

Requirements and Specification, ESOF 328, Spring 2022

Exam 2, March 25

Name _____

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

1. Business analyst is often a role played, rather than a job title. This role goes by many different names. Which of the following is least likely to be a synonym for business analyst? (3 pts.)
 - a. Systems analyst
 - b. Business analyst
 - c. Requirements manager
 - d. Requirements engineer
 - e. **Systems engineer**

2. Select the best description for when use case A “extends” use case B. (3 pts.)
 - a. When use case A may or may not include use case B.
 - b. **When use case B may or may not include use case A.**
 - c. When use case A always includes use case B.
 - d. When use case B always includes use case A.
 - e. None of the above.

3. Class diagrams are used to partition a system into classes. Similarly, data flow diagrams are used to partition a system into: (3 pts.)
 - a. Scenarios
 - b. Objects
 - c. **Functions**
 - d. All of the above
 - e. None of the above

4. Administrators of System X can create performance criteria associated with outcomes for the programs that they administer. (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

5. Future enhancements to accommodate other types of conflicts shall not be too difficult. (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. For each of the following, give an example business rule that is related to the conflict of interest project. (8 pts.)

Fact

Employees of Montana Tech need to declare potential conflicts of interest, every year.

Constraint

The Vice Chancellor of Research cannot sign their own conflict of interest form, or the conflict of interest form for anyone they work for.

Action enabler

If a Person of Interest indicates they have a potential conflict of interest, more details must be collected about each conflict.

Inferences

A management plan for the Chancellor and the Vice Chancellor of Research will need to be completed by someone off the Montana Tech campus.

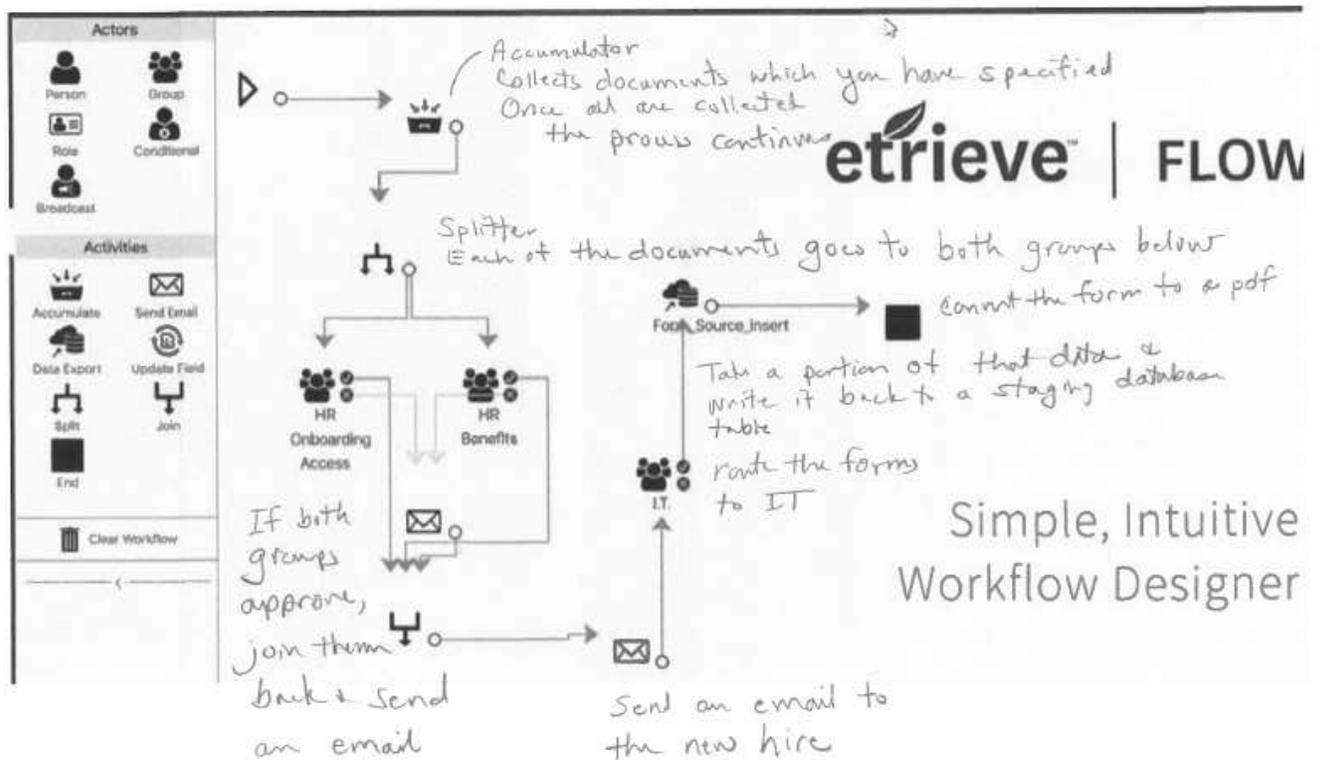
7. Describe three substantially different and useful COI System prototypes. Note that this question is only asking about the COI System, not the Etrieve forms.

For each prototype, clearly state its goal and why this would be useful to our class.
(Point breakdown for each prototype description:

- 2 point for the prototype being different from the others
 - 1 point for the goal of the prototype
 - 1 point for the justification of spending the effort to create the prototype)
- (12 pts.)

1. Create a dashboard mock-up to demonstrate the information which administrators could view and how a search facility might work.
Goal: Clarify requirements.
Justification: The developers don't want to put a lot of effort into showing information that the users don't find useful.
2. Create a prototype which gets COI information directly from Etrieve, not from a local database. Get information such as the % forms completed, % of each No Conflicts/Minor Conflicts and Major Conflicts, % conflicts from various grounds, such as tenured faculty, engineering faculty, new faculty, administrators, etc.
Goal: Determine the feasibility of getting COI information directly from Etrieve.
Justification: There is no reason to store information in a local database if it isn't necessary.
3. Say that it is feasible to get COI information directly from Etrieve rather than storing it in a local database. Create a prototype which determines the average response time when getting dashboard information from Etrieve.
Goal: Determine the average time to get and display COI dashboard information.
Justification: Possibly the COI system should store information in a local database, because getting the information from Etrieve might make the interface annoyingly slow.

8. The following is from an overview of the Etrieve Flow Designer (<https://www.softdocs.com/watch-etrieve-flow-overview>).



Suggest an appropriate model(s) to use when communicating with the clients concerning COI Etrieve forms. Justify your suggestions. (10 pts.)

This workflow example is linear with a start and an end. It is made up of pre-determined activities, with forks and joins. Activity diagrams are also linear, with a start and one or more ends. Activity diagrams have forks and joins. The activities in Activity diagrams are flexible, in that any activity can be represented by simply putting the description of the activity in a rectangular box. Overall, these workflows are well suited to being represented in Activity diagrams with a limited set of activities.

9. Describe the difference between COI System information shown in a data model and COI System information shown in a data dictionary. Follow that with a sketch of each, using information that suspect will need to be stored.

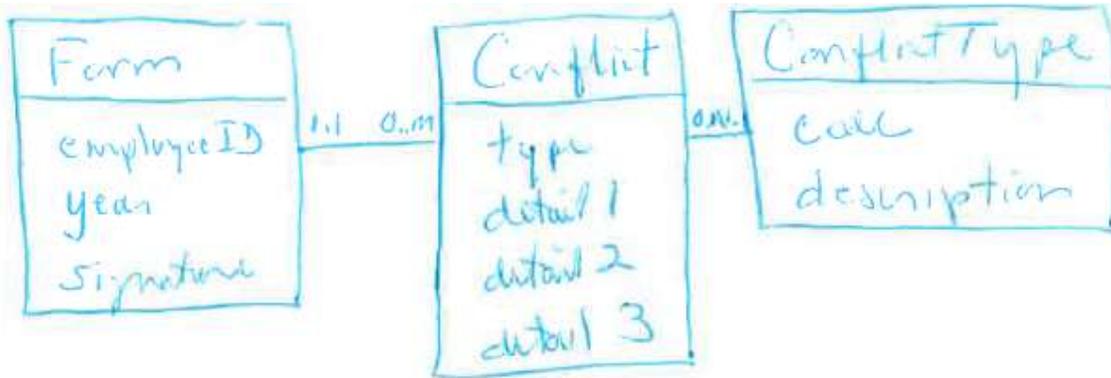
a. Description of the difference: (5 pts.)

Data model given a pictorial view of the data expected in the system and its relations

Data dictionary list data elements, giving a name, description and possibly the data type. This is lower-level information.

b. Sketch of a data model (5 pts.)

Portion of a data model:

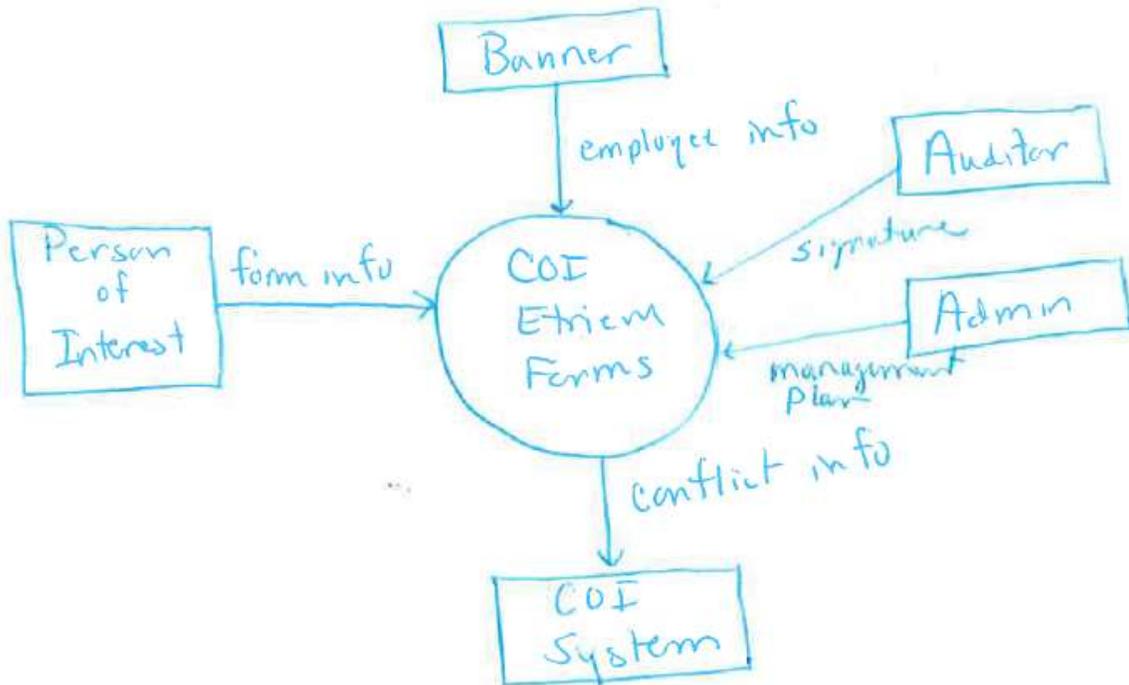


c. Sketch of a data dictionary (5 pts.)

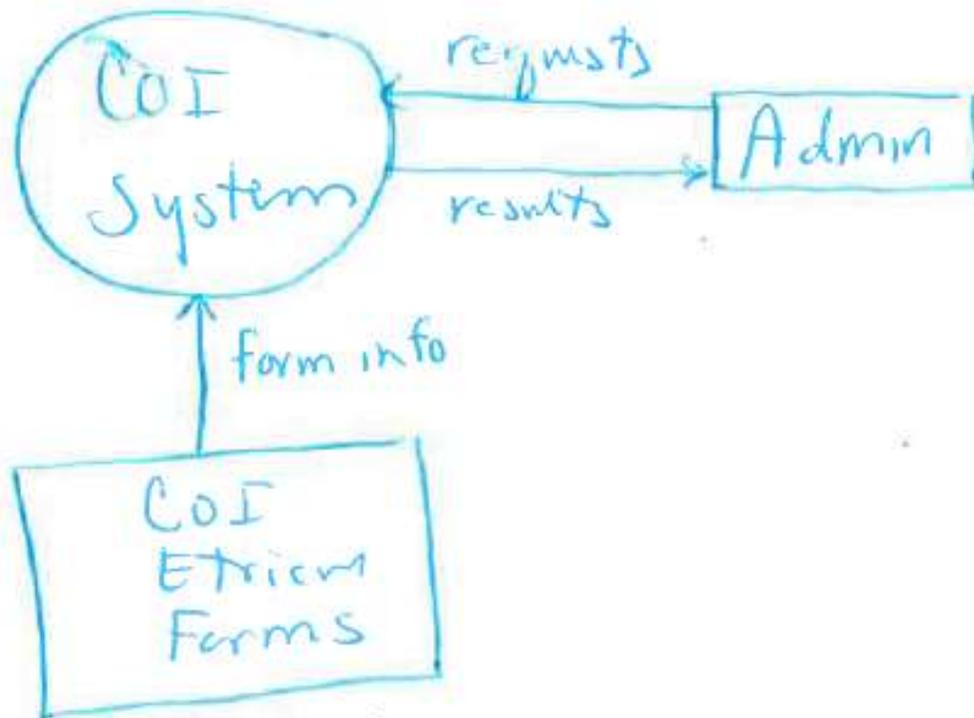
Portion of a data dictionary:

Name	description	type	length	composite
employeeID	id number	string	11	no
fName	first name	string	20	no
lName	last name	string	20	no
address	street, state, city, zip	string		yes
⋮	⋮	⋮	⋮	⋮

10. Create two context diagrams, one for COI Etrieve forms and one for the COI System.
 a. Context diagram for COI Etrieve Forms (10 pts.)



- b. Context diagram for COI System



11. Create one or more state transition diagrams, that best captures the following definitions. (20 pts.)

<p>Status of COI form</p>	<p>COI forms can have one of the following distinct statuses:</p> <ul style="list-style-type: none"> • Not Started: The Person of Interest has not started or modified their form. • In Progress: The Person of Interest has made changes to their form but hasn't submitted it yet. • Submitted: The Person of Interest has signed and submitted the form for review by the Admins. • Pending: A management plan has been created for one or more conflicts, but the Person of Interest has not yet signed their management plan (see the "Created" status of the management plan below). • Complete: The form has been reviewed and signed by an Admin or Auditor.
<p>Status of management plan</p>	<p>Management plans can have one of the following distinct statuses:</p> <ul style="list-style-type: none"> • No Plan Needed: No conflict exists, so no plan is needed. • In Review: Form is either being reviewed or created by Admins. • Created: The form was created by the COI system or the Admins and exists. • Signed: The form has been signed by the Person of Interest. • Complete: The form has been signed by both the Person of Interest and an Admin or Auditor.

