

**Requirements and Specification, ESOF 328, Spring 2022**

**Exam 1, Feb. 4**

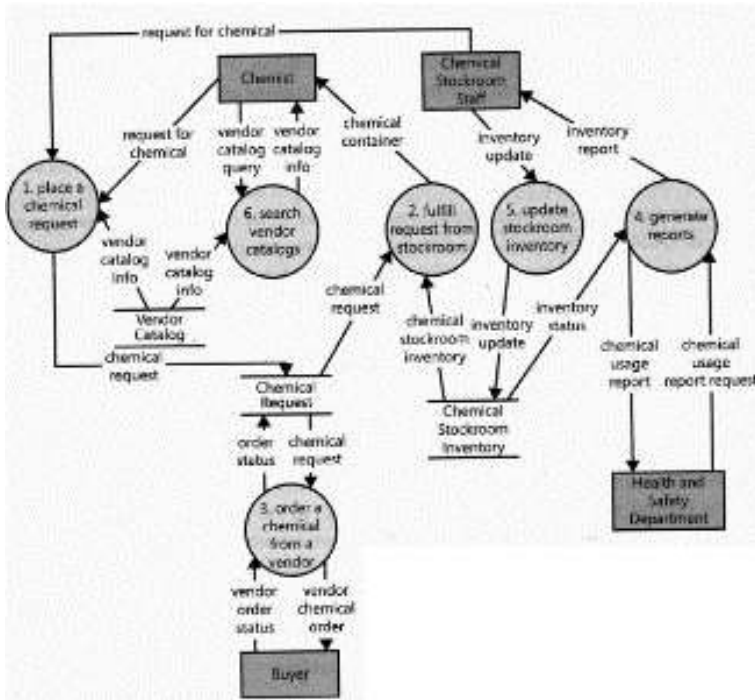
**Name** \_\_\_\_\_

This exam is to be completed individually without the use of the text, notes, the Internet, or any other items.

1. Select the best category for the information: The Conflict of Interest System must use an MS SQLServer database. (3 pts.)
  - a. Business rule
  - b. User requirement
  - c. Functional requirement
  - d. Non-functional requirement which is not also a quality attribute
  - e. Quality attribute
  
2. The information that all website images must include alternative text to be used by electronic reading devices to meet accessibility requirements of visually impaired users can best be categorized as a: (3 pts.)
  - a. Constraint
  - b. User requirement
  - c. Functional requirement
  - d. Feature
  - e. Quality attribute
  
3. Select the best category for the information: ABET requires a mapping between student outcomes and courses. (3 pts.)
  - a. Business rule
  - b. User requirement
  - c. Functional requirement
  - d. Non-functional requirement which is not also a quality attribute
  - e. Quality attribute
  
4. When creating course and activity offerings, a user shall be able to select a semester for which the offerings will be created. This shall not modify the default semester. (3 pts.)
  - a. User requirement
  - b. Functional requirement
  - c. Non-functional requirement which is not also a quality attribute
  - d. Quality attribute
  - e. Design constraint

5. Select the best category for the information: Clients are typically not allowed to receive boxes before 30 days have lapsed since their last box. (3 pts.)
- a. **Business rule**
  - b. User requirement
  - c. Functional requirement
  - d. Non-functional requirement which is not also a quality attribute
  - e. Quality attribute
6. Select the best category for the information: Users with the administration role can create course offerings for courses within their programs. (3 pts.)
- a. Business rule
  - b. **User requirement**
  - c. Functional requirement
  - d. Non-functional requirement which is not also a quality attribute
  - e. Quality attribute
7. Which of the following is least likely to be a task of a business analyst? (3 pts.)
- a. Identify project stakeholders
  - b. Elicit requirements
  - c. Document requirements
  - d. **Develop user interfaces**
  - e. Manage requirements
8. Which of the following is least likely to be a skill needed by the business analyst? (3 pts.)
- a. Listening skills
  - b. Facilitation skills
  - c. Analytical skills
  - d. Modeling skills
  - e. **Project management skills**
9. Select the most common role of a product champion. (3 pts.)
- a. **Help provide system requirements**
  - b. Manage requirements elicitation
  - c. Manage system development
  - d. Lead elicitation meetings
  - e. Document system requirements

10. Consider the following diagram.



This diagram can most accurately be described as a:

(3 pts.)

- a.) Context diagram
- b.) Sequence diagram
- c.) Entity-Relationship diagram
- d.) State transition diagram
- e.) Data flow diagram

11. List five distinct ways to solicit information from users. (5 pts.)

Workshops  
Interview  
Observation  
Survey  
Documentation

12. Five activities are given. Tell the phase: elicitation, analysis, specification, validation or management, to which this activity most likely belongs. (10 pts.)

- a. Tracing individual requirements to their corresponding designs, source code, and tests  
Management
- b. Deriving functional requirements from other requirements information  
Analysis
- c. Identifying the product's expected user classes and other stakeholders  
Elicitation
- d. Looking for user feedback on a prototype of aspects of a proposed system  
Validation
- e. Documenting use cases.  
Specification

13. Imagine that you have become a business analyst for a software development company. A new business analyst was hired. Since you are a senior member of the staff, you are to help this new person get “on board”. Describe to this person how to write good use cases. (10 pts.)

Use cases capture user interactions with the system. They express the back and forth between user and system. List this back and forth interaction in steps.

In addition to the normal flow, give steps of any alternate and exceptional flows, telling precisely when the new flow would break off and return.

Use cases aren't used to express behavior that the system does on it's own. They also don't include design detail. Don't make them too large and attempt to make each use case independent of others (except for the use of “includes” and “extends” which we can go over later).

14. Describe the use of “includes” and “extends” in a use case diagram. (5 pts.)

A use case “includes” another use case, if every time the use case is executed, the included use case is also executed.

A use case “extends” another use case, when the use case may or may not include the extended use case.

15. Evaluate the following requirements and write new requirements if necessary.  
(15 pts.)

R01. Create a relation between two CEs

When working within a DSM, the user can create a relation by:

1. Selecting directed or non-directed
2. Selecting the first CE (the source for directed CEs)
3. Selecting the second CE (the destination for directed CEs)
4. Pushing the “create relation” button.

Rationale: Relations are needed within DSMs

Priority: Imperative

Requirements checklist:

	Satisfied?	Why or why not?
Identified by a number	yes	
Identified by a short phrase	yes	Although it could be shorter
Prioritized (imperative, important, desired)	yes	
Rationale is given	yes	Could give more detail.
Tells what is required	yes	
Tells under what situation	yes	
Clearly written, unambiguous	yes	
Avoids premature design	no	Steps are premature design, as well as the “button”
Can’t be broken into multiple more clear requirements	yes	
Necessary requirement (also check that it wouldn’t be better expressed as a non-functional requirement)	yes	
Realistic	yes	
Testable	yes	
Stands on its own – other requirements don’t need to be examined to understand what this means	yes	
Uses terms/approach consistent with the rest of the document	yes	

Problems:

- Identifying short phrase is not very short
- Includes premature design

Rewrite:

R01. Create relation

The system shall facilitate the creation of relations between two distinct CEs within an opened DSM. Relations shall be undirected or directed, and not both.

Rationale: Relations can show navigation within the DSM. There is no reason for a CE to be in relation with itself. Some relation types imply a direction, while others do not.

Priority: Imperative

16. When writing requirements the terms “should”, “will” and “shall” all have different meanings. Define each in such a way that the difference is clear. (10 pts.)

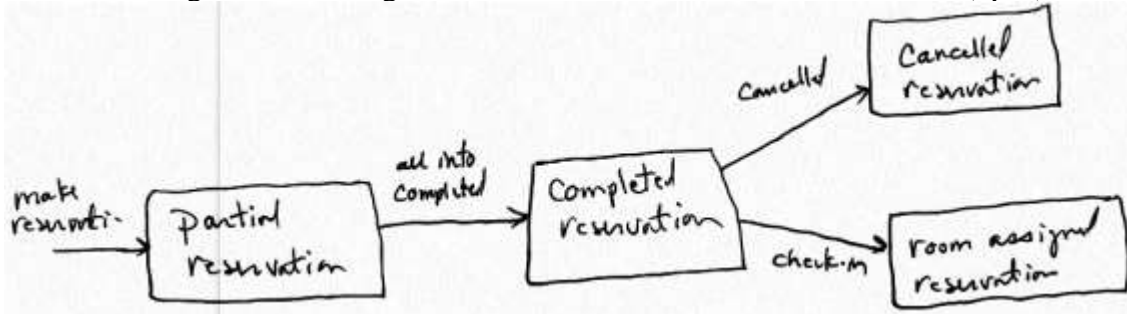
Shall – required functionality, system capability, something programmed into the system.

Should – desired functionality, but not required.

Will – something that is true but that developers do not need to implement.

17. Imagine developing a hotel reservation system. This system will facilitate making reservations, the check-in and checkout processes, customer information, and room information for a hotel.

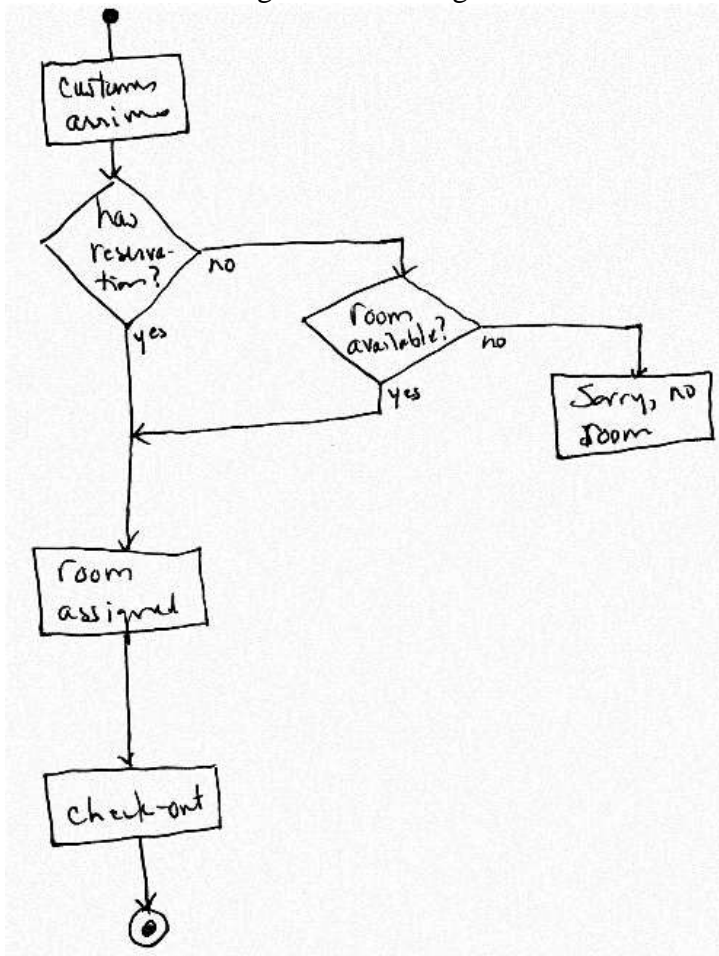
- a. Create a state transition diagram for a reservation and explain what the diagram is showing. (5pts.)



This diagram shows the states that a reservation goes through, along with the transitions that take the reservation from one state to another.

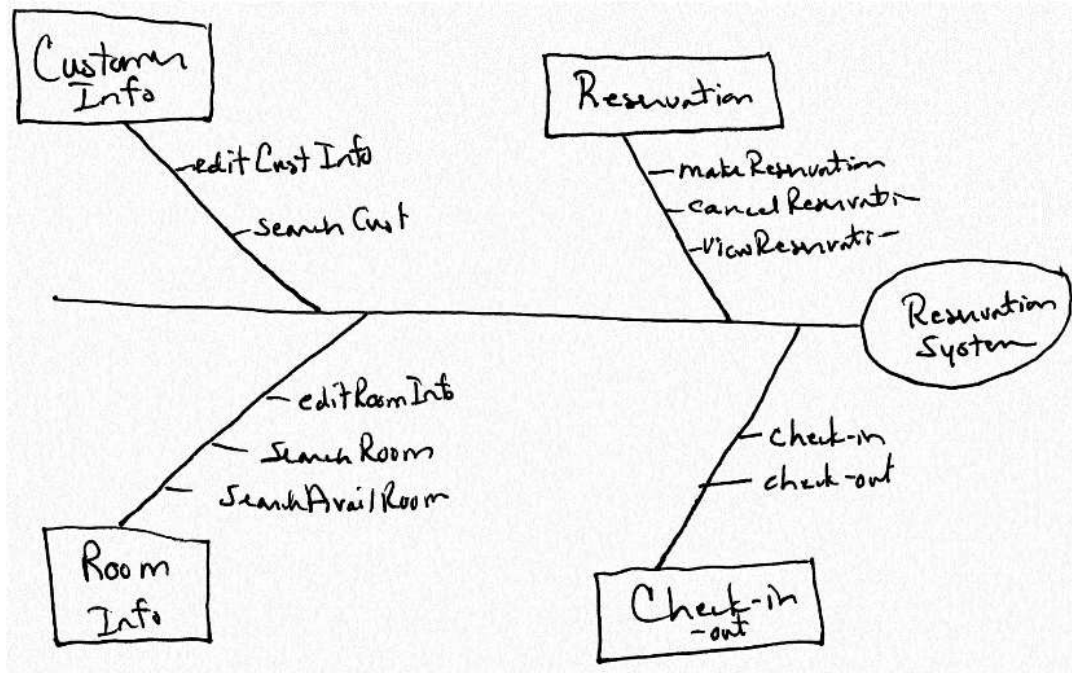


- b. Create an activity diagram for the process of a customer checking into a room. This customer may, or may not, have an existing reservation, and explain what the diagram is showing. (5 pts.)



This diagram shows the process of checking into a room. Possible outcomes are a message, "Sorry, no room", or they complete their stay in the room.

- c. Create a feature tree for this hotel system and explain what the diagram is showing. (5 pts.)



This diagram shows the functionality of the Reservation System. The functions (use cases) are split into the features: Reservation, Customer Information, Room Information and Check-in/Check-out.