Systems Analysis: Process Decomposition with Swim Lane Diagrams - 1

After completing this activity you will be able to:

- Interpret a swim-lane diagram
- Construct a simple swim-lane diagram

Step 1: Individually

Reference the swim lane diagram shown on screen. Prepare 3 questions that can be answered with the diagram: (e.g., what happens before/after X, who does Y)

1. What is the first step in the process?
2. Who notifies the Rep?
3. What happens if the terms are not standard?

Step 2: In small groups.

Ask other group members your questions. Reach a consensus on the correct answers.

Step 3: In small groups.

Review the narrative up on the screen and create a swim lane diagram that describes the hiring process.

See next 2 pages
Mike is the HR manager at Playwicki Financial Services. They need to hire a new systems analyst. The job has been posted on the company’s web site and a few people have applied for the position. The hiring process starts when Mike reviews the applications and matches them up with the job requirements to identify the best candidate. Once the best candidate has been identified, their resume is sent to the hiring manager to review. If the hiring manager is not interested they ask Mike for another candidate and Mike starts looking for another candidate. If the hiring manager is interested in interviewing the candidate they let Mike know and Mike schedules a phone interview with the hiring manager. The hiring manager conducts the phone interview with the candidate. If the hiring manager is not happy with the candidate they ask Mike for another candidate and the process starts over again. If the hiring manager is happy with the candidate then they let Mike know and Mike schedules a face-to-face interview for the candidate with the hiring manager. The hiring manager conducts the interview. If the hiring manager is not happy with the candidate they let Mike know and the process starts over again. If the hiring manager is happy with the candidate they notify Mike that they’d like to hire the candidate. Mike call the candidate to offer them the position over the phone. If the candidate is interested, Mike assembles the formal offer and mails it to the candidate. The candidate signs the offer, returns it to Mike and the new employee is officially hired.
Step 4: Draw diagram on board and discuss as a class

Step 5: Answer three short-answer questions (individually)

1. In which situations is it useful to draw a swim lane diagram?
   * when training a new employee
   * to understand a process and find ways to optimize it (identify redundancies)
   * to clarify steps in a process and who is responsible for each one.

2. Describe the main elements included in a swim lane diagram: **Actors & their swim lane**
   
   Symbols
   
   ![Symbols diagram]

3. Do you think you could utilize swim lane diagrams in some of your other classes? If so, what classes and how would you use them?

Step 6: Rate this activity (individually)

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Step 7: Submit completed activity sheet
Systems Analysis: Process Decomposition with Swim Lane Diagrams - 2

After completing this activity you will be able to:
- Construct a simple swim-lane diagram

Step 1: Individually – Read the Following Narrative

Chris is the cake decorator at Cold Stone Creamery. Chris works part-time and is responsible for decorating all of the cakes that Cold Stone sells including both stock cakes and custom orders. Chris can’t do this alone. She needs the help of other people at the store to do this.

It all starts in the morning before the store opens when the store manager takes inventory of what cakes they have in stock. While taking the inventory the manager checks the expiration dates for all cakes that are in stock. If a cake has reached its expiration date, it is removed from stock and discarded. If a cake is within a week of reaching its expiration date, it is tagged as a “Manager’s Special” and the price is reduced by 25%. The store manager compares what they have in inventory to the “par sheet” which lists how many of each type of cake the store would like to have in stock. Based on the difference between what they already have in stock and what the par sheet says they should have in stock, the manager creates a list of cakes that need to be made by the crew members. The manager also looks at orders for both stock cakes and custom cakes. If there are any orders then the manager adds these cakes to the list of cakes to be built.

Throughout the day the crew members build the cakes on this list. Building a cake does not include decorating a cake. Building a cake involves cutting out the right sized/shape piece of cake from a large sheet of cake (i.e. small round, large round, small rectangle, large rectangle in either chocolate or vanilla) which will form the bottom layer of the cake and mixing the ice cream (a combination of ice cream flavors and mix-ins) that will form the top layer of the cake and putting the cake and mixed ice cream into the appropriate pan which serves as a mold. The cake is then put into the blast freezer to deep freeze the cake overnight.

The next day Chris pulls the newly built cakes out of the blast freezer and decorates the cakes as needed to fill orders and replenish stock. As part of decorating the cakes, Chris packages the cakes into containers, labels each cake correctly with the type of cake and the expiration date for the cake. Chris puts the stock cakes out in the display freezer to be sold and the orders in the freezer in the back so they will be waiting for the customer when they come in to pick up their cake.

Step 2: In small groups (2-3) create a swimlane diagram to document this process.
Create list of cakes that need to be made

Look at order for stock cakes and custom cakes

New orders?

Add cakes to the list

Build cakes

Put cake in blast freezer

1 day later

Pulls new cake out of blast freezer

Decorate cake

Put cake in display freezer

Put stack in the back freezer

To be sold?
Systems Analysis: Entity Relationship Diagrams - 1

After completing this activity you will be able to:
- Interpret an entity relationship diagram
- Construct a simple entity relationship diagram

Step 1: Individually

Reference the entity relationship diagram shown on screen. Prepare 3 questions that can be answered with the diagram:

1. What entity are we discussing?
2. Which attributes describe the student?
3. What is the relationship between the grade & the section?

Step 2: In small groups (2-3 students).

Ask other group members your questions. Reach a consensus on the correct answers.

Step 3: In small groups: consider the following scenario

TempleBank runs a free daycare service for all of its employees. The company wants to more easily identify employees who use the service and also needs to parents where to pick up their kids.
- Each employee can have multiple children enrolled in the daycare center.
- Employees can be described by their employee ID number, first name, last name, phone number and work location.
- Children can be described by their first name, last name, gender, and date of birth.
- Because children are provided with lunch and snacks, it is important to track dietary restrictions (e.g., gluten-free, vegetarian, vegan, food allergies, etc.). Each child is assigned to one of 3 rooms based on age, maturity, and parents work location.

1. Identify entities (hint: there are at least 3) and relationships among the entities

   see diagram attached

2. Identify multiple attributes for each entity.

   see diagram attached

Step 4: Students will be called upon at random to discuss
Step 5: In small groups: consider the following scenario

A wedding party DJ to create a database to keep track of their Compact Disc collection. For each CD relevant info includes genre, artist, songs and key information about each song.

A. Identify entities, 3-5 attributes per entity, and relationships
B. Draw a simple entity relationship diagram

Step 6: Students called upon at random to help draw diagram on board and discuss

Step 7: Answer two short-answer questions (individually)

1. When do you think an entity relationship diagram is most useful?
   
   When creating and manipulating databases (DB Design)

2. What do you think are the most common types of errors made when creating an ERD?
   
   Mixing up entity and attributes

Step 8: Rate this activity (individually)

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   Anything else you want the instructor to know? |
| Rating (1 to 5) |

Step 9: Submit completed activity sheet
Systems Analysis: Entity Relationship Diagrams - 2

After completing this activity you will be able to:
- Construct a simple entity relationship diagram

**Step 1: In small groups (2-3) construct an ERD based on the following narrative**

Each major at the Fox School of Business has at least one student professional organization (SPO). Some majors have more than one SPO. Keeping track of all of the SPOs, what department they are associated with, what majors they cover, the student leadership, the faculty advisors, etc. has become a nightmare. The school has decided to develop a database to keep track of all of these SPOs. The first step in developing a database is to model the data using an ERD. As a team, construct an ERD.

**Step 2: Students called upon at random to help draw diagram on board and discuss**
Step 3: In small groups (2-3) construct an ERD based on the following narrative

You are the president for a newly formed Temple club called "Owls Mix-n-Mingle". This is a social club that organizes low-cost outings to places like the Philadelphia Zoo and the Art Museum where students can meet and socialize with other students in a fun, relaxed setting. While this is not formally recognized as a "dating site", many people participate and their interests range from an interest in possible romantic connections to simply meeting new friends. Construct an ERD that models the data requirements for "Owls Mix-n-Mingle". Make sure that you capture information about both members and events that are hosted by the organization.

Step 4: Students called upon at random to help draw diagram on board and discuss

Step 5: Rate this activity (individually)

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Rating (1 to 5)
Systems Analysis: Decision Trees

After completing this activity you will be able to:

- Construct a simple decision tree

Step 1: In small groups (2-3 students) – Review the following narrative and construct a decision tree

There is a chance that your parents will be visiting this week-end. You have been wanting to go to the movies with them for a while so that’s the plan if they finally decide to come visit. But they have cancelled so many times this year that you have to think about a backup plan. Ok so if they are not coming, you want to play tennis but only if it’s sunny with no wind. But if it is really windy, you will plan on going shopping IF you have lots of money left over after the week is over. Now if it is going to rain all day, then you don’t feel like doing anything so you will stay in. Also if it’s windy with no rain but you have just a little bit of money left over then you will go to the movie (too bad for your parents).

If you decide to play tennis, then you will try the new cool place that just opened only if you had time to do your laundry. If not, then you will go to your regular spot.

Now you have to come up with some suggestions of movies, if your parents show up. If they are both in a good mood, then you will suggest an action pack movie, but if your mom or your dad is feeling down then you will suggest a comedy to cheer them up. But if they decide to bring your brother then there is no other choice then going to see sci-fi movie. Nice week-end plans!

See next page
Step 2: Discuss as a class

Step 3: Answer two short questions individually

1. Describes the 3 main elements included in a decision tree:
   - A decision point (condition) declared in a diamond shape
   - Values of condition (ex: sunny, cloudy, and rainy) are on the branches
   - Outcome (action, ex: shopping) are declared at the end of each branch in a rectangle

2. In which situations is it useful to draw a decision tree?
   - to explain complex business rules
   - to automate business rules
   - to train employees

Step 4: Rate this activity (individually)

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Systems Analysis: Conceptual Architecture Diagram

After completing this activity you will be able to:
- Construct a simple conceptual architecture diagram and ERD

Step 1: Individually – Review the following narrative

In part of MIS2501 – Enterprise IT Architecture, students are challenged to propose innovative products and services that can be delivered through a variety or digital ecosystems. In the spring of 2015 an MIS2501 student, Alex Savon, proposed a new application for the Apple Watch. After doing his research he determined that the accelerometer in the Apple Watch was sensitive enough to detect seizures in a person who has epilepsy and is wearing the watch.

Alex's proposal was for an application that would detect seizures and measure/report the duration and intensity of the seizure along with the person's heart rate throughout the event to the person's physician. In addition, information about this event would be sent via text messages to the loved ones of the person experiencing the seizure. With the detailed information provided by the application, the physician would be able to fine tune the treatment plan including adjusting medications. The end result is better health outcomes and an improved quality of life for the patient. Finally, as a result of the improved health outcomes, patients would need to see their physician less frequently which will result in a significant reduction in healthcare costs. Due to these financial benefits, the proposal was to provide this service to patients with their health insurance companies paying for the service.

With this use of technology, everybody wins. Patients experience better health outcomes and an improved quality of life and insurance companies reduce costs.

Step 2: In small groups (2-3 students) then discuss as a class.

Discuss the narrative and create a conceptual architecture diagram that describes this system.

Who are the users of this system and what are the interfaces used by each user?
- Patient, Physician, Insurer & Loved ones

What are the processes that this system needs to support?
1) Detect, measure & report episode
2) Analyze episodes & adjust treatment plan
3) Track covered procedures & episode
4) Report event via text

What resources (data) needs to be collected and managed by this system?
- Event monitoring & reporting DB
Sample Mini-Case Review

After completing this activity you will be able to:

- Improve your ability to work with swim lane diagrams and ERD on the upcoming exam

Step 1: Individually – Read the following narrative

Purchasing an Ad at the Drexel University Student Newspaper – Jeffrey Popovich

The Triangle, Drexel’s student newspaper, is a weekly publication distributed around Drexel’s University City and Center City campuses. The paper has a readership in the thousands; favored by students, faculty, and visitors of the university. A large portion of the newspaper’s budget comes from advertisements from local businesses. The process by which a business purchases an ad in the newspaper is multi-faceted and requires the effort of a variety of individuals.

First, a customer reaches out to the Sales Manager at the paper, expressing interest in purchasing a full-page advertisement for the following week. One week’s notice is required for all advertisements, as the staff needs time to craft the layout of the paper prior to submitting it to the publisher. The Sales Manager receives the request and creates an invoice in QuickBooks, which is then forwarded to the customer. The Sales Manager also asks the customer for any artwork they may have.

The customer then signs the invoice, sends payment (if acceptable), and emails the artwork to the Sales Manager. With the customer’s response in-hand, the Sales Manager takes the payment and sends it to the Accounting Team. The Accounting Team deposits the payment into the paper’s bank account, and makes note of the receipt in a dedicated Microsoft Excel file. Once the payment is confirmed, the artwork and copy for the ad are approved by the Managing Editor of the paper. If approved, the Editor places the ad into the paper to be printed, and confirms the submission to the Sales Manager. If the ad is not approved, the Managing Editor works with the client to create a new ad.

After the paper is printed, the Accounting Team sends a tear-sheet of the advertisement to the customer.