Chapter 2: Accountants as Business Analysts

Multiple Choice Questions

1. e
2. d
3. e
4. e
5. e
6. b
7. d
8. e
9. e
10. c
11. c
12. e
13. d
14. c
15. b
16. a
17. b
18. e
19. d
20. a
21. e
22. e

Discussion Questions

1. The answers will vary according to the student's background, but it is likely that they will feel best prepared to use technology and less prepared to design, manage, and evaluate technology.

2. Managing regulatory compliance would involve collection and maintenance of a wide variety of information. First, organizations would have to collect requirement information. Then, they would have collect process information to identify where process activities must comply with regulations. Finally, they would have ongoing collection of process performance data to ensure continued compliance and reporting.

3. BPMN activity diagrams support process documentation, process evaluation, and process improvement. Thus, BPMN diagrams would document the finance and accounting processes to support employee training. An accurate documentation would support an evaluation of process inefficiencies and potential process improvements including applications of technology, as well as a review of internal controls over the process and identification of potential weaknesses.

4. Student responses will vary depending on their experience, but most will mention training, SOX compliance, regulatory compliance, identifying and collecting process performance information, aiding audits, and so on.

5. Process modeling is iterative. The analyst will model the process and then confirm his/her model with process participants. The confirmation process would likely raise questions about completeness.

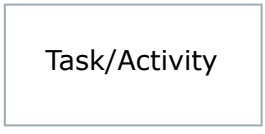
6. The use of pools and lanes help establish responsibility. It would be hard to enforce responsibility where multiple departments are involved. Additionally, the assignment process helps define tasks/activities at an appropriate level of detail that allows the models to be used for training, process change, performance management, etc.

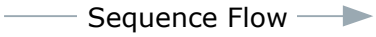
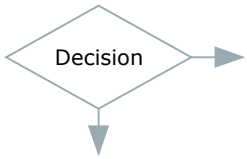
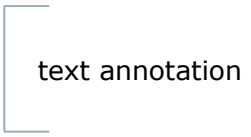
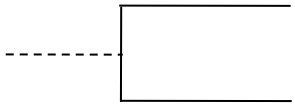
7. Exclusive gateways show distinct choices, such as when you select one option among multiple alternatives. Inclusive gateways allow selection of one or more options, such as ordering both an entrée and an appetizer or just an entrée. Parallel gateways take all possible options, such as when dining at a restaurant that charges one price for the meal that includes an appetizer, main course, beverage, and dessert.

8. When the process experiences a delay such as described, the best way to model that is through the use of an intermediate event, such as an intermediate message (catching) event.

9. Processes that start with a timer event could be time to prepare financial reports, time to pay taxes, time to attend class, etc.

10. BPMN diagrams serve similar purposes to flowcharts. The following table compares basic symbols and shows the similarities. The BPMN symbols have more capability to handle events and the Gateways are more flexible that the flowchart decision symbol. The extended list of symbols in the chapter shows that many flowchart symbols are closely tied to specific and outdated data processing methods, whereas the BPMN symbols are independent of the technology.

Element	BPMN Symbol	Flowchart Symbol
Events/ Start and End		
Activities		

Sequence Flows		
Gateways/ Decisions		
Annotations		

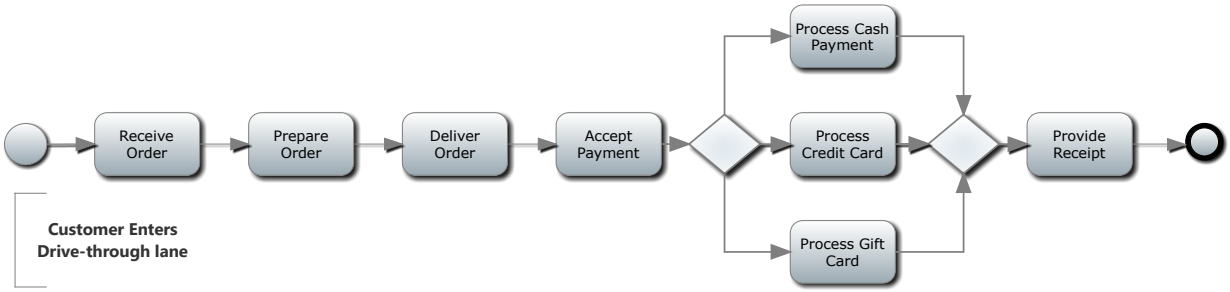
Comparing BPMN to data flow diagrams shows that the models are very different. Data flow diagrams do not have start, end, or intermediate event symbols. They do, however, clearly show the flow of data in a process or processes, where the BPMN diagram more clearly shows the sequence of activities.

Problems

(Note – Problems with "Connect" in parentheses below are available for assignment within Connect. The Connect-based solutions for all Problems can be found in the following section beginning on Page 11.)

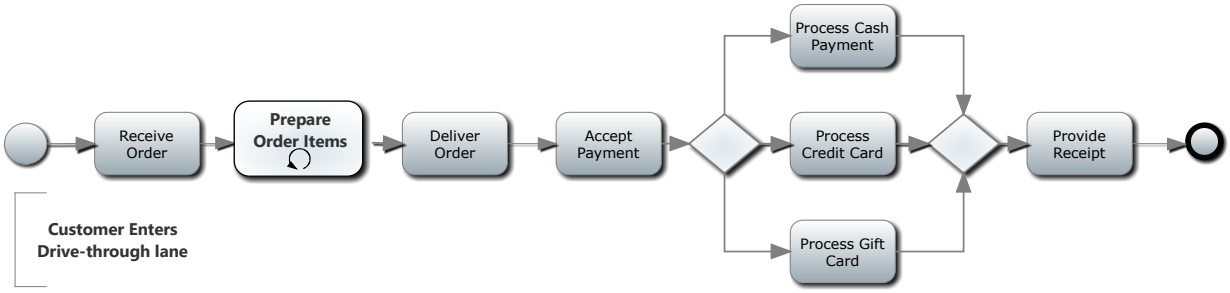
1. **(Connect)** Solutions for Parts a to d are below:

a. Solution should look similar to the following model:

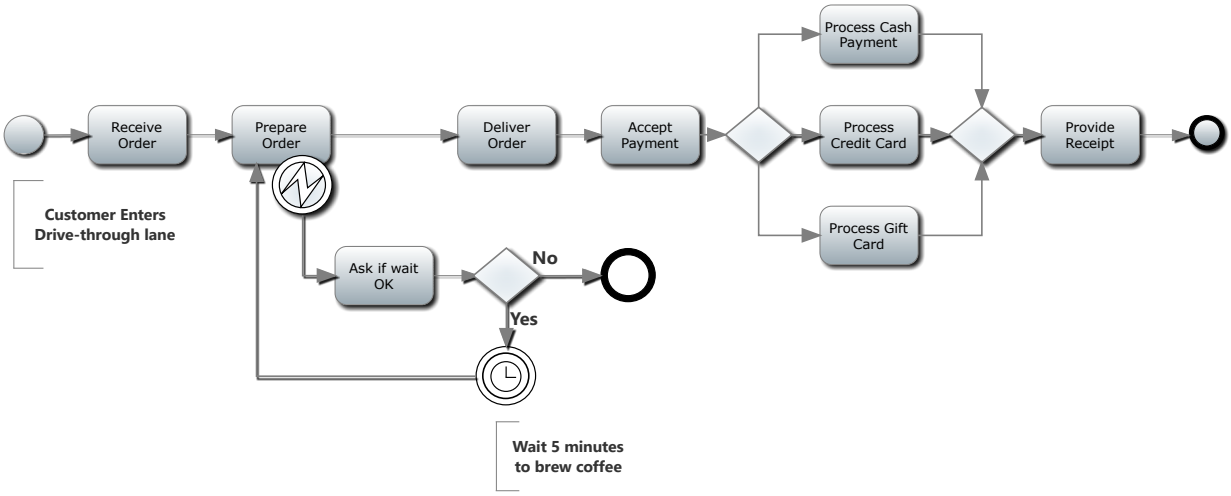


(Note that "review menu" is a customer task and would not be modeled in the Starbucks pool.)

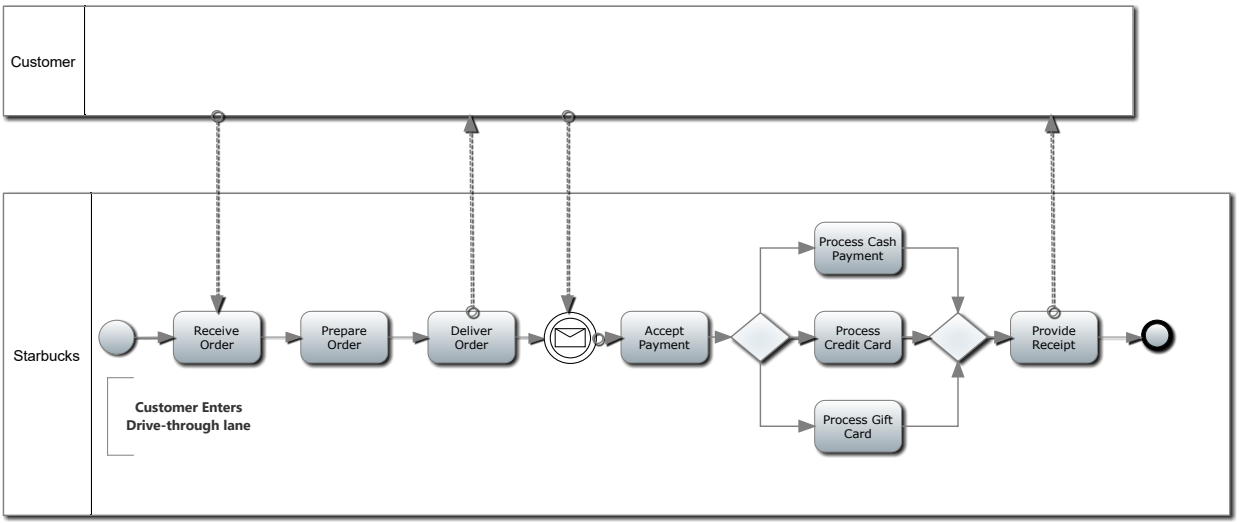
b. Solution should look similar to the following model. The looping task could also involve accepting payments, e.g., the customer pays partly by gift card and remainder by cash.



c. Same solution as problem 1, but adding the possibility that coffee will take 5 minutes to brew.

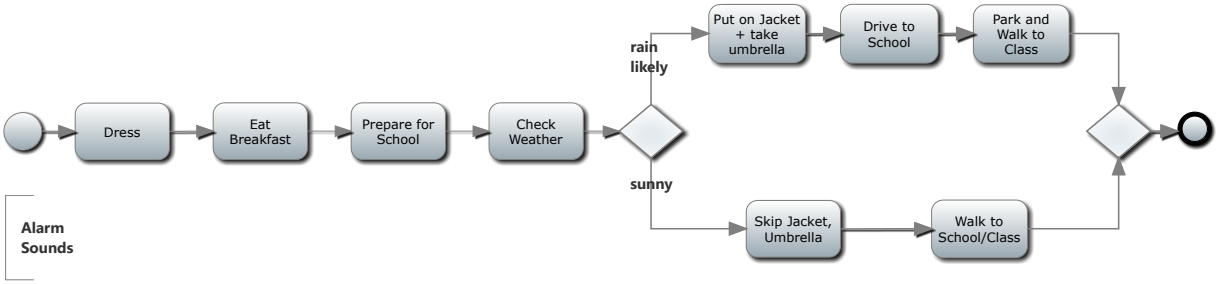


d. Same as problem 1, but including two pools, message flows, and an intermediate message event. This solution only includes one intermediate message event, but there could be a message event receiving and sending (catching and throwing) all message flows.

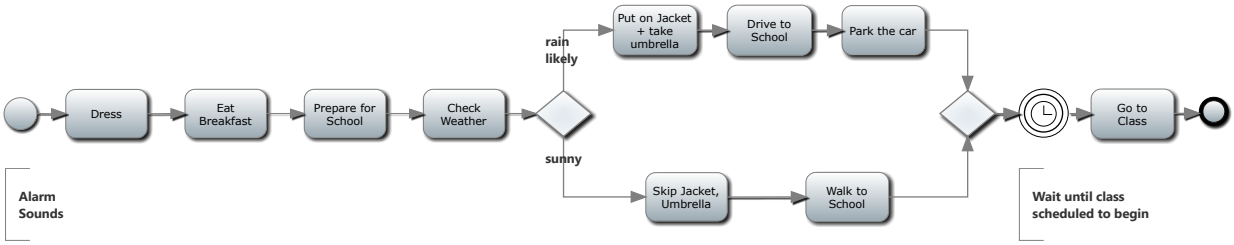


2. **(Connect)** Solutions for Parts a to c are shown below:

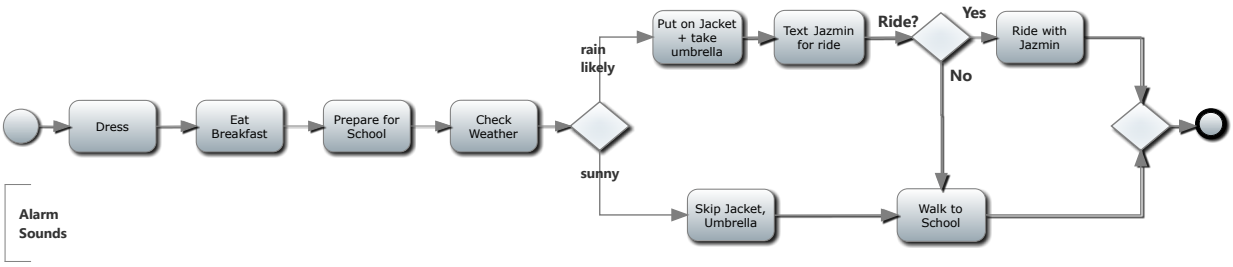
a. Solution should look similar to the following model:



b. Same as Part a, but add an intermediate timer event to indicate the wait between arriving at school and going to class.

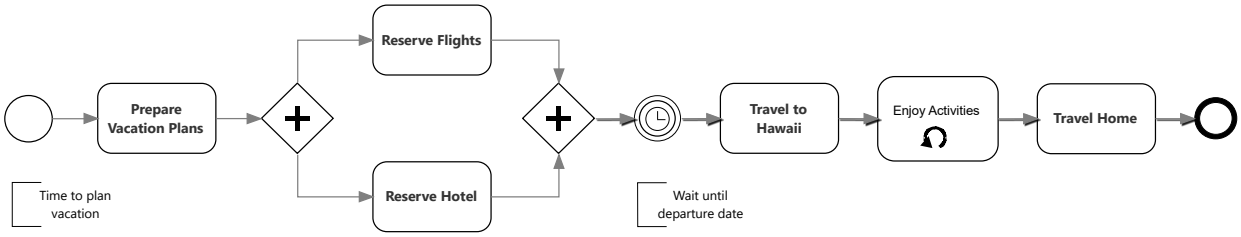


c. Same as Part a, but instead of driving, Larry texts Jazmin for a ride to school. If she can give him a ride, he rides to school with her. If not, he walks to school.

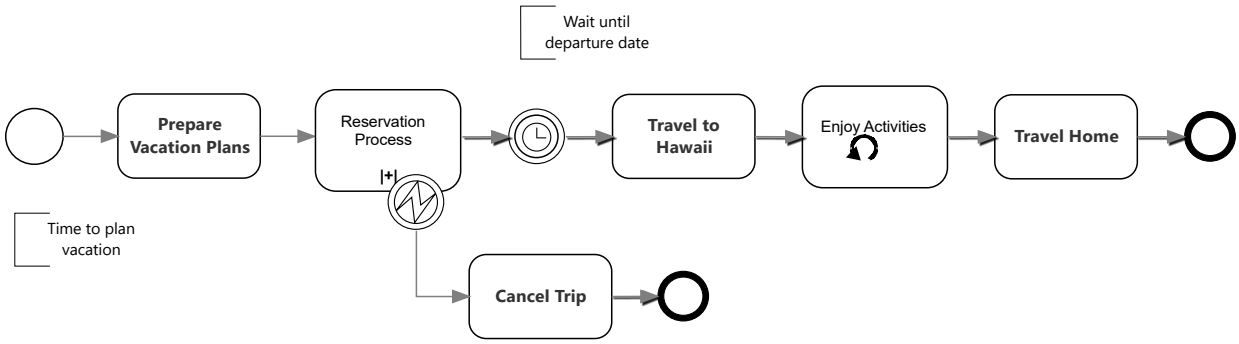


3. **(Connect)** Solutions for Parts a and b are shown below:

    a. Yannis plans a vacation to Hawaii.

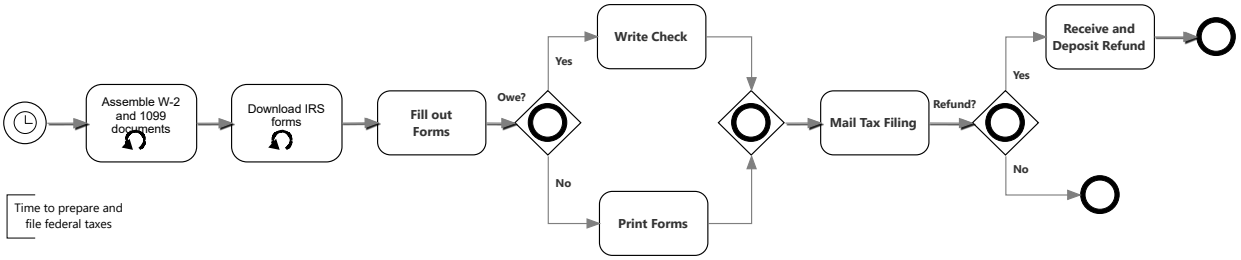


a. Same as Part a, but assuming that Yannis is having trouble staying within his budget. He tries alternate dates for flight and hotel reservations and cancels his trip if they are not acceptable. In this solution, the reservation process is presented as a collapsed subprocess. The details of the reservations subprocess, including testing alternate dates, could be modeled separately.

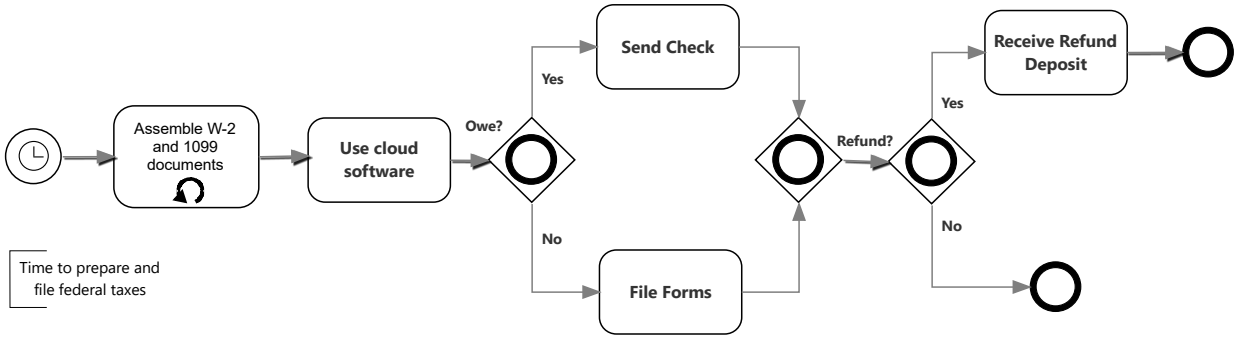


4. **(Connect)** Solutions for Parts a and b are shown below:

    a. Time to prepare and file your federal income taxes. Note that tasks could be represented as looping (for multiple forms or documents).

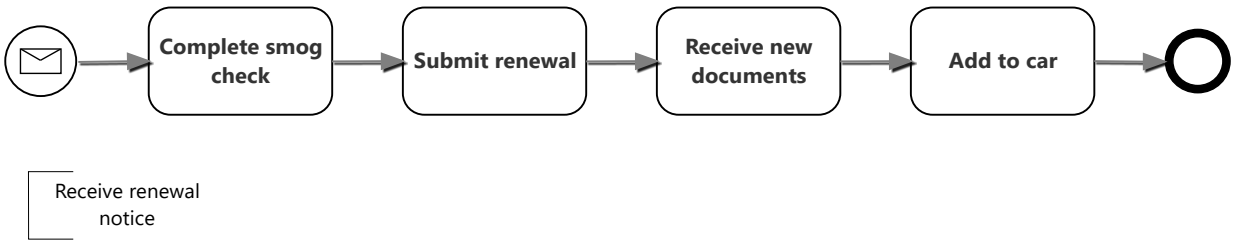


a. Same as Part a, but instead of manual preparation, you use an online tax system to prepare and submit your tax forms. The refund, if any, is sent directly to your bank.

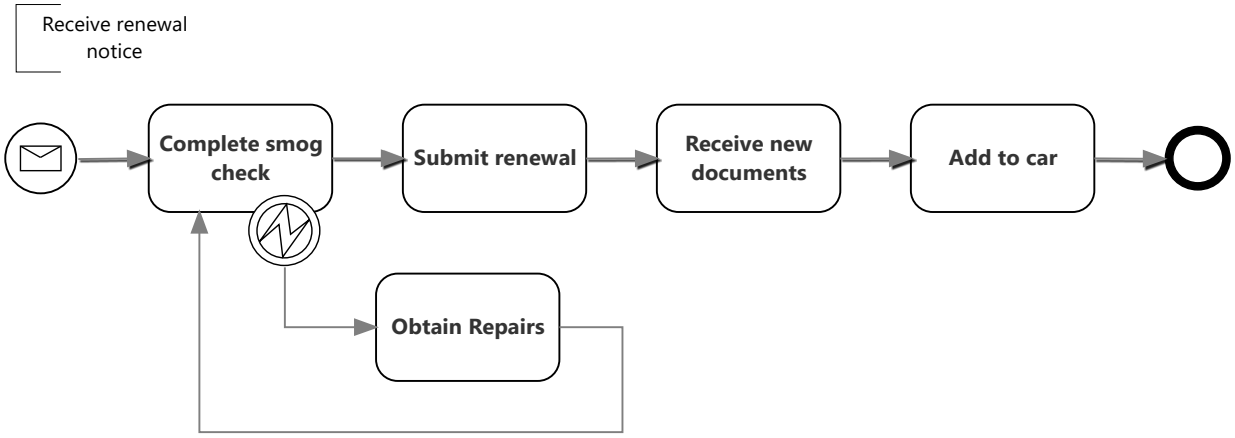


5. **(Connect)** Solutions for Parts a to c are shown below:

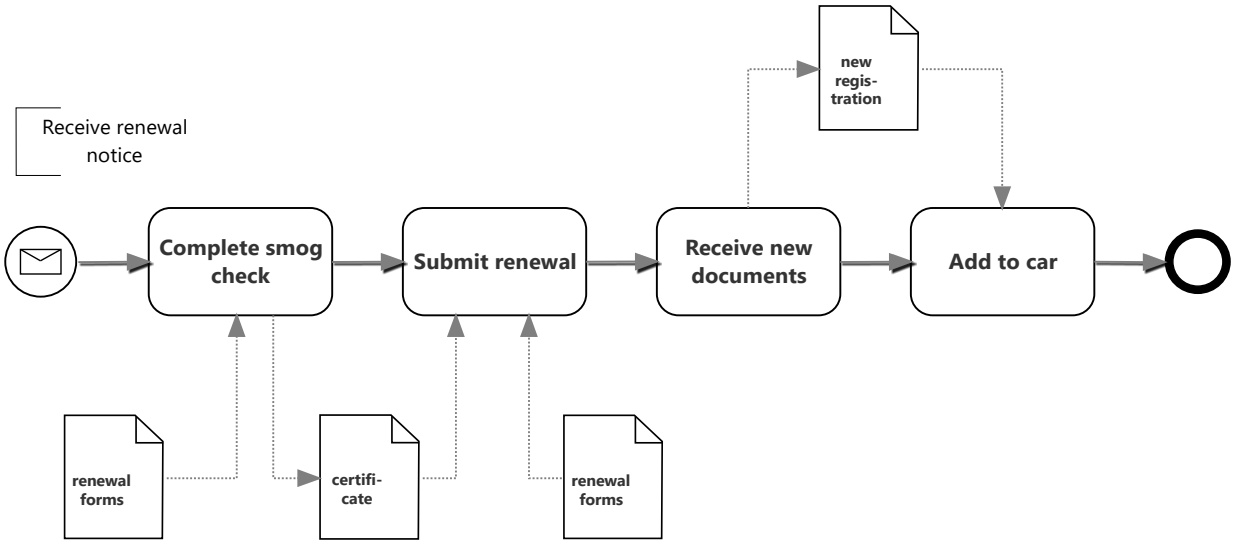
    a. Heide renews her automobile registration after completing smog check. Simple initial process.



    b. Same as Part a, but now the automobile fails the smog check and needs repairs from the dealer to pass. Note that you could use gateways to model the error condition.



    c. Same as Part a, but now the diagram uses data objects to represent the renewal forms received from the state, the smog check certificate, and the subsequent registration.

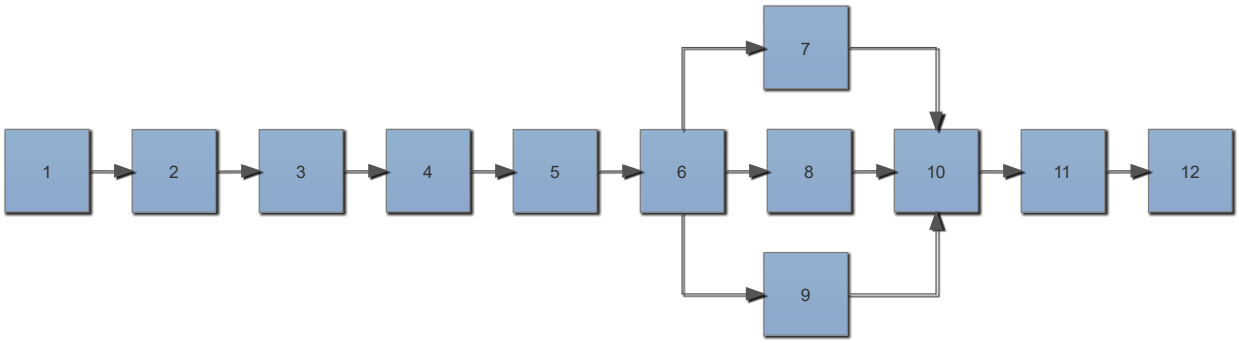


Problems – Solutions for Connect

Problem 1

Part A

Assume that you will complete your model with 12 elements in the sequence shown below.



1. Which BPMN symbol should replace block 1 above to start the process?
    1. **A circle with a thin solid perimeter**
    2. A rectangle with rounded corners
    3. A diamond
    4. A circle with a thick solid perimeter
    5. A rectangle with sharp corners
2. The name for the symbol that you selected to replace block 1 in the process is which of the following?
    1. A task
    2. A gateway
    3. An end event
    4. **A start event**
    5. An intermediate event
3. Which BPMN symbol should replace block 2 above in the process?
    1. A circle with a thin solid perimeter
    2. **A rectangle with rounded corners**
    3. A diamond
    4. A circle with a thick solid perimeter
    5. A rectangle with sharp corners
4. The name for the symbol that you selected to replace block 2 is which of the following?
    1. **A task or activity**
    2. A gateway
    3. An end event
    4. A start event
    5. An intermediate event
5. Which of the following is the best label or name to replace the number 2?
    1. Order received

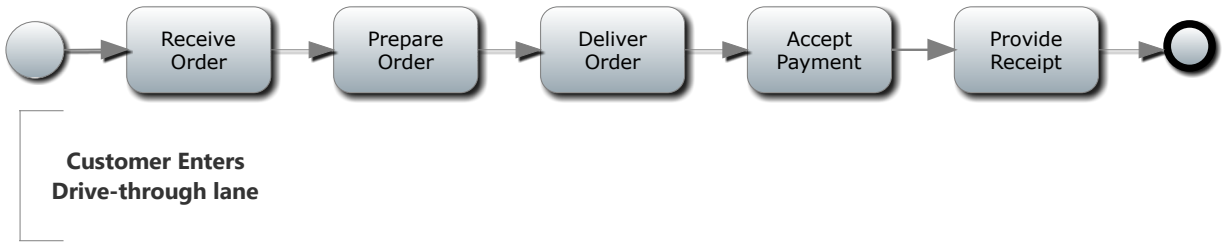
2. Prepare order
3. Receive order
4. Accept payment
5. None of these

6. Which of the following is the best label to replace the number 3?
    1. Order received
    2. Prepare order
    3. Receive order
    4. Accept payment
    5. None of these
7. Which of the following is the best label to replace the number 4?
    1. Order received
    2. Prepare order
    3. Order is delivered
    4. Deliver order
    5. None of these
8. Which of the following is the best label to replace the number 5?
    1. Order received
    2. Prepare order
    3. Receive order
    4. Accept payment
    5. None of these
9. After number 5, the process branches to process the type of payment. Which of the following BPMN symbols should then replace block 6 in the process?
    1. A circle with a thin solid perimeter
    2. A rectangle with rounded corners
    3. A diamond
    4. A circle with a thick solid perimeter
    5. A rectangle with sharp corners
10. The name for the symbol that you selected to replace block 6 in the process is which of the following?
    1. A task
    2. A gateway
    3. An end event
    4. A start event
    5. An intermediate event
11. Which of the following is the best label to replace the number 6?
    1. Order received
    2. Receipt is provided
    3. Provide receipt
    4. Accept payment
    5. None of these
12. Assume that blocks 7, 8, and 9 represent 3 options for processing payments. After that branching, the process then merges again in block 10. Which of the following is the name of the BPMN symbol that should replace block 10?
    1. A task
    2. A gateway
    3. An end event

4. A start event
5. An intermediate event

13. Which of the following is the best label to replace the number 11?
    1. Receipt is provided
    2. Prepare order
    3. Receive order
    4. **Provide receipt**
    5. None of these
14. Which of the following is the name of the BPMN symbol that should replace block 12?
    1. A task
    2. A gateway
    3. **An end event**
    4. A start event
    5. An intermediate event
15. Which of these describes the BPMN symbol that should replace block 12 above to end the process?
    1. A circle with a thin solid perimeter
    2. A rectangle with rounded corners
    3. A circle with a double line perimeter
    4. **A circle with a thick solid perimeter**
    5. A rectangle with sharp corners

Part B

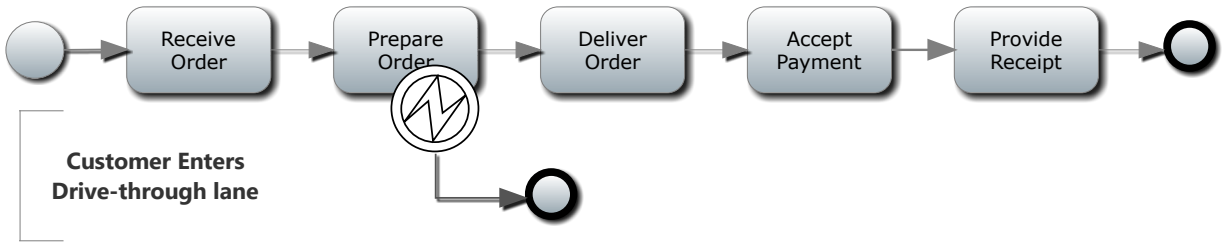


Assume the diagram above provides a high-level view of the process.

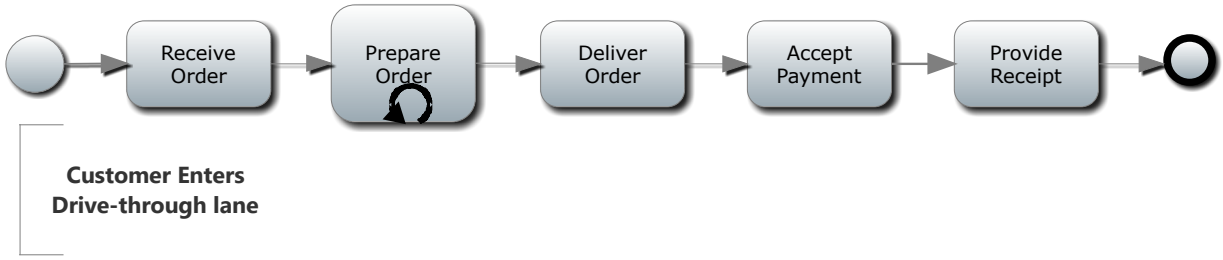
a. Which of the following is used to represent a looping task?
    1. Use a gateway before and after the task
    2. Create a collapsed subprocess
    3. **Add a circular arrow to the symbol**
    4. Add an intermediate timer event
    5. None of these

b. Assume that the Starbucks barista performs multiple preparation tasks to prepare the order. Which of the following diagrams best shows the looping task?

1.



2.



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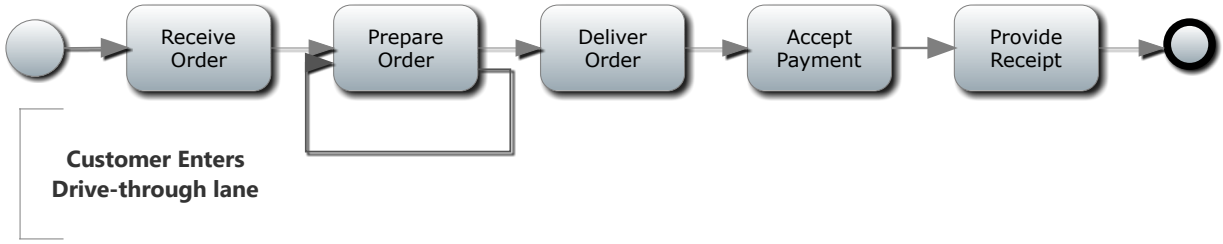

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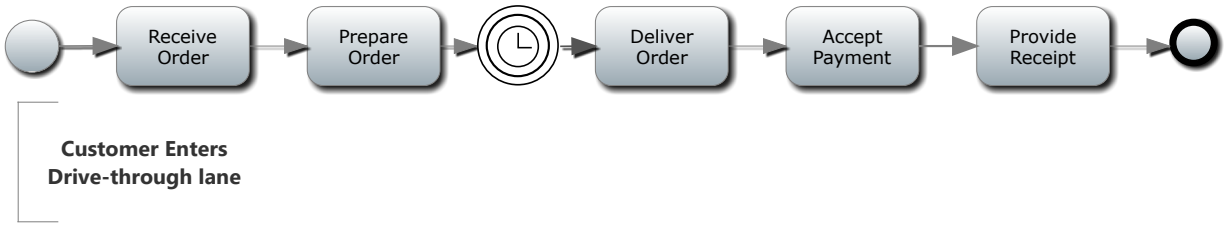
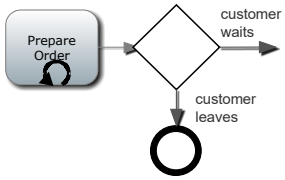


Part C

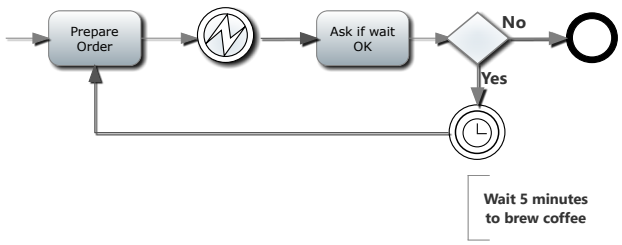
a. Which of the following is used to represent an intermediate error event?
   a. Place the intermediate error symbol on the perimeter of the task
   b. Use a gateway after testing whether coffee is ready
   c. Add a circular arrow to the symbol showing that the process repeats
   d. Add an intermediate timer event showing that the process is delayed
   e. None of these

b. Which of the following partial diagrams best models the described features?

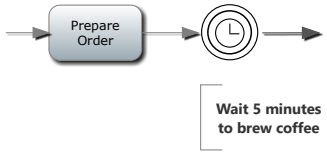
1.



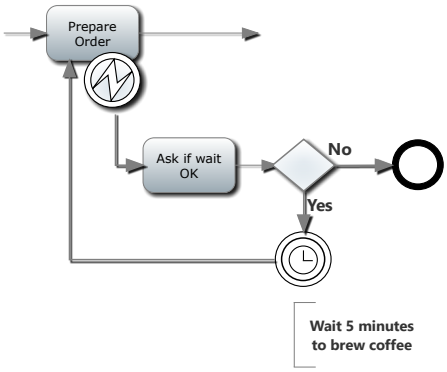
2.



3.



4.



Part D

a. Pools represent participants in a process. Which of the following is the best name for the pool representing the external participant?
    1. Starbucks
    2. Baristas
    3. **Customers**
    4. Drive-through lane
    5. None of these

b. Which of the following is most likely to be a name of a message flow coming into the Starbucks pool?
    1. **Customer Order**
    2. Delivered Order
    3. Answers to Customer Questions
    4. Customer Receipt
    5. None of these

c. Models often show the pool for the external participants as opaque. What are the advantages of this?
    1. Focuses on the message flows and activities for the internal participant
    2. Ignores activities in the external participant pool that are not relevant
    3. Reduces the complexity of the model
    4. Focuses on controllable process activities
    5. **All of these**

d. Intermediate message events can be catching or throwing. The events catch incoming message flows and throw outgoing message flows. Which of the following message flows could connect to an intermediate catching event in this process?
    1. Delivered products
    2. **Customer payments**
    3. Customer receipt
    4. Answers to customer questions
    5. None of these

e. Intermediate message events can be catching or throwing. The events catch incoming message flows and throw outgoing message flows. Which of the following message flows could connect to an intermediate throwing event in this process?

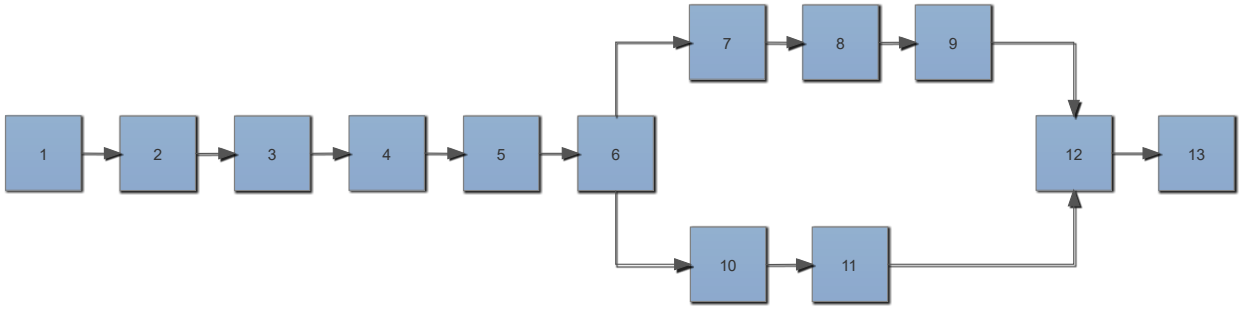
1. Customer order
2. Customer payments
3. **Customer receipt**
4. Answers to customer questions
5. None of these

f. Which of the following is required if you include any tasks or other BPMN elements in the Customers pool?
   1. **The sequence flow in the Customers pool must flow continuously from the start event to end events**.
   2. The message flows still connect to the edge of the Customers pool regardless of whether or not the pool is opaque.
   3. You do not need to show message flows if you include activities in the Customers pool.
   4. The Starbucks pool can be opaque if you include the activities in the Customers pool and the message flows.
   5. None of these.

Problem 2

Part A

Assume that you will complete your model with 13 elements in the sequence shown above.



1. Assume that block 1 is the start event that begins this process. From the problem description, what is the trigger for the start of the process?
    a. Time to go to school
    b. Alarm sounds
    c. The weather report
    d. A weekday starts
    e. None of these
2. What is the name of the BPMN symbol that should replace block 1?
    a. A task
    b. A gateway
    c. An end event
    d. A start event
    e. An intermediate event
3. What is the name of the BPMN symbol that should replace block 2?
    a. A task
    b. A gateway
    c. An end event
    d. A start event
    e. An intermediate event
4. Which of the following is the best label for block 2?
    a. Clothes are put on
    b. Get dressed
    c. Eat breakfast
    d. Prepare for school
    e. None of these

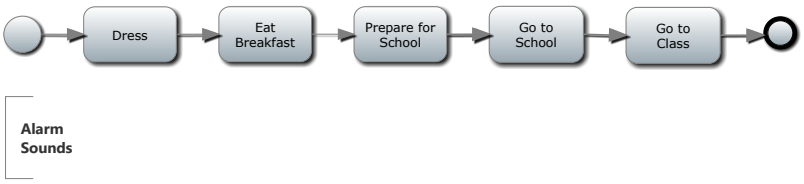
5. Assume that block 5 represents the "check weather" task. Then, block 6 represents where the process branches depending on weather. What kind of gateway should be used to replace block 6?
    a. Inclusive gateway
    b. Exclusive gateway
    c. Parallel gateway
    d. Conditional gateway
    e. None of these
6. Assume that block 7 represents a task labeled "put on jacket and take umbrella," and block 8 represents a task labeled "drive to school." Which of the following is the best label for block 9?
    a. Take of jacket
    b. Park and walk to class
    c. Drive to class
    d. Walk to class
    e. None of these
7. Which of the following is the name of the BPMN symbol that should replace block 12 to show that the two sequence options merge?
    a. A task
    b. A gateway
    c. An end event
    d. A start event
    e. An intermediate event
16. Which of the following describes the BPMN symbol that replaces block 12?
    1. A circle with a thin solid perimeter
    2. A rectangle with rounded corners
    3. A circle with a double line perimeter
    4. A circle with a thick solid perimeter
    5. A diamond
17. Which of the following is the name of the BPMN symbol that should replace block 13?
    1. A task
    2. A gateway
    3. An end event
    4. A start event
    5. An intermediate event

Part B

Consider the same narrative as shown in the beginning, but add an intermediate timer event to indicate the wait between arriving at school and going to class when the class is scheduled to start.

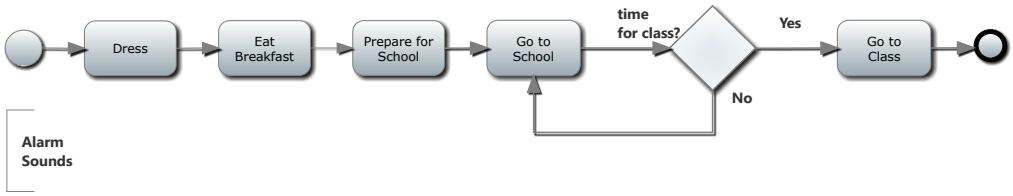
a. Which of the following best describes the purpose of an intermediate timer event?
    1. Causes the process flow to branch
    2. Allows the process flows to merge
    3. Delays process flow until a specified time or specified duration
    4. Starts a process at a specified time
    5. None of these

b. Consider the following high-level model of this process. Where would you insert the intermediate timer event?



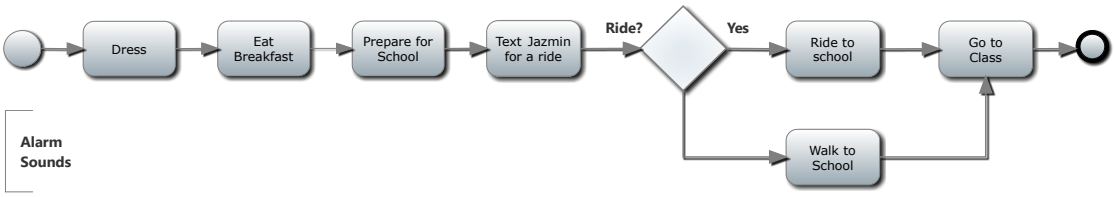
1. Between the start event and the dress task.
2. Between prepare for school tasks and go to school task.
3. **Between go to school task and go to class task**.
4. Between go to class task and end event.
5. None of these.

c. Consider the following model. Why isn't this an acceptable equivalent to the one shown in b above with an intermediate timer event?

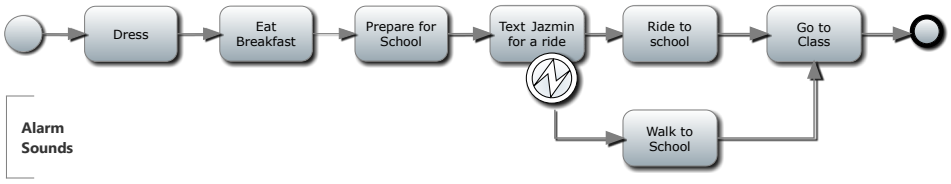


1. The flow loops back to going to school and you are already there.
2. Gateways don't develop information, they direct flow based on information from the previous task/activity.
3. The loop doesn't delay the flow until a specified time.
4. **All of these are reasons why model c is not equivalent to model b**.

Part C



a. Assume the diagram above correctly summarizes the activity in question. Why is the following diagram not equivalent to the diagram above?



1. **This diagram assumes that an error occurs when Jazmin will not give you a ride**.
2. This diagram assumes that you don't always text to ask for a ride.
3. This diagram assumes Jazmin's car will not break down.
4. This diagram assumes that you do not want to walk to school.
5. None of these explains why the two diagrams are not equivalent.

Problem 3

Part A

For each step in the diagram from the beginning, enter the appropriate symbol and label. If two events can occur at the same time, enter information for both. The 1st, 4th, and 10th steps have been entered for examples.

Step	Symbol(s)	Label(s)
1	a.	x
2	**d**	**b**
3	**g**	**x**
4	d and d	c and d
5	**g**	**x**
6	**i**	**x**
7	**d**	**e**
8	**h**	**a**
9	**d**	**f**
10	b	x

Select from the following symbols

a. Start Event

b. End Event

c. Intermediate Event

d. Task

e. Exclusive Gateway

f. Inclusive Gateway

g. Parallel Gateway

h. Looping Task

i. Intermediate Timer Event

j. Intermediate Error Event

Select from the following labels

a. Enjoy vacation activities

b. Prepare vacation plans

c. Reserve Flights

d. Reserve Hotel

e. Travel to Hawaii

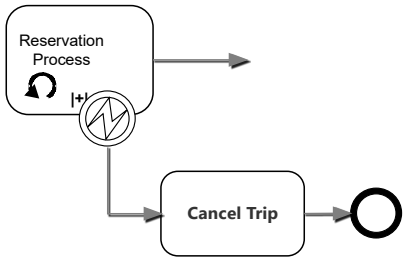
f. Travel to Home

x. No label

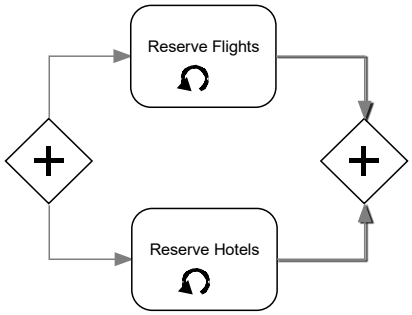
Part B

a. Focusing on the part of the diagram that describes the reservation process, both for flights and hotels. Which of the following partial models would acceptably replace the parallel gateways and reservations tasks so that the model addresses the new situation?

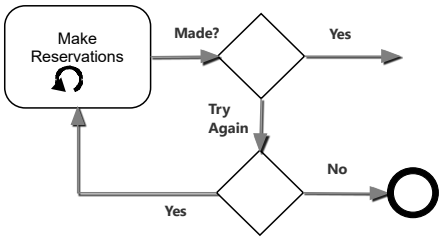
1.



2.



3.



4. None of these

Problem 4

Part A

For each step in the diagram from the beginning, enter the appropriate symbol and label. If two events can occur at the same time, enter information for both. The 2nd, 6th, and 10th steps have been entered for examples.

Step	Symbol(s)	Label(s)
1	**k**	**x**
2	d and h	a
3	**d and h**	**b**
4	**d and h**	**c**
5	f	x
6	d and d	g and e
7	**f**	**x**
8	**d**	**d**
9	**f**	**x**
10	b and d	f and x
11	**b**	**x**

Select from the following symbols

a. Start Event
b. End Event
c. Intermediate Event
d. Task
e. Exclusive Gateway
f. Inclusive Gateway
g. Parallel Gateway
h. Looping Task
i. Intermediate Timer Event
j. Intermediate Error Event
k. Start Timer Event

Select from the following labels

a. Assemble W-2 and 1099 Forms
b. Download IRS forms and instructions
c. Fill out forms
d. Mail Tax Filing
e. Print Forms
f. Receive and Deposit Refund
g. Write check
x. No label

Part B

For each step in the diagram from the beginning, enter the appropriate symbol and label. If two events can occur at the same time, enter information for both. The 5th and 8th steps have been entered.

Step	Symbol(s)	Label(s)
1	**k**	**x**
2	**d and h**	**a**
3	**d**	**h**
4	**f**	**x**
5	d and d	d and e
6	**f**	**x**
7	**f**	**x**
8	b and d	f and x
9	**b**	**x**

Select from the following symbols

a. Start Event
b. End Event
c. Intermediate Event
d. Task
e. Exclusive Gateway
f. Inclusive Gateway
g. Parallel Gateway
h. Looping Task
i. Intermediate Timer Event
j. Intermediate Error Event
k. Start Timer Event

Select from the following labels

a. Assemble W-2 and 1099 Forms
b. Download IRS forms and instructions
c. Fill out forms
d. Submit tax return
e. Send check
f. Receive and Deposit Refund
g. Write check
x. No label
h. Use cloud software

Problem 5

Part A

For each step in the diagram from the beginning, enter the appropriate symbol and label. If two events can occur at the same time, enter information for both. For example, the 2nd and 6th steps are entered.

Step	Symbol(s)	Label(s)
1	**a**	**x**
2	d	a
3	**d**	**b**
4	**d**	**c**
5	**g**	**x**
6	d and d	e and f
7	**b**	**x**

Select from the following symbols

a. Start Event
b. End Event
c. Intermediate Event
d. Task
e. Exclusive Gateway
f. Inclusive Gateway
g. Parallel Gateway
h. Looping Task
i. Intermediate Timer Event
j. Intermediate Error Event
k. Start Timer Event

Select from the following labels

a. Complete smog check
b. Submit registration renewal
c. Receive new registration
d. Obtain repairs
e. Place registration in glove box
f. Place tags on license
x. No label

Part B

For each step in the diagram from the beginning, enter the appropriate symbol and label. If two events can occur at the same time, enter information for both. For example, the 2nd and 7th steps are entered.

Step	Symbol(s)	Label(s)
1	**l**	**x**
2	d and j	a and x
3	**d**	**d**

4	**d**	**b**
5	**d**	**c**
6	**f**	**x**
7	d and d	e and f
8	**b**	**x**

Select from the following symbols

a. Start Event
b. End Event
c. Intermediate Event
d. Task
e. Exclusive Gateway
f. Inclusive Gateway
g. Parallel Gateway
h. Looping Task
i. Intermediate Timer Event
j. Intermediate Error Event
k. Start Timer Event
l. Start Message Event

Select from the following labels

a. Complete smog check
b. Submit registration renewal
c. Receive new registration
d. Obtain repairs
e. Place registration in glove box
f. Place tags on license
x. No label

Part C

For each step in the diagram from the beginning, list the data object used or created during that step. Steps 1 and 2 are filled in for example.

Step	**Symbol(s)**	**Label(s)**	**Data Object Used**	**Data Object Created**
1	Start Message Event	None	None	None
2	Task	Complete Smog Check	**a**	**b**
3	Task	Submit Renewal	**a and b**	**None**
4	Task	Receive New Documents	None	c
5	Inclusive Gateway	None	**None**	**None**
6	Task, task	Place registration in glove box,	**a and b**	**None**

		Put tags on license		
7	End Event	None	**None**	**None**

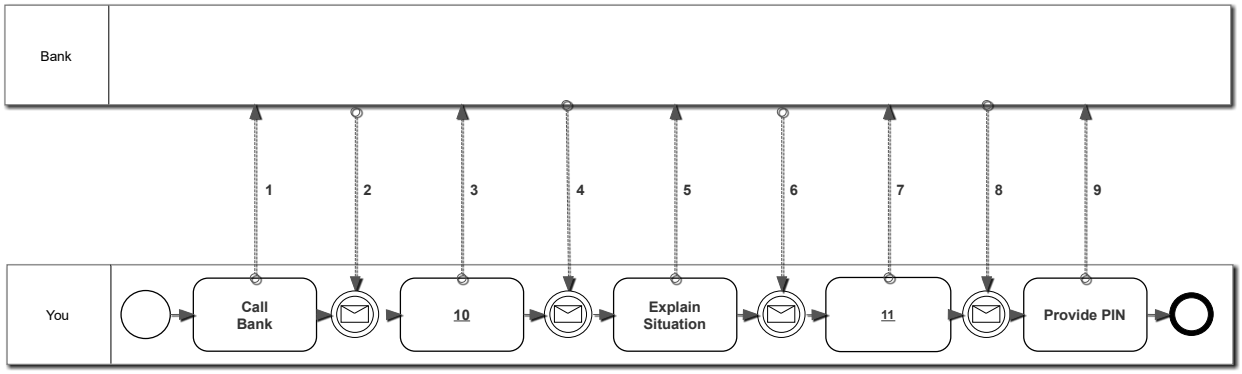
Select from the following data objects

a. Renewal forms
b. Smog certificate
c. New registration and tags

Problem 6 (Available in Connect Only)

Consider the following description and then select the appropriate names for the numbered message flows and activities in the diagram below.

You lost your wallet and your credit card. You recognize that you need to call your bank to cancel the credit card and get a new one. This process starts when you call the bank's central number. The bank's automated system provides you several options. You select the option that allows you to speak to a customer service representative. After a short wait, the representative answers your call and asks how they can help. You explain the situation. The representative cancels the credit card. Then, you ask if the bank could expedite delivery of a new card, since you are leaving on vacation in a few days. The representative makes the arrangements and then asks you to set a new PIN for your card. You select your new PIN. The representative then summarizes the transactions and asks if there is anything else. You say no and the call ends.



Select your answers from the following options:

A. Request expedited delivery
B. How can I help?
C. Call to bank
D. PIN selection
E. Confirm delivery and request PIN
F. Select call system option
G. Selected option
H. Lost card information
I. Card cancelled and new card issued information
J. Bank system options
K. Request for expedited delivery
L. Write down new card number

Solution:

1. C
2. J
3. F
4. B
5. H
6. I
7. K
8. E
9. D
10. F
11. A