Course Guide

IBM Case Foundation 5.2.1: Control Workflow Progress

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IBM Training

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Course description

IBM Case Foundation 5.2.1: Control Workflow Progress

Duration: 1 day

Purpose

This course is intended to teach the skills that are needed to control timing in workflows. Timing can be controlled through milestones, deadlines, timers, delays, and checkpoints.

Audience

This course is intended for Case Foundation and Case Manager application builders, who plan, design, and implement Case Manager and Case Foundation solutions.

Prerequisites

- Use Process Designer
- Create workflow maps
- Use Process Tracker
- Use Process Administrator
- Use Process Configuration Console
- Use Content Navigator
- Use Administration Console for Content Platform Engine

Objectives

- Add milestones and logging to a workflow
- Establish workflow and step deadlines
- Control processing times and delays
- Add checkpoint processing to a workflow

Contents

- Milestones and loggin
- Workflow deadlines
- Timers and delays
- Checkpoints

Agenda

Note

The following unit and exercise durations are estimates, and might not reflect every class experience.

Day 1

(00:15) Course introduction
(00:30) Unit 1. Milestones and logging
(00:30) Exercise 1. Milestones and logging
(00:30) Unit 2. Workflow deadlines
(00:30) Exercise 2. Workflow deadlines
(00:30) Unit 3. Timers and delays
(00:30) Exercise 3. Timers and delays
(00:30) Unit 4. Checkpoints
(00:30) Exercise 4. Checkpoints

Unit 1. Milestones and logging

Estimated time

00:30

Overview

In this lesson, you learn how to use milestones. You are designing an IBM Case Foundation solution and you need to control logging and the display of status messages for a workflow. Workflow participants need information on workflow status at specified points in the workflow. Mangement wants a log kept with key information on process status for each workflow. You add milestones and logging to your workflow definition.

How you will check your progress

- Complete lesson exercises.

References

IBM FileNet P8 Platform Knowledge Center:

https://www.ibm.com/support/knowledgecenter/SSNW2F

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Unit objectives

- Add milestones and logging to a workflow.

Figure 1-1. Unit objectives

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Milestones and workflow progress

- A milestone defines a notification point at a step in a workflow.
  - Before execution of a step.
  - After completion of a step.
- Used to trigger a message at a designated point.
  - Message can be used to record progress of the workflow.
  - Message is displayed to workflow participants, trackers, and launch users.
  - Message is a string expression.
- Defined in Workflow Properties > Milestones tab.
- Assigned to a step in Properties pane.

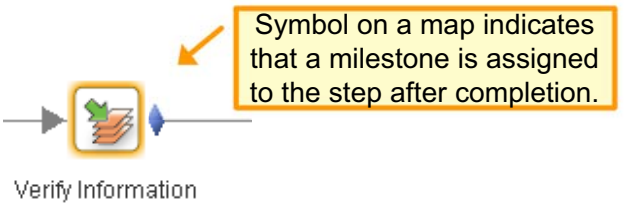

Figure 1-2. Milestones and workflow progress

Help path

FileNet P8 Platform>FileNet P8 Platform 5.2.1 > Integrating workflow into document management>Process applications concepts>Design and run workflows

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfwd008.htm

You can choose to define key notification points, or milestones, in a workflow. These milestones are located where participants might need to receive a message that describes workflow status or progress of a process that is pending or completed.

Each milestone can be used in one or more steps. You can place a milestone either before or after an Activity step, or after the Launch step. The milestone message is a string expression and can include the values of one or more data fields.

When the running workflow reaches a milestone, the specified message is written to a log file. Depending on the specified milestone level (1 - 99), the milestone is displayed for workflow participants, trackers, and the user who launched the workflow. You can use milestone levels to control the workflow users' access to milestone information. The milestone level site preference (set on the Application Engine) determines the milestones that are listed.

Milestone properties

Milestone properties are defined in the Workflow Properties window, Milestones tab. Defined milestones are assigned to a step in the Properties pane. The milestone can be assigned before execution of the step and after completion of the step.

In the Workflow Properties window, you enter the message that is recorded in the log when the milestone is reached. At run time, the message is displayed in step processors and in Process Tracker. The message can be any concatenation of string expressions and string variables. The maximum runtime display length is 250 characters. Characters beyond 250 are truncated.

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Milestone levels and messages

- Milestones are displayed in different interfaces.
- For a participant:
  - If available in the step processor, use Milestones view or Track Status action to display milestone information.
- For a tracker:
  - Use Milestones tab in Process Tracker to display messages.
  - Use Milestones tab in the Track Work Item page.
  - Use email, if email notification is configured.

Milestones and logging

Figure 1-3. Milestone levels and messages

Help path

FileNet P8 Platform>FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Process applications concepts > Design and run workflows > Milestones

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfwd008.htm

Where and when a milestone and its message are displayed depend on several factors that are described here.

For a workflow participant

If the Track Status link is available in the open step processor, the workflow participant can open Process Tracker to view milestones. If the Milestones link is available in the open step processor, the workflow participant can use the Milestones page to view milestones.

In an open work item, the participant can view a list of milestones that are reached in the workflow.

For a tracker

In IBM Content Navigator Track Work Items page, the Milestones tab lists all milestones that are defined in a workflow. If a milestone has been reached, its message is displayed. Otherwise, only

the name of the milestone is displayed. All milestone levels can be viewed in Process Tracker regardless of the level set in Site Preferences.

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Define and use a milestone

1. Define the Milestone name, level, and expression in Workflow Properties Milestones tab.
   - Milestone name is displayed in Process Tracker and the step processor.
   - Milestone Level is used to determine which milestones are displayed.
2. Assign the milestone to one or more steps in the Step Assignments tab.
   - Assignment Before Execution.
   - Assignment After Completion.

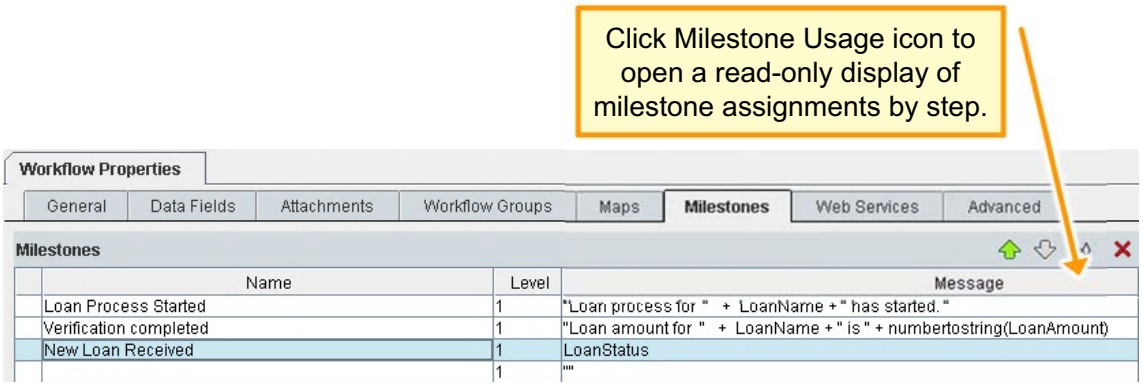

Figure 1-4. Define and use a milestone

Help paths

IBM FileNet P8 Knowledge Center > Integrating workflow into document management > Designing workflows > Define workflow properties > Milestone usage

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh028.htm

IBM FileNet P8 Knowledge Center > Integrating workflow into document management > Designing workflows > Define workflow properties > Milestone usage

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh174.htm

To determine where a milestone is used in a workflow, click the Milestone Usage icon in Workflow Properties to open the Milestone Usage window. In the Milestone Usage window, select a milestone from the list at the top of the page. Select the map where the milestone is used. In the list of steps where the milestone is used, the symbols indicate whether the milestone is assigned before or after the step.

The screen capture on this page shows an example of the Milestones tab in Workflow Properties where three milestones have been defined.

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Example: Milestone display in Process Tracker

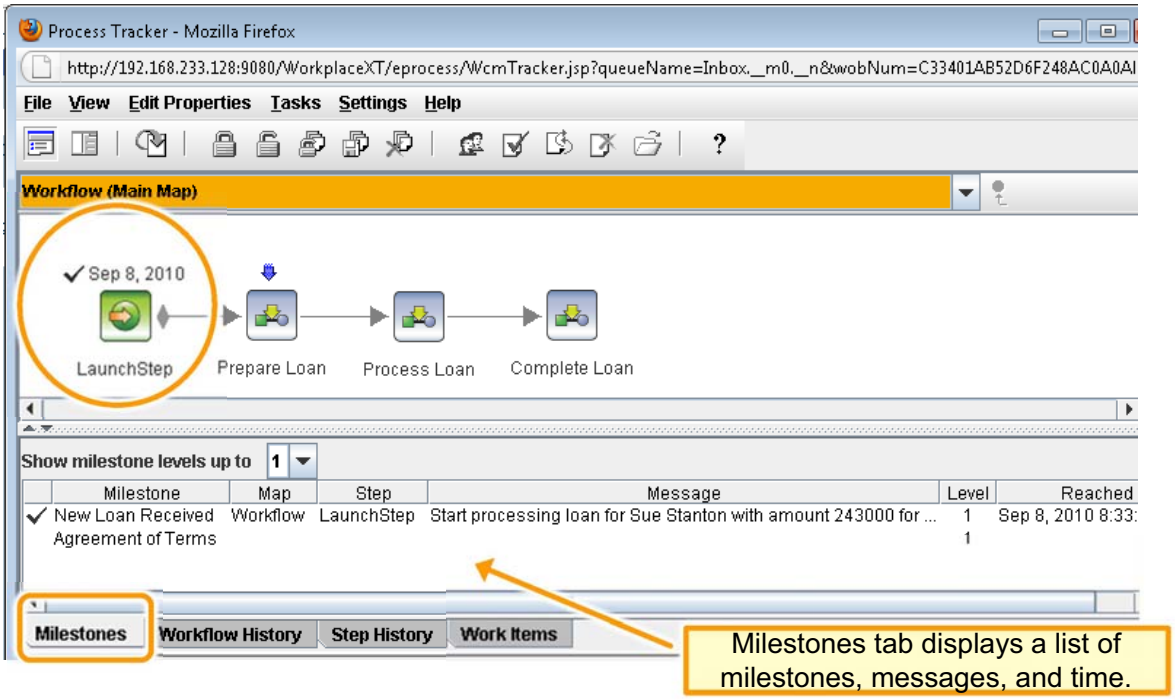

Figure 1-5. Example: Milestone display in Process Tracker

The example screen capture on this page shows the display of the Milestones tab in Process Tracker. The example is based on the milestone definition that is shown in the previous page. The LaunchStep milestone, called new Loan Received, was reached and the milestone message is displayed.

The Milestones tab displays a list of reached and future milestones. A check mark next to a milestone indicates that it was reached. The Milestone tab includes the following information:

- Milestone name
- Workflow map and step that are assigned to the milestone
- Milestone message
- Milestone level
- Time that the milestone is reached

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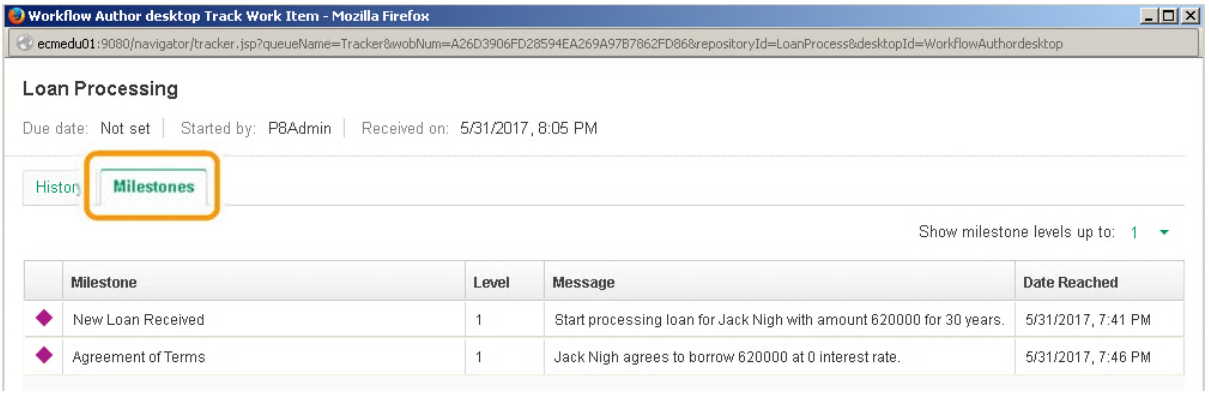
Example: Milestone display in Track Work Item page



Milestones and logging

Figure 1-6. Example: Milestone display in Track Work Item page

The Track Work Item page is an IBM Content Navigator feature that you can access from the Work View by double-clicking tracked work items. The page features two tabs: History and Milestones. On the Milestones page, a purple diamond indicates a completed milestone.

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Using event logs

- Event logs keep a record of workflow history.
  - Contain a record of specific system- or workflow-related events that are used to track workflow activity.
  - Are used in reports and tools to display workflow history.
- At design time, you can specify when custom log entries are made in the event logs.
- After workflow processing completes, you can query event logs and produce reports on workflow activity that was logged.
  - Custom messages can provide meaningful information for your customized business reports.

Figure 1-7. Using event logs

Help path

Integrating workflow into document management > Process applications concepts > Events > About event logs

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfes000.htm

Event logs maintain a record of workflow history. They contain a record of specific system- or workflow-related events that are useful for tracking workflow activity. Event logs are database structures on the Process Services Server that collect workflow event information, such as work item creation, termination, begin service, and end service. You can create a new event log to meet a design requirement to view workflow history reports by workflow or type of work. You specify the event log to be used by a workflow definition in Process Designer Workflow Properties.

The following example is a scenario for creating a new event log.

- An organization associates all loan processing workflows with a user-defined event log called LoanLog. This log separates the log data for processed loans from the log data for other internal administrative events, such as accounts payable processing. In this way, queries for workflow history of loans can be run more efficiently.

After events are written to an event log in the workflow database, you can access and analyze the event information in the following ways:

- Use Process Administrator to build and run searches.
- Use a custom-defined application program that calls the log query APIs. An application developer writes this custom program by using system-provided APIs.
- Use a comma-separated value (CSV) text file that is created by the system-provided vwlog administrative tool. You can open the resulting file with another tool, such as Microsoft Excel, which can read and process CSV-type files.
- Use IBM FileNet Process Analyzer, an expansion product to create workflow performance reports based on event log information.

IBM Training

Log system function

- Use to record a custom message in the event log.
- Specify two parameters:
  - Event Type Expression:
    - An integer or integer expression greater than 1000.
  - Event Message Expression:
    - A string or string expression that is written to F_Text system field

Figure 1-8. Log system function

Help paths

IBM FileNet P8 Knowledge Center > Integrating workflow into document management > Designing workflows > About steps > System functions > General step activity > Log system function

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh107.htm

IBM FileNet P8 Knowledge Center > Integrating workflow into document management > Process applications concepts > Events > Event logging categories

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfes004.htm

You can use the Log system function in a workflow definition to record a defined, custom message in the event log. You place the Log system step on the workflow map in the location where you want the message to be logged. At run time, when the system step is run, the specified message is recorded in the event log specified for the workflow definition in the Workflow Properties Advanced tab. The Log system function has two parameters.

Event type expression

Enter an integer or integer expression that is used to identify the message in the event log. Specify a number greater than 1000. The system reserves integers ranged 1 - 1000 for other events. If you enter an integer that is less than 1000, the system adds 1000 to the value. After the Log system step runs, you can use Process Administrator to find and view the logged messages by searching the event log by using F_EventType in the search criteria. The F_Text field contains the value of the logged event message expression.

Event message expression

Enter a string expression that is recorded in the F_Text system field in the event log.

IBM Training

Example: Logging a data field

- Use case scenario:
  - Management wants reports on status of loans (status data field).
- Design solution example:
  - Record the value of the status data field in the event log by using the Log system function.
  - Develop a custom application to display management reports based on event logs by using F_EventType and F_Text fields.

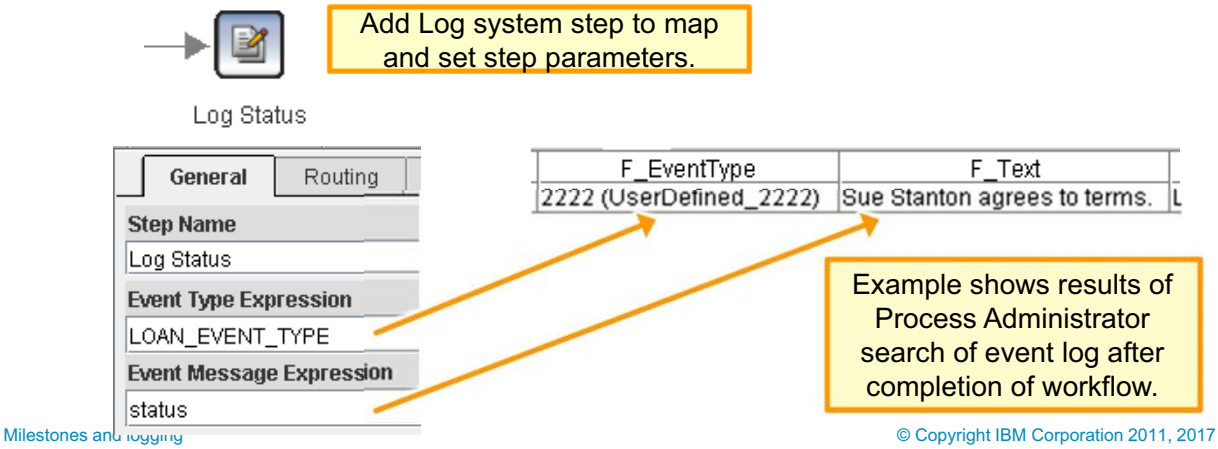

Figure 1-9. Example: Logging a data field

This example use case illustrates how a workflow designer and an application developer must coordinate their efforts to solve a business requirement in a workflow.

The screen capture on the left show the design-time properties settings for a Log system step. The screen capture on the right is an example of the entry in the event log shown after completion of the step with the corresponding F_EventType and F_Text values.

In this example, the LOAN_EVENT_TYPE parameter is an integer data field with a value of 2222. The status parameter is a string data field that contains a text message about loan status.

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Instructor demonstration

- Using milestones and logging.

Figure 1-10. Instructor demonstration

Using milestones

Create a simple workflow that includes a milestone.

Run the workflow and then view the milestones in Process Tracker.

Using logging

Use Process Administrator to view event logs. Some events to search for:

350 – step processor or user locks a work item.

352 – work item is queued.

Other event log types can be found here:
https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfes004.htm

IBM Training

Unit summary

- Add milestones and logging to a workflow.

Figure 1-11. Unit summary

IBM Training

Exercise: Milestones and logging

Requirements:
Course Exercises Guide
Student system

Milestones and logging

Figure 1-12. Exercise: Milestones and logging

IBM Training

Exercise objectives

- Add milestones and logging to a workflow.

Figure 1-13. Exercise objectives

Unit 2. Workflow deadlines

Estimated time

00:30

Overview

In this lesson, you learn how to use deadlines. You need to establish deadlines for the overall workflow process completion and for the completion of individual steps. You want to notify a workflow participant when a deadline approaches for the completion of a step. If a step deadline expires, you want the work to be escalated and sent to a manager for attention.

How you will check your progress

- Complete lesson exercises.

References

IBM FileNet P8 Platform Knowledge Center:

https://www.ibm.com/support/knowledgecenter/SSNW2F

IBM Training

Unit objectives

- Establish workflow and step deadlines.

Figure 2-1. Unit objectives

IBM Training

Workflow deadline

- A time limit for the completion of the entire workflow.
  - Specified in Workflow Properties on the Advanced tab.
  - Specified in minutes, hours, days, or weeks.
  - Time value is relative to when the workflow is launched.
  - When a workflow deadline expires, an entry is made in the event log and workflow status shows overdue.
- Optionally, you can specify a reminder be sent before the deadline expiration.
  - Specified reminder is a time relative to the deadline expiration.
  - Reminder is sent to the assigned tracker for the workflow.
- Workflow deadlines have no automatic escalation.

Workflow deadlines

Figure 2-2. Workflow deadline

Help paths

IBM Knowledge Center > Integrating workflow into document management > Designing workflows > Define workflow properties > Workflow properties – Advanced

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh170.htm

IBM Knowledge Center > System overview > Features > Workflow management > Defining business workflows > Deadlines and timers

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.sysoverview.doc/p8sov035.htm

A participant with a deadline can receive a reminder of the pending deadline through an email message. When the deadline is passed, a visual reminder displays in the participant's inbox, and an email can be sent to a configurable list such as one or more supervisors.

When a workflow deadline expires, no automatic escalation occurs. No option to configure an escalation map for a workflow deadline exists. If you want to configure an alternative processing path on a deadline expiration, you can use the timer system functions.

Workflow participants do not receive notification of a workflow deadline. The tracker is notified if email notification is enabled. To enable workflow participants to receive notification of reminders and deadlines, specify deadlines and reminders for individual steps.

IBM Training

Step deadline

- A time limit for the workflow participant to complete a step:
  - Specified for a step in step properties Deadline tab.
  - Available only for Activity steps.
  - Time value is relative to the time that the step is routed to the participant.
  - Specified in minutes, hours, days, and weeks or by using a time expression.
  - You can define a submap that runs when the deadline or reminder expires.
- Each step deadline is independent.
- Optionally, you can specify a reminder be sent before a step deadline expires.
  - Specified reminder is a time relative to the deadline expiration.
  - Email is sent to tracker and workflow participant.
  - Reminders are available only for steps that are assigned to a participant.

Figure 2-3. Step deadline

Help path

IBM FileNet P8 IBM Knowledge Center > Integrating workflow into document management > Designing workflows > About steps > About Activity steps > Activity step – deadline

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh064.htm

Step deadlines and reminders are optional step properties that are used to control when work must be done. You can specify a time limit for a participant to complete a particular step. The deadline indicates an amount of time relative to the time that the work item was routed to the participant.

Optionally, you can specify that the assigned participant receives a reminder of the pending deadline. The reminder is relative to the expiration time of the deadline. Step reminders are not sent for work queue steps because no participant is assigned.

You can place a deadline on any activity step. Step deadlines are independent of each other.

IBM Training

Step deadline expiration

- When a step deadline expires:
  - Overdue status is displayed for the item in Inbox or Public Queue.
  - Tracker status shows overdue icon.
  - If specified, the deadline submap is run.
  - Optional email notification for tracker and participant is sent.
  - An entry is made in the event log.

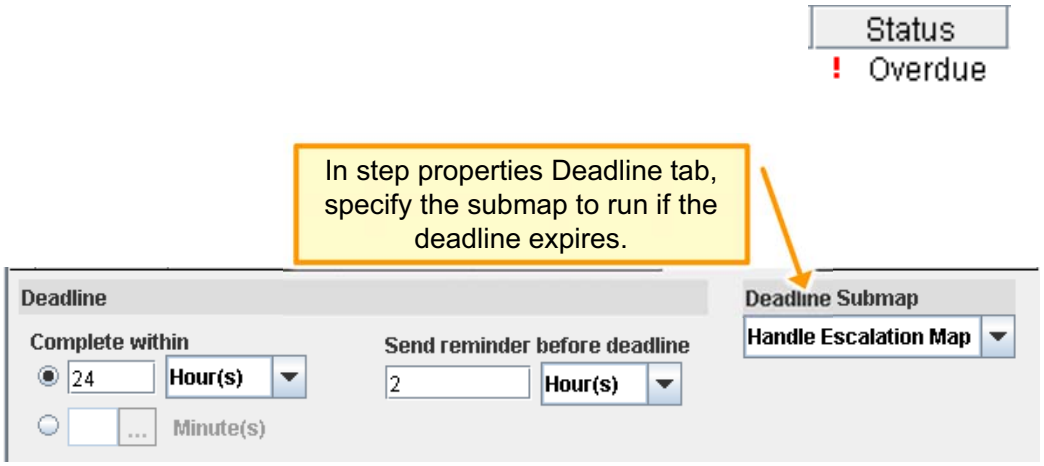

Figure 2-4. Step deadline expiration

Help path

IBM FileNet P8 IBM Knowledge Center > Integrating workflow into document management > Designing workflows > About steps > About Submap steps > About return from a called workflow map

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh003.htm

When a step deadline expires, an entry is made in the event log (F_EventType = 172), and the F_Overdue system field for the item is assigned the value 2. (The value 2 indicates that the deadline expired for this step.) You can also specify an optional deadline submap that is run.

If a deadline submap is specified, the submap is called when the step deadline expires. After completion of the deadline submap, processing returns to the calling map, that is, the map in which the step deadline expired. You can control the return behavior from the deadline submap by using an implicit return or by adding an explicit Return system step to the deadline submap. You can also terminate the workflow by placing a TerminateProcess or TerminateBranch system step on the deadline submap.

If a step deadline expires during the processing of a step (after the step is locked), the deadline submap is not run. No log entry is made in the event log.

IBM Training

Participant notification

- If you want participants to be notified of deadlines and reminders, enable email notification for the workflow definition.
  - Advanced Workflow Property setting.
  - The system administrator must configure email notification.
- For a workflow deadline and reminder:
  - Workflow participants are **not** notified of workflow deadlines.
  - If email notification is enabled for the workflow, the tracker is notified.
  - The tracker must enable workflow deadline and reminder notification in user preferences.
- For step deadlines and reminders:
  - Workflow participants and trackers can be notified.
  - User must enable step deadlines and reminders notification in user.preferences to receive an email.

Figure 2-5. Participant notification

Help Path

IBM FileNet P8 IBM Knowledge Center > Developing FileNet P8 applications > Process Development > Process Java Developer's Guide > Developing Process Applications > Developing Email Notifications > Email notification types

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.dev.doc/note/email_notification_types.htm

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Using workflow and step deadlines

- If you use a workflow deadline and step deadlines in a workflow definition:
  - Avoid overlapping deadlines.
  - Ensure that total step deadline time does not exceed the workflow deadline time.
- Deadline overlap is not an error:
  - Resulting overlapping messages might be confusing for users.

Figure 2-6. Using workflow and step deadlines

Specifying both workflow and step deadlines

A workflow deadline is independent of all step deadlines. If you define a workflow deadline and deadlines on individual steps, you can avoid overlapping deadlines by ensuring that the total deadline for all combined steps is not greater than the workflow deadline. Although no consequence results from overlapping deadlines in a running workflow, the messages that are produced by overlapping deadlines and reminders might be confusing to users.

IBM Training

Instructor demonstration

- Step deadline expiration.

Figure 2-7. Instructor demonstration

Step deadline expiration

Use an existing workflow, or create one.

Create a workflow submap for handling the exception.

Set up a step deadline. Use this format: addminutes(systemtime(), deadlineTime) format, such as is used in the lab.

Set configure the step deadline to call the submap when it expires.

Run the workflow and give the step time to expire.

Show that the submap is called by using Process Tracker.

IBM Training

Unit summary

- Establish workflow and step deadlines.

Figure 2-8. Unit summary

IBM Training

Exercise: Workflow deadlines

Requirements:
Student exercises book
Student system

Workflow deadlines

Figure 2-9. Exercise: Workflow deadlines

IBM Training

Exercise objectives

- Establish a workflow deadline.
- Establish a step deadline.

Figure 2-10. Exercise objectives

Unit 3. Timers and delays

Estimated time

00:30

Overview

You need to control the period of tie during which a specified series of steps is processed. You want an alternate processing path to be followed if the time expires. In another use-case, you want to delay workflow processing for a specified period of time.

How you will check your progress

- Complete lesson exercises.

References

IBM FileNet P8 Platform Knowledge Center:

https://www.ibm.com/support/knowledgecenter/SSNW2F

IBM Training

Unit objectives

- Control processing time and delays.

Figure 3-1. Unit objectives

IBM Training

Timer functions

- Define a period during which a specified series of steps must process.
  - You control how processing proceeds when the time period expires.
  - Multiple timers can be active at the same time in a workflow.
  - For each timer, you define an expiration time and optional submap to run.
- Timer system functions
  - Work together to define and control the timer behavior
  - Are located in the Timer Palette
    - BeginTimer, SuspendTimer, ResumeTimer, EndTimer, EndAllTimers

Figure 3-2. Timer functions

Help path

FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > Time limits for work item processing

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh048.htm

Use a timer to define a period during which a specified series of steps must be processed. If the timer expires, you can provide alternative processing in a submap.

Multiple timers can be active at the same time in a workflow.

IBM Training

Begin and end timers

- BeginTimer
  - Indicates beginning of series of steps to be run before a specified time
  - Includes properties to specify:
    - Name of timer
    - Expiration time
    - Map that is called when timer expires
- EndTimer
  - Ends one specified timer
- EndAllTimers
  - Ends all timers for the work item
  - Requires no parameters

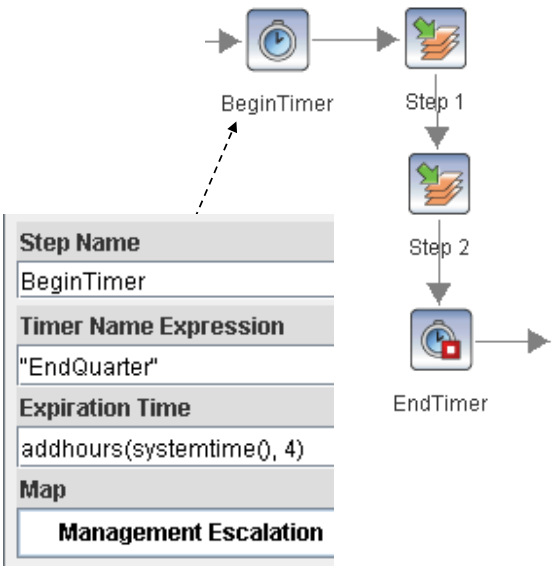


Figure 3-3. Begin and end timers

Help paths

FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > Time limits for work item processing > BeginTimer system function

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh098.htm

FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > Time limits for work item processing > EndTimer system function

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh105.htm

FileNet P8 Platform>FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > Time limits for work item processing > EndAllTimers system function

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh103.htm

If the Timer Name Expression evaluates to the name of a nonexistent timer, the EndTimer system function has no effect.

The EndAllTimers system function terminates all timers that are in the work item regardless of whether the timer is active, suspended, or disabled.

By default, when a work item terminates, all timers in effect for the item are ended, regardless of whether an EndTimer or EndAllTimers function is present.

The specified timer map to be called on timer expiration can be a user-defined map or a system map.

Begin and end timer example

The diagrams on this page show an example use of BeginTimer and EndTimer system steps. In this example, Step 1 and Step 2 must be completed before 4 hours elapse from the current time. If this time expires and the steps are not completed, then the Management Escalation submap is called. If the steps are completed within the specified period, the timer is ended and workflow processing continues.

IBM Training

Suspend and resume timers

- SuspendTimer
  - Starts suspension of timer
  - Sequence continues without interruption until ResumeTimer, even if timer expires.
  - Timer continues to count down during suspension.
- ResumeTimer
  - Ends suspension
  - If timer expires, the system runs the submap that is specified in BeginTimer.

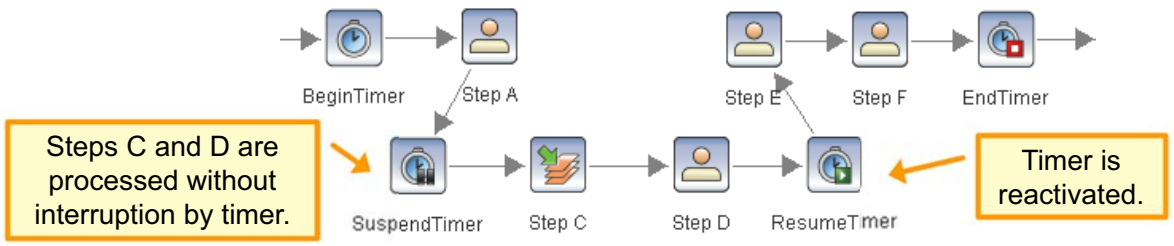


Figure 3-4. Suspend and resume timers

Help paths

FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > Time limits for work item processing > SuspendTimer system function

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh113.htm

FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > Time limits for work item processing > ResumeTimer system function

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh110.htm

Use the SuspendTimer system function to prevent a specified timer from calling its expiration submap when it expires. The timer remains suspended until the ResumeTimer system function reactivates it.

When a timer is suspended, it continues to count down. If the timer interval expires during the timer suspension, the specified timer expiration submap is not called until the timer is reactivated.

If the timer name expression evaluates to the name of a nonexistent timer, the SuspendTimer and ResumeTimer system functions have no effect.

Suspend and resume a timer example

The diagram on this page shows an example use of the SuspendTimer and ResumeTimer system steps. In this example, Step C and Step D are processed without interruption by the timer set in the BeginTimer step. If the timer expires between the execution of the SuspendTimer and ResumeTimer steps, the timer expiration map is not called. After the ResumeTimer step is run, then the timer expiration map is called if the timer expired.

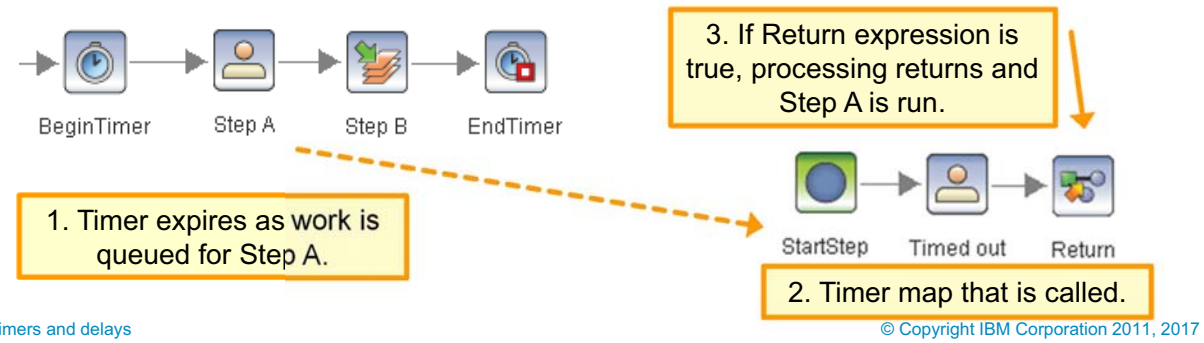
Example use case scenario

For example, in a financial services workflow that processes a funds transfer, Step C represents a Debit Account step and Step D represents a Credit Account step. You might not want an expired timer to interrupt these two steps.

IBM Training

Expired timers

- If a timer expires and is not suspended, a Timer map is called.
  - Timer map is processed and contains an implicit or explicit return.
- After the timer map completes and, depending on the return option, processing resumes at one of these states:
  - At the state when the timer map was called.
  - At the next state.
- If you want to retry the step that was queued when timer expired:
  - Add a Return system function with Return expression equals true to the timer map:



Timers and delays

Figure 3-5. Expired timers

When the timer expiration map completes, processing resumes on the original workflow map. Where processing resumes depends on whether an implicit or explicit return is used in the called timer map. The exception to this behavior is the case where the timer expiration map contains a TerminateBranch or TerminateProcess system step. In this case, the work item or workflow process is terminated.

The diagram on the left on this page shows an example map that contains BeginTimer and EndTimer system steps. The timer set in the BeginTimer step expires while the work item is queued waiting for Step A. The timer expiration map that is shown on the right is called. The Timed out step is processed. The Return system step contains a Return expression that evaluates to true. Because this return retry option is true, processing returns to the calling map shown on the left and Step A is queued again and is ready to be processed.

IBM Training

Design considerations for using timers

- Expired timers do **not** preempt work in progress.
- Expired timers do **not** preempt exceptions.
- Expired timer does preempt Delay or WaitForCondition processing.

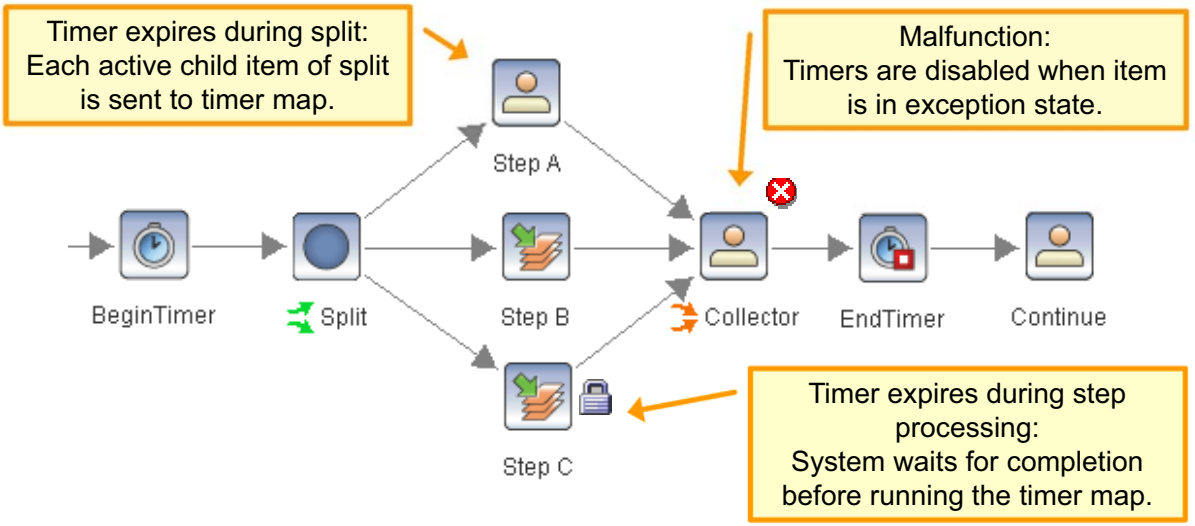


Figure 3-6. Design considerations for using timers

The diagram on this page shows an example workflow map with BeginTimer and EndTimer system steps that are placed before and after several Activity steps in a parallel process.

The following are some design considerations to keep in mind when using timers in a workflow definition.

- Timers do not preempt processing. If a participant or automated process is processing a work item when the timer expires, the system waits until the processing is complete before calling the timer expiration map.
- Expired timers do not preempt exceptions. An exception condition disables timers during exception handling.
- An expired timer does preempt Delay or WaitForCondition processing. Delay is described on the next page.
- If a timer expires between execution of an AND-split and collector step (parallel processing situation), then each active child work item in the split is sent to the timer map (unless the timer is suspended).
- When a work item terminates, all timers in effect for the item are ended, regardless of whether an EndTimer or EndAllTimers function is present.

IBM Training

Delay system function

- Suspends processing of work item
- Resumes processing at specified time
  - Use a time expression to indicate the delay expiration time.
  - Using a specific time limits the workflow reusability.
- Work item waits in Delay system queue.

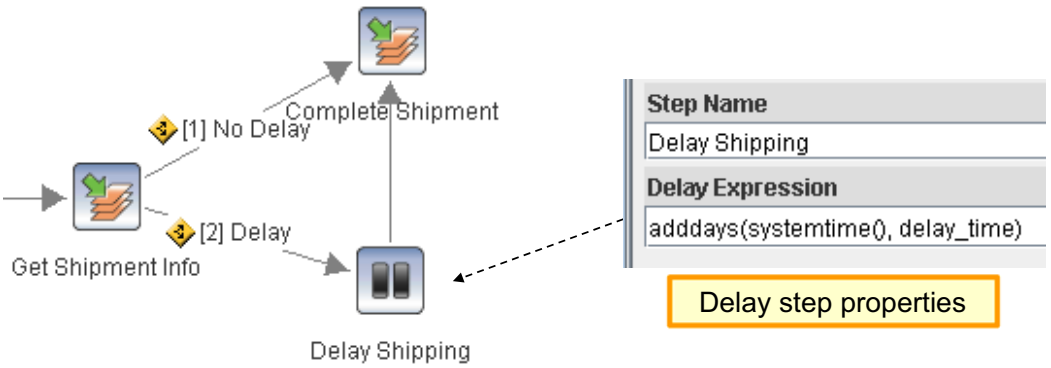


Figure 3-7. Delay system function

Help path

FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > General step activity > Delay system function

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh102.htm

Use the Delay system function to suspend the processing of a work item for a specified time period. At the end of the period, processing resumes with the next step on the workflow map. No other options to control processing behavior are available. Use the Delay system function only if you are sure that you want to suspend processing for the entire specified time period.

In the Delay step properties, you must enter an expression that indicates the duration of the delay. You can use the Expression Builder to build the expression or type the expression directly into the field.

For greater flexibility in delaying work until a certain event occurs, you can use a WaitForCondition system function.

Example use of Delay

The diagram on this page shows an example workflow map that uses a Delay system step and the Delay step properties. This example is for processing product shipment to a customer. In the Get Shipment Info step, the customer has the option of requesting a delay in shipment or requesting immediate shipment. In the Get Shipment Info step, delay_time is assigned an integer value that indicates the number of days that the shipment needs to be delayed. If delay_time is zero or a negative value, then no shipping delay occurs and the Complete Shipment step is run. If the value of delay_time is greater than 0, then the workflow is suspended for that number of days from the current system time (adddays(systemtime(), delay_time). Then, processing resumes, and the Complete Shipment step is run.

IBM Training

Instructor demonstration

- Define a timer

Figure 3-8. Instructor demonstration

Create a workflow with three or more steps.

Define a short timeout submat to handle the timer expiration.

Add a BeginTimer step. Specify the timer expression to be something short, such as (addminutes(systemtime(), 1)

Add an EndTimer step. Be sure to use the same Timer Name Expression for begin and end timer steps.

Launch the workflow and allow the timer to expire before you complete processing.

Use Process Tracker to show that the workflow started the timer expiration submap.

IBM Training

Unit summary

- Control processing time and delays.

Figure 3-9. Unit summary

IBM Training

Review questions

1. True or False: The SuspendTimer pauses the timer countdown until the ResumeTimer step is reached.

2. Expired timers preempt which of the following artifacts? (Choose all that apply).
   A. Work in progress
   B. Exceptions
   C. Delays
   D. WaitForConditions

3. On the Return step of a timer expiration submap, what happens if the Return expression is true?
   A. Work returns to the BeginTimer step.
   B. Work returns to the EndTimer step.
   C. Work returns to the ResumeTimer step.
   D. Work returns to the step that was queued when the timer expired.

Timers and delays

Figure 3-10. Review questions

Write your answers here:

1.

2.

3.

Review answers

1. True or False: The SuspendTimer pauses the timer countdown until the ResumeTimer step is reached.
   The answer is FALSE

2. Expired timers preempt which of the following artifacts? (Choose all that apply).
   A. Work in progress
   B. Exceptions
   C. Delays
   D. WaitForConditions
   The answer is BOTH C and D

3. On the Return step of a timer expiration submap, what happens if the Return expression is true?
   A. Work returns to the BeginTimer step.
   B. Work returns to the EndTimer step.
   C. Work returns to the ResumeTimer step.
   D. Work returns to the step that was queued when the timer expired.
   The answer is D

Figure 3-11. Review answers

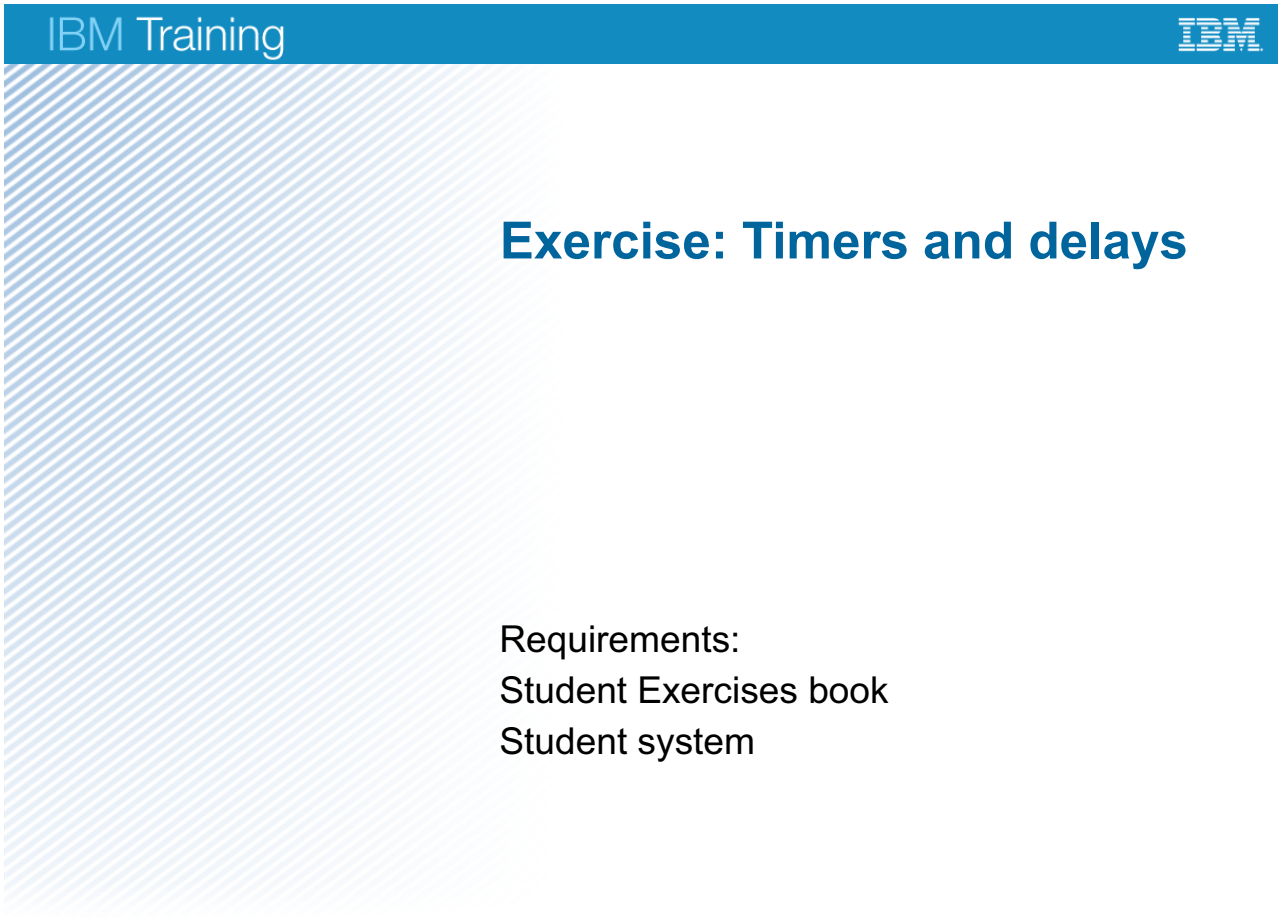


Figure 3-12. Exercise: Timers and delays

IBM Training

Exercise objectives

- Add a timer system function to a workflow definition.
- Add a delay system function to a workflow definition.

Figure 3-13. Exercise objectives

Unit 4. Checkpoints

Estimated time

00:30

Overview

You need to set a workflow checkpoint and save current workflow information at a point in the process flow. At a later point in the workflow, you need the option to roll back specified worflow information to that earlier point in processing and if necessary, to resume work processing at that previous point.

How you will check your progress

- Complete lesson exercises.

References

IBM FileNet P8 Platform Knowledge Center:

https://www.ibm.com/support/knowledgecenter/SSNW2F

IBM Training

Unit objectives

- Add checkpoint processing to a workflow.

Figure 4-1. Unit objectives

IBM Training

Rollback behavior in a workflow

- You can roll back work item data field values to the values held at a previous point in processing.
  - You can specify which data field values are rolled back.
  - You can specify whether work item processing resumes at that previous point or continues from the current point.
- Three system functions work together to enable checkpoint and rollback processing behavior:
  - BeginCheckPoint.
  - RollbackCheckPoint.
  - EndCheckPoint.

Checkpoints

Figure 4-2. Rollback behavior in a workflow

Help path

FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > Checkpoints for rolling back work items

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh047.htm

Checkpoint system functions work together to roll back work item data field values to the values held at a previous point in processing. If specified, work item processing resumes at that previous point. Otherwise, work item processing continues. You can specify which work item data field values are rolled back.

Three checkpoint processing system steps run the checkpoint functions. These system steps are located in the CheckPoint Palette in Process Designer:

- BeginCheckPoint
- RollbackCheckPoint
- EndCheckPoint

The diagrams on this page show the three system step icons for BeginCheckPoint, RollbackCheckPoint, and EndCheckPoint as they appear in the CheckPoint Palette.

IBM Training

Checkpoint system functions

- BeginCheckPoint saves all data field values when the step is run, for potential rollback to that point.
- When RollbackCheckPoint is run:
  - Specified stored data field values are recovered and replace the current field values.
  - Work item processing moves back to the BeginCheckPoint or continues forward depending on the specified Resume Processing Expression.
  - Optionally, a submap is run before rolling back.
- EndCheckPoint discards the saved data field values.
  - Data fields retain current values.
  - Processing continues with the next step.

Figure 4-3. Checkpoint system functions

BeginCheckPoint

BeginCheckPoint saves the current data field values of the work item. The processing of the work item continues until an EndCheckPoint or RollbackCheckPoint runs:

- If EndCheckPoint runs, the saved data field values are discarded and the step that follows EndCheckPoint runs.
- If RollbackCheckPoint runs, the previously saved values replace the current values only in the data fields that are designated for rollback. The processing of the work item then continues with either the step after RollbackCheckPoint or the step after BeginCheckPoint, depending on the value of the Resume Processing Expression specified in the RollbackCheckPoint step.

EndCheckPoint

EndCheckPoint marks the point at which the saved data field values are discarded.

RollbackCheckPoint

RollbackCheckPoint marks the point at which saved data values replace the current values in the data fields that are designated for rollback. In the RollbackCheckPoint step configuration, you determine which data fields are to be rolled back and where work item processing resumes after the rollback.

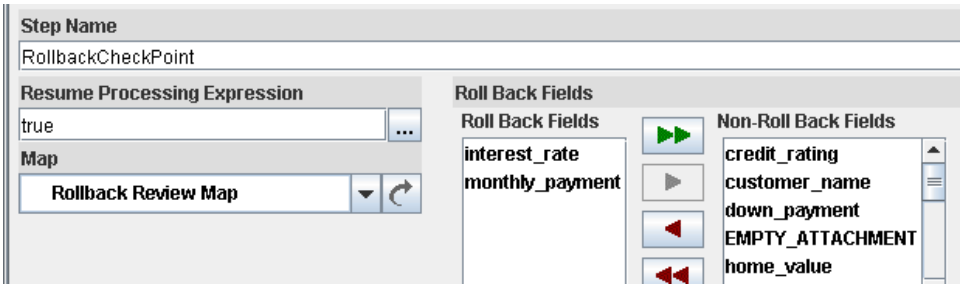
When run, the RollbackCheckPoint function reads the saved work item state and completes the following actions:

- Data field values designated to be rolled back are set to their values immediately before the BeginCheckPoint step.
- If the Resume Processing Expression evaluates to true, the work item returns to the step immediately following the BeginCheckPoint step. If a submap is designated, it is called before returning to the step immediately following the BeginCheckPoint step.
- If the Resume Processing Expression evaluates to false, the work item proceeds to the step that follows the RollbackCheckPoint step.

IBM Training

Specify where processing resumes

- For RollbackCheckPoint, you specify:
  - Resume Processing Expression.
  - Optional submap.
  - Rollback and non-rollback fields.
- The Resume Processing Expression (Boolean expression) in RollbackCheckPoint properties is evaluated.
  - If true, then processing returns to the step after BeginCheckPoint.
  - If a submap is specified, then the submap is processed first.
  - If false, then processing continues to step after RollbackCheckPoint.



Checkpoints

Figure 4-4. Specify where processing resumes

Help path

FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > Checkpoints for rolling back work items > RollbackCheckpoint system function

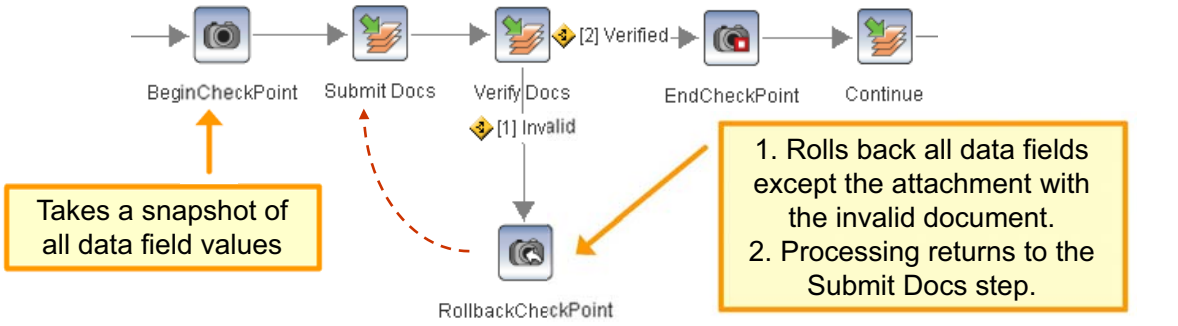
https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh112.htm

The diagram on this page shows an example of the RollbackCheckPoint step properties that show the resume processing expression and the rollback and non-rollback fields.

IBM Training

Example: Using a checkpoint

- Use case scenario:
  - In a document verification process, you need the option to return an invalid document to the submitter and roll back some data values.
- Design solution example:
  - BeginCheckPoint runs before the Submit Docs step to capture data values for potential rollback.
  - If documents must be resubmitted, RollbackCheckPoint runs.
  - Resume Processing Expression evaluates to true and processing returns to the step that follows the BeginCheckPoint step.



Checkpoints

Figure 4-5. Example: Using a checkpoint

The diagram on this page shows an example scenario for a generalized document verification process. Before the document is submitted in the Submit Docs step, a snapshot of all data fields is stored when the BeginCheckPoint step runs. The Verify Docs step evaluates the submitted document and determines whether it is invalid or valid. If the document is invalid, the RollbackCheckPoint step is run. The RollbackCheckPoint step is configured to complete the following actions:

1. All data fields, except the attachment field that contains the submitted document, are rolled back to the value at the BeginCheckPoint step.
2. Because the Resume Processing Expression evaluates to true, the workflow processing continues with the step that follows the BeginCheckPoint step, which is the Submit Docs step.

If the submitted document is valid and verified, then the EndCheckPoint step is run. The data field values that are captured at the BeginCheckPoint step are discarded. The processing continues with the Continue step and uses the current data field values.

The diagram on this page shows the example workflow map that contains the checkpoint processing steps.

Tip: In this example, the workflow designer does **not** need to create a route from the RollbackCheckPoint step to the Submit Docs step. If the Resume Processing Expression evaluates to true, the workflow processing automatically continues with the Submit Docs step.

IBM Training

Design considerations when using checkpoints

- Checkpoint blocks cannot be nested.
- A RollbackCheckPoint run without an associated BeginCheckPoint calls the Malfunction system map.
- RollbackCheckPoint rolls back only the data fields.
  - Results from other system functions and tasks are not rolled back.
  - For example: Create system function creates a new work item.
- External events do not roll back.

Figure 4-6. Design considerations when using checkpoints

Help path

FileNet P8 Platform 5.2.1 > Integrating workflow into document management > Designing workflows > About steps > System functions > Checkpoints for rolling back work items > Guidelines for checkpoint placement and usage

https://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh050.htm

Checkpoint block cannot be nested

If you nest checkpoint blocks, the workflow validates. However, the workflow is not processed as you expect. After a BeginCheckpoint function runs, if another BeginCheckpoint function is encountered without an EndCheckpoint being run, the system behaves as if an EndCheckpoint for the first BeginCheckpoint is present. That is, the information that is saved for the first BeginCheckpoint is discarded. New information is saved for the second BeginCheckpoint. Therefore, the first BeginCheckpoint does not function as a checkpoint.

Events do not roll back

The RollbackCheckPoint function rolls back only the values of designated work item data fields. System steps and user-defined steps that run between the BeginCheckPoint and RollbackCheckPoint functions are not rolled back. For example, work items that are created by a

Create system function are not deleted. The Create system function is described in another unit in this course.

If an automated process completes tasks outside of the IBM FileNet P8 system, such as updating an external database, the results of those tasks remain unless you undo them manually or use another automated process.

IBM Training

Instructor demonstration

- Using checkpoints and system functions.

Figure 4-7. Instructor demonstration

IBM Training

Unit summary

- Add checkpoint processing to a workflow.

Figure 4-8. Unit summary

IBM Training

Exercise: Checkpoints

Requirements:
Student exercises book
Student system

Figure 4-9. Exercise: Checkpoints

IBM Training

Exercise objectives

- Add checkpoint processing to a workflow.

Figure 4-10. Exercise objectives

IBM Training