normal form (1NF) to 2nd normal form (2NF)
    c. 2nd normal form (2NF) to 3rd normal form (3NF)
    d. Generalized normal form (GNF) to fully normalized form (FNF)

17. Independent entities are:
    a. When a child requires attributes from the parent
    b. When there is only one entity for a data process model
    c. When an entity can exist without the help of another entity
    d. Where the entity identifier is also the primary key

18. Another name for custom development might be:

    a. Offshore outsourcing
    b. In-house development
    c. CASE tools
    d. Package software

19. In the user interface design process when the analysts examine the DFDs and use cases developed in the analysis phase and interview users, the analyst will develop:

    a. Interface structure diagram
    b. Case scenario
    c. Interface design prototype
    d. Interface standards
    e. Physical DFD

20. In most cases, decision support systems are best at:

    a. Finding particular records that are stored in legacy databases

    b. Finding processes that are stored in object databases

    c. Finding aggregated data

    d. Analyzing audit (or log) files for possible intrusion and security breaches

    e. Red and green linked list processing

21. The process of coordinating a program as it changes through construction (like keeping files and programs in different places) is called:

    a. Change control

    b. Separation of duties

    c. Judicial control

    d. Scope creep

    e. None of the above

22. If a program does not pass a test:

    a. The analyst will verify that the use-cases were correctly formulated

    b. The program is sent back to the development team

    c. The project manager will verify that the test was or was not appropriate for the code being tested

    d. The project will be scratched

    e. More programming staff will be added to the project

23. The most common cause of schedule problems during application development is:

    a. Weather related (like hurricanes, tornados, wildfires)

    b. Hardware and server incompatibilities

    c. Scope creep problems

    d. Switching to different development tools (such as a new version of your programming language)

    e. None of the above

24. Which of the following is NOT a general test stage?

    a. Unit tests

    b. Module tests

    c. Integration tests

    d. System tests

e. Acceptance tests

25. Generally, most errors (defects) are found in which two testing periods?

   a. Unit testing and integration testing

   b. Integration testing and system testing

   c. System testing and acceptance testing

   d. Unit testing and acceptance testing

   e. Alpha testing and beta testing

Part II – True or False Questions
25 Questions –[Each question carry 1 mark]

No.	Question	True/False
1	If the business need is core to the business then it is best to outsource the system development.	False
2	The very first computing architectures were terminal based.	False
3	A database, that is used extensively in data warehousing, is a multidimensional database.	True
4	In terms of reaching the most number of people in requirements gathering, interviews are considered better than questionnaires.	False
5	Aggregation is used when one class (subclass) inherits from another class (superclass) meaning that the properties and operations of the superclass are also valid for objects of the	False

	subclass.	
6	Data flows to a process must be balanced, like if there are two input data flows, there MUST be two output data flows.	False
7	Technical feasibility is generally done in the planning phase of the SDLC.	True
8	Language prototype is one of the three interface design prototypes, and it is generally the least expensive and also provides the least amount of details	False
9	Client-server scalability is greater than server-based scalability.	True
10	Use cases are a type of 'event-driven modeling'.	True
11	Online processing collects inputs over time and enters them into the system at one time.	False
12	The decision to make, to buy, or to outsource influences the design tasks that are performed throughout the rest of the design phase.	True
13	The design phase is the time to select the specific software that will operate the hardware.	True
14	Most software follows the standard Windows or Macintosh approach for screen layout by dividing the screen into top, middle, and the bottom areas.	True
15	Concrete classes produce only templates for more specific classes. They cannot be instantiated.	False
16	The concept that says the same message can be interpreted differently by different classes of objects is called 'encapsulation'.	False
17	Analyst can select either of ease of use or ease of learning when designing the user interface	False
18	ERDs are drawn in several levels: Context ERD diagrams; Level 0 ERD diagrams; Level 1 ERD diagrams.	False
19	User experience refers to minimizing the number of clicks or commands to go from one field to another.	False
20	Using an HTML prototype lets users see what a screen form might look like.	True

No.	Question	True/False
21	Tutorials teach people how to use major components of the system.	True
22	User documentation must be developed at the end of the project, after all programming, testing and approvals have occurred.	False
23	Alpha and beta tests are part of systems testing.	False
24	One of the keys to successful project management is to monitor minor slippages in the schedule.	True
25	White-box testing is used when the complexity is high and you want to 'trace' each path through the programming applications.	True

Part III – Short Answer Questions
6 Questions [5 Marks each question]

1. Describe the difference between a thick and a thin client.

Ans: Thick and thin clients are found in client-server applications and they are categorized as thick or thin based on the proportion of application logic stored on the client terminal. Thick, or sometimes referred to as fat, clients are those that house a majority of the application logic. Thin clients are those where the majority of the systems' application logic is stored on the server.

2. What is inheritance? Give an example.

Inheritance is that a subclass 'inherits' common sets of attributes and methods from a class above it. For example, 'employee' might be an abstract class and be made up of sales-person, manager, buyer, etc. Each of the subclasses would inherit the attributes and methods from the class above it (such as name, employee-id, employee phone number, employee-address and more).

3. When creating an Interface Structure Design for an online pharmacy business; what considerations should Danielle, a systems analyst, consider?

Ans: Interface Structure Designs should grow from use cases and DFDs. There are no commonly used rules or standards for their development. Trees should generally follow menus and submenus. Use scenarios should be developed and applied following use cases and DFDs.

4. At the end of the design phase, there is a document named the system specification that describes the different design documents and their uses. What is the consolidated purpose of this deliverable and why is it important?

Ans: The system specifications document contains the: physical process models, physical data model, architecture design, hardware and software specification, interface design and program design. These elements represent the blueprint for the physical system layout inclusive of server configurations, cable connectivity and any ancillary devices that will be a part of the overall system. Additionally, the documents contain software, hardware and technical specifications that will enable programmers and service personnel to operate the machinery as well as to prescribe the proper workaround, patches, fixes and software additions and upgrades to the physicalsystem.

This is an important consolidation of documents because it provides the creator, end user and maintenance engineers with a written model of the system they are about to implement which will minimize errors as well as allow for timely and effective corrective measures.

5. What are the major benefits of Object-Oriented Systems Analysis and Design?

Ans: The concepts (like polymorphism, encapsulation, inheritance) allow analysts to break a complex system into smaller, more manageable components, and to work on those components individually and to more easily piece the components back together to form a system.

6. What are the steps for writing a use case?

Ans: Identifying the use cases; identify the major steps within each use case; identify elements within steps; confirm the use cases

Part IV – Long Answer Questions
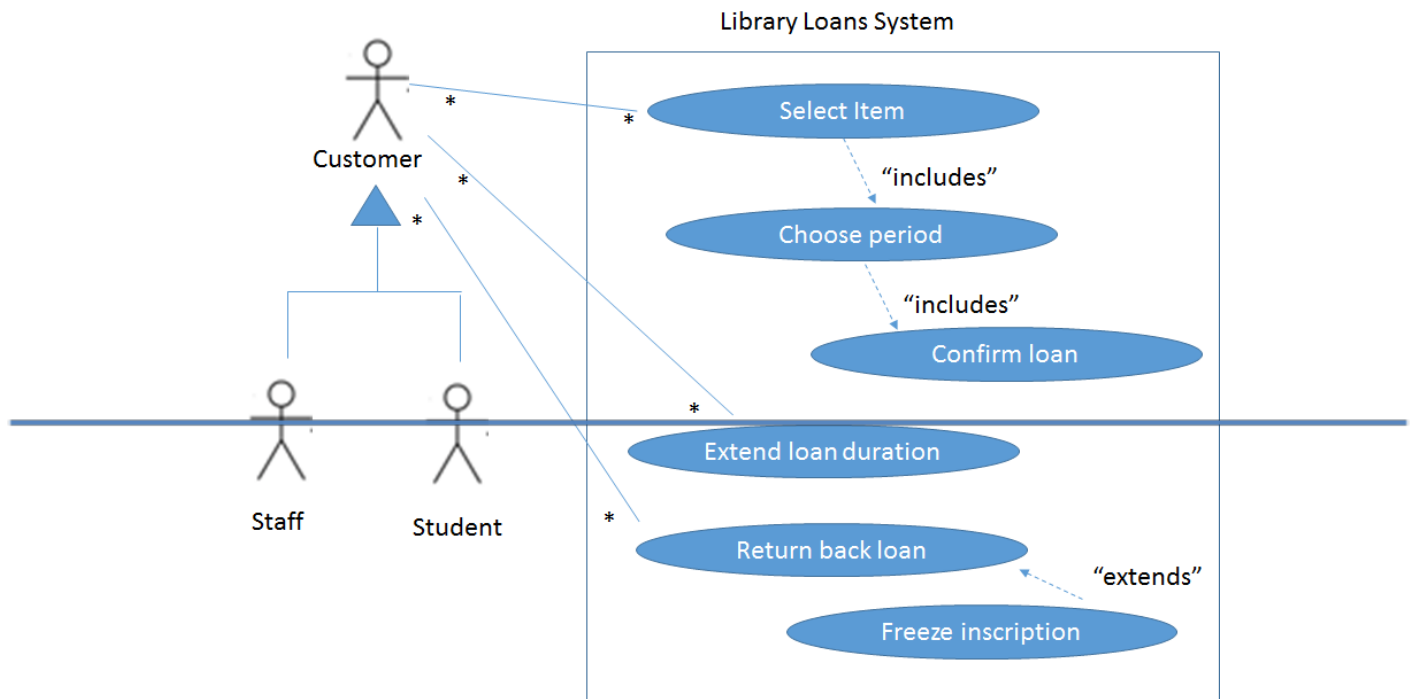### 2 Questions [10 Marks each question]

Library loans system

A library loans three different kinds of items to customers: books, video tapes and compact disks. Each item has a title and a publisher. In addition, books have an author, and CDs have an artist. The library may have multiple copies of the same book, video tape or compact disk. There are two different kinds of customer: students and staff. For both kinds of customer, the library has their name, sex and address. Students may borrow at most 20 items, but there is no number limitation for staffs. The customer has to choose the items to loan, then the period and finally confirm the loan. A loan can be performed only if the customer has not a frozen library inscription. When returning the items, an inscription is frozen if the customer does not respect the loan period. The maximum period of each loan is two weeks. A loan can be extended at most one

Q1)- Draw the use case diagram

Library Loans System

Q2)- Draw the class diagram

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