

## Lesson: Exception processing

### Overview

### Why is this lesson important to you?

You are designing an IBM FileNet BPM solution. You must handle the resolution of possible business process exceptions in your workflow definition. You override the Malfunction system map. You must test the workflow to verify the changes.

### Activities

- Resolve business process exceptions: Challenge
- Resolve business process exceptions: Walkthrough

### Lesson dependency

You must have successfully completed the previous lesson activities.

### Requirements

The activities in this unit assume that you have access to the student system configured for these activities.

### Virtual student system

Connect to your student system to complete these lab activities. See the Readme First file on the Materials tab if you need instructions to connect to the student system.

### System startup and system check

IBM FileNet P8 software services on your student system must be started. If you have not already started the IBM FileNet P8 software on your system, do the procedures in *Appendix A: System startup and system check* before proceeding with the lessons in this unit.

Perform a system check whenever you start up an IBM FileNet P8 system or start working on a system that is in an unknown state. These activities assume that you have performed a system check when you begin an activity session.

## User accounts

Type	User ID	Password
FileNet Workplace XT	filenetadmin	IBMFileNetP8



### Note

Passwords are always case-sensitive. User names are not case-sensitive. Many user names use only lowercase letters on the student system.

## Resolve business process exceptions: Challenge

### Challenge

Open and launch a prepared workflow definition file that contains a business process exception. Use administrative tools to identify and correct the malfunction in the running workflow. Modify the workflow definition file by overriding the Malfunction system map to allow a loan manager to review the exception and correct malfunctions. A loan manager selects from one of three choices: Terminate loan, Retry, or Skip. Use the data in the table to complete this activity.

### Data

Item	Value
Prepared workflow definition file	<a href="C:\Labs\F145\FlowControl\Loan">C:\Labs\F145\FlowControl\Loan</a> Processing - Exception Example Start.pep
Workflow Data Fields	<ul style="list-style-type: none"><li>• Boolean, false retry_option,</li><li>• String, "" error_message,</li><li>• Integer, 0 error_number,</li></ul>

Review Exception step on Malfunction map	<p>Assignment after Completion:</p> <ul style="list-style-type: none"> <li>• Name: 0, retry_option</li> <li>• Expression: if (F_Responses[2] &gt; true, false)</li> </ul> <p>Responses:</p> <ul style="list-style-type: none"> <li>• Terminate loan</li> <li>• Retry</li> <li>• Skip</li> </ul> <p>Activity Type: LoanManager Work Queue</p> <p>Selected Parameters:</p> <ul style="list-style-type: none"> <li>• customer_name [RW]</li> <li>• down_payment [RW]</li> <li>• error_message [Read]</li> <li>• error_number [Read]</li> <li>• interest_rate [RW]</li> <li>• loan_amount [RW]</li> <li>• loan_id [RW]</li> <li>• loan_officer_group [RW]</li> <li>• monthly_payment [RW]</li> <li>• status [RW]</li> </ul>
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Item	Value
Return step on Malfunction map	Return Expression: <code>retry_option</code>

Define the following three assignments after completion of StartStep on the Malfunction map.

Name	Expression
<code>error_message</code>	<code>F_LastErrorText</code>
<code>error_number</code>	<code>F_LastErrorNumber</code>
<code>status</code>	<code>error_message</code>

## Verification

- You must launch and process your final workflow definition through to completion without errors.
- Your Malfunction system map must look similar to the following diagram. This diagram contains a Review Exception step with conditional routing.



# Resolve business process exceptions: Walkthrough

## Introduction

This exercise gives you practice in using exception handling techniques in a workflow definition. These procedures present a simple example of a workflow exception.

In a production environment, a process designer generally works with application developers to determine possible business processing exceptions and design appropriate exception handling routines, which might include custom programs.

### ***Procedure 1: Determine the cause of workflow malfunction***

In this procedure, you launch a prepared loan processing workflow definition that contains a business process exception. You locate and determine the error using administrative tools and correct the malfunction in the running workflow.

1. On your student image, log in to Workplace XT using the filenetadmin user account listed in the "Lesson Overview" section.
2. Open and explore a prepared workflow definition file.
  - a. In Workplace XT, click Tools > Advanced Tools > Process Designer.
  - b. Click File > Open.
  - c. Locate and open the following file:

<C:\Labs\F145\FlowControl\Loan> Processing - Exception Example Start.pep

- d. Explore the workflow definition to familiarize yourself with the process flow and notice the following items:
  - This workflow definition is a simplified version of the loan processing workflow that you worked with in the previous lesson. You work only with the Prepare Loan Map submap in this activity.
  - The Prepare Loan Map submap was simplified by removing the checkpoint logic to save time when testing for a workflow exception. The Process Loan Map and Complete Loan Map submaps are not executed.
  - In Workflow Properties, the loan\_officer\_group workflow group is defined and contains no members.
  - In the Prepare Loan Map, the Get Rate and Payment step is assigned to the loan\_officer\_group workflow group.
  - An assignment before execution of the Get Rate and Payment step assigns an invalid user account to loan\_officer\_group.
  - The Not Valid route includes a condition to check for null field parameters for customer\_name, loan\_amount, loan\_document, loan\_term, and loan\_date.

## 3. Validate and launch the workflow definition.

## a. Validate the workflow.

Notice that the workflow validation is successful despite the fact that it contains a business processing exception, an invalid workflow group assignment.

## b. Click File &gt; Launch Main Workflow.

## c. Complete the “Save the workflow definition to an object store” wizard using the following information:

- Object store: LoanProcess > Workflows
- Document Title: Loan Processing Workflow – Exception
- Security: <Accept default values.>

## 4. Complete the Launch Step processor.

## a. In the Launch Step window, click Data Fields.

## b. In the Data Fields view, type the following values in the fields:

- customer\_name: Sam Eden
- down\_payment: 8000.
- loan\_date: <a future date and time>
- loan\_id: E123
- loan\_term: 15
- purchase\_price: 99000.

## c. In the Attachments view, assign an attachment of your choice to loan\_document.

## d. Click Launch.

## 5. Use Process Administrator to locate the work item.

## a. In Process Designer, click Tools &gt; Process Administrator.

## b. Construct and execute a filtered search of LoanRoster by using the loan\_id exposed field and the data in the following table.

Search criteria	Value
Look for	Work Items
In	Workflow Roster
Select one	LoanRoster
Search mode	Edit (all fields)
Criteria	loan_id = 'E123'

## c. In the results pane, locate your work item.

## d. Notice that the work item is flagged with the exception symbol and is waiting in the Conductor queue.

## 6. Determine the cause of the workflow exception.

## a. Select the work item in the results pane.

- b. Right-click the work item and click View Information Stack.
  - c. In the Information Stack window, click the work item listed in the top pane.
  - d. In the bottom pane, view information about the exception including the map and step where the error occurred and a description of the error.
- Tip:** You can resize the window to view the entire message. Or you can hover your mouse pointer over the Error Message to display the entire message as a tool tip.
- e. Notice that the malfunction occurred at the Get Rate and Payment step. This step was assigned to an invalid user and the user information cannot be found.
  - f. Click Close to close the Information Stack window.
7. Correct the error and complete processing of the work item.
- a. In Process Administrator, select the work item.
  - b. Click Tasks > Workflow Groups.
  - c. Click OK in the message window about locking the work item.
  - d. In the Manage Workflow Groups window, remove UnknownUser from the list of Selected Users.
  - e. Use the options to search for the filenetadmin user.
  - f. Select filenetadmin and click Add to move filenetadmin to the listed of Selected Users.
  - g. Click OK.
  - h. In Process Administrator, scroll across the results pane to locate the loan\_officer\_group field in the work item.
  - i. Verify that filenetadmin is assigned to this workflow group.
  - j. Click File > Save All Changes.
  - k. Click Tasks > Complete Work.
  - l. In the Complete Work window, select the item in the top pane and click OK.
  - m. Click Find Now to re-execute the roster search.
  - n. Verify that the work item is now in the LoanCustomer queue and notice that the item is no longer flagged as an exception.
  - o. Select the work item in the results pane.
  - p. Click Tasks > Complete Work.
  - q. In the Complete Work window select the item in the top pane and click OK.
  - r. Click Find Now to re-execute the roster search.
  - s. Select the work item in the LoanUnderwriter queue in the results pane.
  - t. Click Tasks > Complete Work.



- u. In the Complete Work window select the item in the top pane and click OK.
- v. Minimize Process Administrator.



### Information

In step 7, you corrected the error at the Get Rate and Payment step by assigning a valid user to the loan\_officer\_group workflow group using an administrative tool. Then you were able to complete the processing of the workflow. In the next procedure, you modify the workflow definition design to allow a loan manager to handle business exceptions.

## ***Procedure 2: Override the Malfunction map***

In this procedure, you override the Malfunction map to send the work item to a loan manager in the event of an exception. The loan manager corrects the malfunction.

1. Add a new workflow data field and override the Malfunction map.
  - a. Return to Process Designer.
  - b. In the Workflow Properties Data Fields tab, add the following new data fields.

Name	Type	Expression
retry_option	Boolean	false
error_number	Integer	0
error_message	String	""

- c. On the map toolbar, click Create Map.
  - d. Click Override Inherited Map.
  - e. Select the Malfunction map.
  - f. Click OK.
  - g. Notice that the Malfunction map is displayed with the three default steps.
2. Redefine the Malfunction map.
  - a. Select the Review step.

b. Revise the step properties for the Review step using the following information:

- Step Name: Review Exception
- Activity Type: LoanManager Work Queue
- Instructions in Step Processor: Review the error, correct it if possible, and select a response.
- Selected
  - Parameters: -
  - customer\_name [RW] -
  - down\_payment [RW] -
  - error\_message [Read] -
  - error\_number [Read] -
  - interest\_rate [RW] -
  - loan\_amount [RW] -
  - loan\_id [RW]
  - loan\_officer\_group [RW]
  - monthly\_payment [RW]
  - status [RW]

c. Click the Routing tab.

d. Define the following Responses:

- Terminate loan
- Retry
- Skip

e. Click Assignments > After Completion.

f. Define the following assignment after completion:

- Name: retry option
- Expression: `if (F_Responses[2] > 0, true, false)`

g. On the map, right-click the Return step and click Delete.

h. From the General System Palette, drag a TerminateProcess system step onto the map and place it to the right of the Review Exception step.

i. Draw a route from the Review Exception step to TerminateProcess.

j. Define the following route properties.

- Name of route: Terminate
- Conditional Route: Selected
- Responses: ANY (Terminate loan)

k. From the General System Palette, drag a Return system step onto the map and place it below the Review Exception step.

l. Type the following text in the Return Expression field: `retry_option`

m. Draw a route from the Review Exception step to the Return step.

n. Replace the default route name with the following text: `Continue`

**Note**

If the loan manager selects the second response (Retry) at the Review Exception step, then the workflow returns to the step where the malfunction occurred and retries the step. Otherwise, the workflow returns, skips the step, and continues to the next step.

3. Capture the current error message and error number to display in the Review Exception step.

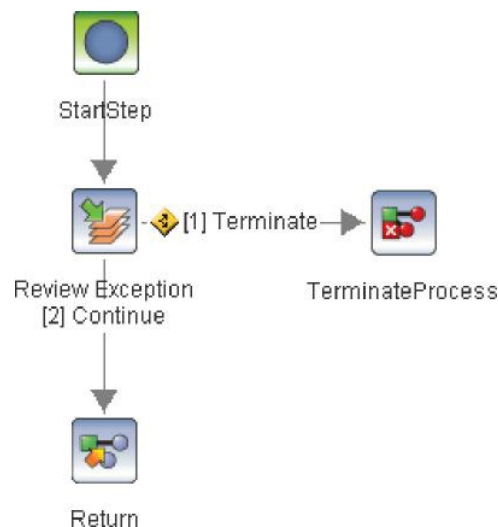
- a. Click the StartStep step on the Malfunction map.
- b. Define the following Assignments Before Execution.

Name	Expression
error_message	F_LastErrorText
error_number	F_LastErrorNumber
status	error_message

**Information**

F\_LastErrorText is a string system field that contains the text message associated with the last exception that occurred. F\_LastErrorNumber is an integer system field that contains the error number associated with the last exception that occurred.

- c. Verify that your Malfunction map looks similar to the following diagram. This diagram contains a Review Exception step with conditional routing.



**Procedure 3: Test exception processing using the Malfunction map**

1. Validate and launch the workflow definition.
  - a. Validate the workflow and correct validation errors, if any.
  - b. Click File > Launch Main Workflow.
  - c. Complete the “Checkin Workflow Definition” wizard using the following information:
    - Document Title: Loan Processing Workflow – Exception
    - Security: <Accept default values.>
2. Complete the Launch Step processor.
  - a. In the Launch Step window, click Data Fields.
  - b. In the Data Fields view, type the following values in the fields:
    - customer\_name: Joe Jenkins
    - down\_payment: 9000.
    - loan\_date: <a future date and time>
    - loan\_id: J456
    - loan\_term: 15
    - purchase\_price: 97000.
  - c. In the Attachments view, assign an attachment of your choice to loan\_document.
  - d. Click Launch.
3. Use Process Administrator to locate the work item.
  - a. Switch to Process Administrator.
  - b. Construct and execute a filtered search of LoanRoster by using the loan\_id exposed field and the data in the following table.

Search criteria	Value
Look for	Work Items
In	Workflow Roster
Select one	LoanRoster
Search mode	Edit (all fields)
Criteria	loan_id = 'J456'
  - c. In the results pane, locate your work item.
  - d. Notice that the work item is flagged with the exception symbol and that it is waiting in the LoanManager queue.
  - e. Minimize Process Administrator.
4. Process the Review Exception step.
  - a. In Workplace XT, click Tasks > Public Inboxes > LoanManager.
  - b. Open the work item waiting at the Review Exception step.

- c. Notice that the error message, error number, and status fields contain information about the error.
  - d. Click `loan_officer_group`.
  - e. Select the text in the Current Values list and click Remove.
  - f. Search for and select the `filenetadmin` user in the list of Available Choices.
  - g. Click Add to selection to add `filenetadmin` to the list of Current Values.
  - h. Click Accept.
  - i. Replace the text in the status field with the following text:  
`Valid user assigned to the loan officer group.`
  - j. Select the Retry response.
  - k. Click Complete.
5. Complete workflow processing.
- a. Switch to Process Administrator.
  - b. Click Find Now to reexecute the roster search for your work item.
  - c. Notice that the work item is in the Inbox queue assigned to `filenetadmin` and is no longer in an exception state.
  - d. In the results pane, select the row containing the work item in the `Inbox(0)` queue.
  - e. Click Open Step Processor on the results pane toolbar.
  - f. Type values of your choice in the `interest_rate` and `monthly_payment` fields
  - g. Click Complete.
  - h. Use the skills that you have learned to complete processing of the work item through the remainder of the steps.



### Information

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In this procedure, you modified the Malfunction map so that a work item is sent to a manager if a malfunction occurs. You provide information to the manager about the malfunction.

Design the workflow definition logic to avoid malfunctions when possible. In this case, you can modify the workflow definition to assign a valid user to the `loan_manager_group` at the Get Rate and Payment step.

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6. Use the skills that you have learned to continue testing the workflow by selecting the Skip and Terminate loan responses at the Review Exception step.

7. Exit all applications.
  - a. Close Process Administrator.
  - b. Return to Process Designer.
  - c. If you have not already done so, check in your final version of the workflow definition. Otherwise, cancel the checkout.
  - d. Exit Process Designer.
  - e. Log out of Workplace XT and close the browser.