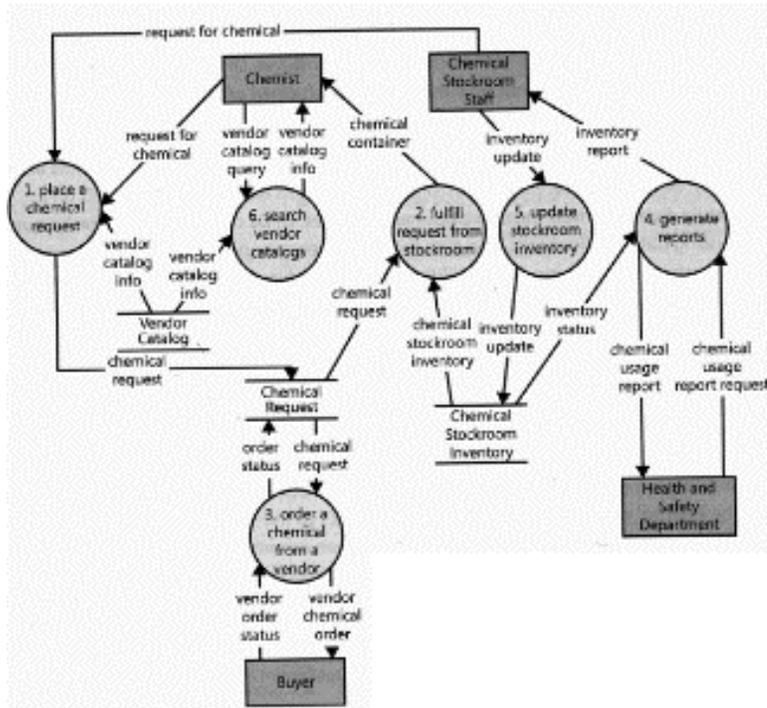


**Requirements and Specification, ESOF 328, Spring 2020**  
**Exam 1, Feb. 28**

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: Users with the administration role can create course offerings for courses within their programs. (4 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: (4 pts.)
  - a.) Constraint
  - b.) User requirement
  - c.) Functional requirement
  - d.) **Non-functional requirement which is not also a quality attribute**
  - e.) Quality attribute
  
3. Which of the following is least likely to be a task of a business analyst? (4 pts.)
  - a.) Identify project stakeholders
  - b.) Elicit requirements
  - c.) Document requirements
  - d.) **Develop user interfaces**
  - e.) Manage requirements
  
4. Which of the following is least likely to be a skill needed by the business analyst? (4 pts.)
  - a.) Listening skills
  - b.) Facilitation skills
  - c.) Analytical skills
  - d.) Modeling skills
  - e.) **Project management skills**

5. Consider the following diagram.



This diagram can most accurately be described as a:

(4 pts.)

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

6. What are the four main stages in the requirements development process? (5 pts.)

Elicitation  
Analysis  
Specification  
Validation

7. Describe five distinct common requirement problems which should be avoided. (5 pts.)

Omitting requirements  
Ambiguous requirements  
Missing stakeholders  
Including design  
Gold plating

After baselining: scope creep

8. Describe what is meant by a requirements baseline. (5 pts.)

A set of requirements which the client has agreed to. Typically, following review and approval, the requirements are baselined and all subsequent changes can be made only through the project's defined change control procedure.

Definition from the text glossary:

A snapshot in time that represents the current agreed-upon, reviewed, and approved set of requirements, often defines the contents of a specific product release or development iteration. Serves as the basis for further development work.

9. Describe the difference between product and project requirements. (10 pts.)

Product is what is being built so product requirements are properties of the software system being built (customer needs or objectives, conditions or capability the product must possess).

Project requirements are those requirements which aren't product requirements but are necessary for the successful completion of the projects. Examples are:

- Resources needed
- Staff training needs
- User documentation
- Infrastructure changes
- Product release info
- Product certification and compliance requirements revised policies
- Customer service-level agreements

10. Consider the user story "As an administrator I want to be able to assign roles to a user so that the user can do work in the system". Give examples which show the difference between "forward to" link to this user story and "backwards from" link to the same user story. (10 pts.)

A possible "forward to" link to this user story is a business objective that says that one reason the system is being built is to achieve greater security. For example, Petroleum may be frustrated with incorrect and untracked updates to the assessment spreadsheets that Sue Schrader shared with the class.

This security business objective could link "forward to" the user story.

A possible "backwards from" link could be from the user story to the same business objective. That is, the security business objective links "backward from" the user story.

In the first case, the link is on the business objective.  
In the second case, the link is on the user story.

11. A significant part of this class is getting input from clients and documenting it in an SRS. We hold six meetings, after each meeting we each create an analysis of what we learned in the meeting, I combine our analysis, we get client feedback on our analysis and update the SRS. Say that you want to model this process and you can't decide whether to use a state transition diagram or an activity diagram.

a. Explain what characteristics would help you make your decision about what diagram to use. (10 pts.)

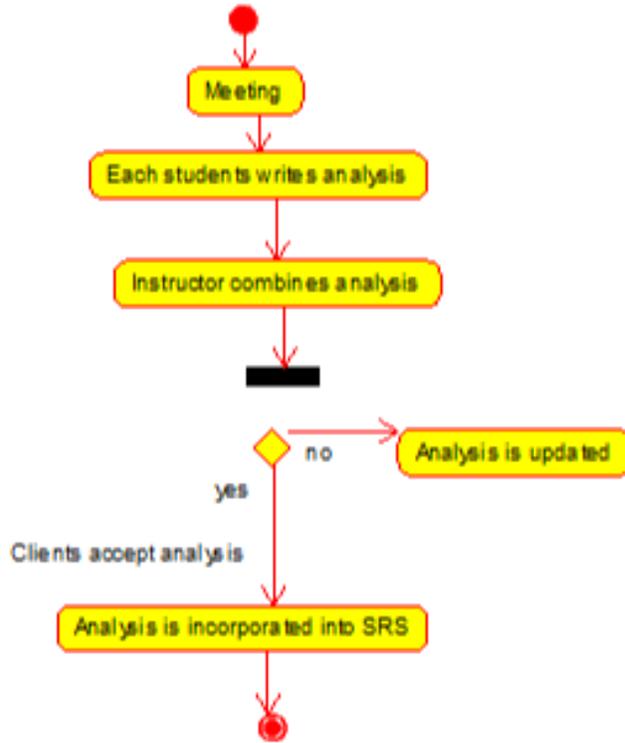
- If you want to focus on the analysis, its various states, and how transitions occur between states, use a state transition diagram.
- If you want to focus on the sequence of events that occur in creating the analysis, use an activity diagram.

b. Sketch a state-transition diagram for the above. (5 pts.)



c. Create an activity diagram for the above.

(5 pts.)



12. Based on the information which you have learned from the ACID clients, and using the style of the use cases which we have already created, develop a “Create PI” use case. Assume that this use case occurs when a user who has permission to create a PI for a particular program is looking at a student outcome that is associated with that program. (If you don’t think that this is a useful use case for ACID, suggest a use case(s) to accomplish the same task, and develop it/them.) (25 pts.)

Use Case Name:	Create PI		
Created By:	You	Last Updated By:	You
Date Created:	Feb. 28, 2020	Date Last Updated:	Feb. 28, 2020

Actors:	Department ABET coordinator, Department Admin (1 pts.)
Description:	User creates a PI which will be associated with the SO currently being observed. (1 pts.)
Trigger:	User want to create a PI associated with a SO.
Preconditions:	User is logged in and is working within a program User has permission to create a PI for that program User is looking at a SO that is associated with the program (4 pts.)
Postconditions:	Unless the user exits the use case early, the newly created PI is associated with the SO and the audit log has been updated. (4 pts.)
Normal Flow:	<b>1.0 User creates a PI that is associated with the current SO in the current program</b> <ol style="list-style-type: none"> <li>1. User indicates a desire to create a PI that will be associated with the SO</li> <li>2. An ‘enter PI’ interface appears that allows the user to enter an identifier and the text of the PI and to submit the data</li> <li>3. The user is informed that the PI was created, is associated with the SO, and that the audit log has been updated.</li> </ol> (5 pts.)

Alternative Flows:	<p><b>1.1 User doesn't submit the PI and no changes were made (branch during step 2)</b></p> <ol style="list-style-type: none"> <li>1. User navigates away from entering the PI, or indicates desire to exit 'enter PI' interface, before any changes were made</li> <li>2. Use case exits</li> </ol> <p><b>1.2 User doesn't submit student outcome after changes were made (branch during step 2)</b></p> <ol style="list-style-type: none"> <li>1. User navigates away from entering the PI, or indicates desire to exit 'enter PI' interface, after changes had been made</li> <li>2. User is warned that they have unsaved changes and asked if they wish to proceed</li> <li>3. User indicates preference</li> <li>4. If 'yes' use case exits and user is informed that no changes were made to the audit log; if 'no' the user remains (or returns) to step 2</li> </ol>
Exceptions:	<p><b>1.0.E.1 Internal error (branch after step 2)</b></p> <ol style="list-style-type: none"> <li>1. The system is not able to connect to the database or some other internal error</li> <li>2. User is informed that an error occurred, the nature of the error, that no changes have been made to the system except that this error has been recorded in the audit log.</li> </ol>
Includes:	None
Priority:	Medium (the system can be prepopulated with necessary student outcomes for each program)
Frequency of Use:	Frequently when setting things up, then less often
Business Rules:	
Special Requirements:	PI's are always associated with SOs

Assumptions:	None
Notes and Issues:	