Course Guide

IBM Case Foundation 5.2.1: Workflow Design Essentials

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IBM Training

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Contents

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Course description

IBM Case Foundation 5.2.1: Workflow Design Essentials

Duration: 1 day

Audience

This course is for workflow authors who are responsible for planning, designing, creating, testing workflow solutions in a development environment.

Prerequisites

- Familiarity with Windows 2008 operating systems.General knowledge of P8 Platform security concepts.
- General workflow terminology:
  - Workflow
  - Workflow definitions
  - Queues
  - Rosters.
- Start a P8 Platform system.
- Familiarity with P8 Platform administration interfaces, including:
  - Administration Console for Content Platform Engine
  - IBM Content Navigator
  - Process Configuration Console
  - Process Designer

Objectives

- Create a workflow definition using Process Designer.
- Use workflow properties and step parameters in a workflow definition.
- Build simple and complex expressions to calculate property values and direct work.
- Use a variety of step types to build a workflow definition.
- Use subscriptions to launch workflows automatically from an initiating attachment.

Contents

- Create a workflow definition with Process Designer

- Use workflow properties and step parameters
- Explore workflow step types
- Build expressions
- Launch workflows with subscriptions

Curriculum relationship

To learn about related courses, please visit the IBM authorized training website: http://www-304.ibm.com/jct03001c/services/learning/ites.wss/us/en?pageType=page&c=Y678448H04759K32

Agenda

Note

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

Day 1

(00:15) Course introduction
(01:00) Unit 1. Create a workflow definition
(01:00) Unit 2. Configure workflow properties
(01:00) Unit 3. Explore workflow step types
(01:00) Unit 4. Build expressions
(01:00) Unit 5. Launch workflows with subscriptions

Unit 1. Create a workflow definition

Estimated time

01:00

Overview

This unit shows how to create a simple workflow using Process Designer.

How you will check your progress

- Successfully complete the lesson exercises.

References

Knowledge Center

http://www.ibm.com/support/knowledgecenter/SSNW2F/welcome

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Why is this lesson important to you?

- You are implementing a workflow application. You must understand how to use the process design tool, Process Designer, to create a new workflow definition, add steps and routes to a workflow map, and save a workflow definition file.

Figure 1-1. Why is this lesson important to you?

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Unit objectives

- Create and save a workflow definition

Figure 1-2. Unit objectives

IBM Training

Process Designer

- Application that is used by workflow authors to create and modify workflow definitions
- Opened through a workflow-enabled desktop in IBM Content Navigator.
- Works on one workflow definition file at a time
- Has two modes of operation:
  - Diagram mode
  - Design mode

Figure 1-3. Process Designer

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>Running Process Designer

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh220.htm

Process Designer is the application that is used by workflow authors to create new and modify existing workflow definitions. Workflow definition files contain the electronic representation of workflow processes that are stored, run, and managed in workflow systems. Process Designer works on one workflow definition file at a time.

You open Process Designer through IBM Content Navigator:

Process Designer has two modes of operation. These modes affect the user interface and functions that are available.

- Diagram mode is used to create basic diagrams of processes and to document the details of each activity. In Diagram mode, you specify the routing between activities, and add a description of each item to communicate the intent and conditions for each activity and route. Diagram mode is used by business users to create process diagrams that are a starting point for a fully functional workflow. After a workflow definition is saved in Diagram mode, a workflow

author can open it with Process Designer Design mode, where the workflow specifications are completed.

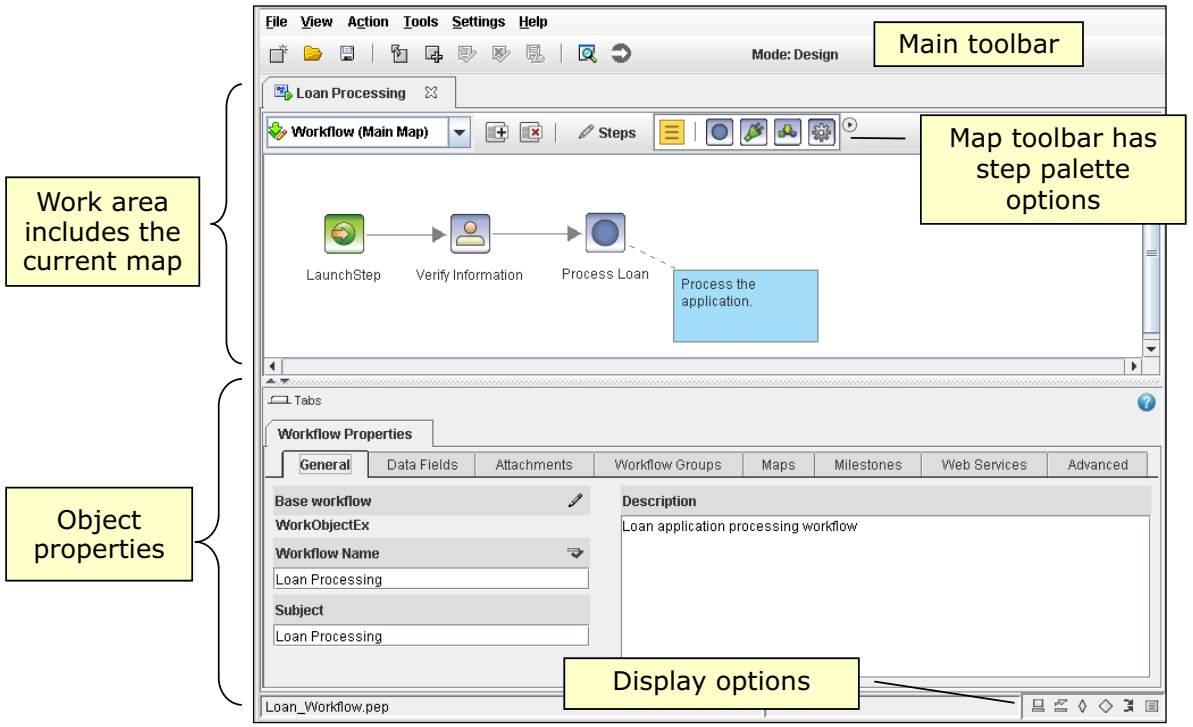
- Design mode provides the functions for defining fully operational workflows. In Design mode, you specify the details of a workflow process and its activities.

In this lesson and throughout this course, you work with Process Designer Design mode to define fully functional workflows.

In Process Designer, you use the File > New command to create a new, empty workflow definition that is ready for you to add steps and routes and to build a workflow map. A new, empty workflow contains a LaunchStep and is ready for you to add steps and routes to the workflow map.

IBM Training

The Process Designer Design mode interface



Create a workflow definition

Figure 1-4. The Process Designer Design mode interface

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>Getting started in Design mode

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh124.htm

This diagram shows the user interface for Process Designer Design mode. The user interface contains two panes.

- The work area in the top pane displays the current workflow map that you are editing. In the map area, you build a workflow map by adding and positioning map elements, such as steps and routes. A workflow definition might have more than one workflow map. However, you can display and edit only one workflow map at a time in Process Designer. The work area is divided into tabs. These tabs provide access to open workflow definitions, configuration settings, and open scenarios in the workflow collection.
- Object properties are displayed in the bottom pane, also call the properties pane. The property specifications for the current item that is selected on the map are displayed in a tabbed format. The Workflow Properties tab shows properties that apply to the entire workflow definition.

In addition, two toolbars are available: the main toolbar and the map toolbar.

- The main toolbar includes shortcuts for commands to open, save, create, validate, and launch a workflow definition. In addition, the mode of operation is displayed in the main toolbar: Diagram mode or Design mode.
- The map toolbar contains shortcuts to commonly used tools for selecting workflow maps, options to create and edit a step on a map, and the docked step palettes. The step palettes can be docked in the map toolbar or displayed floating in a separate window. The step palettes contain various types of steps available for placement on a map.

The status bar at the bottom of the application window contains the name of the current workflow definition file and the name of the workflow that you are editing. On the right side of the status bar, several options for changing the map display are available.

IBM Training

Workflow maps

- Graphical representation of the sequence of steps and routes necessary to complete a business process
- Each step represents a task for one of the assignments:
  - One or more workflow participants
  - A work queue
  - An automated system or process
  - A system function under control of the Content Platform Engine
- Various step types are available to build a workflow map.
- Build and edit a workflow map in the map area of the Process Designer.

Figure 1-5. Workflow maps

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>Getting started in Design mode

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh124.htm

The workflow map is one of the basic elements of a workflow definition. The map is a graphical representation of the sequence of steps and routes that are necessary to complete a business process. The map depicts the flow of work in a business process.

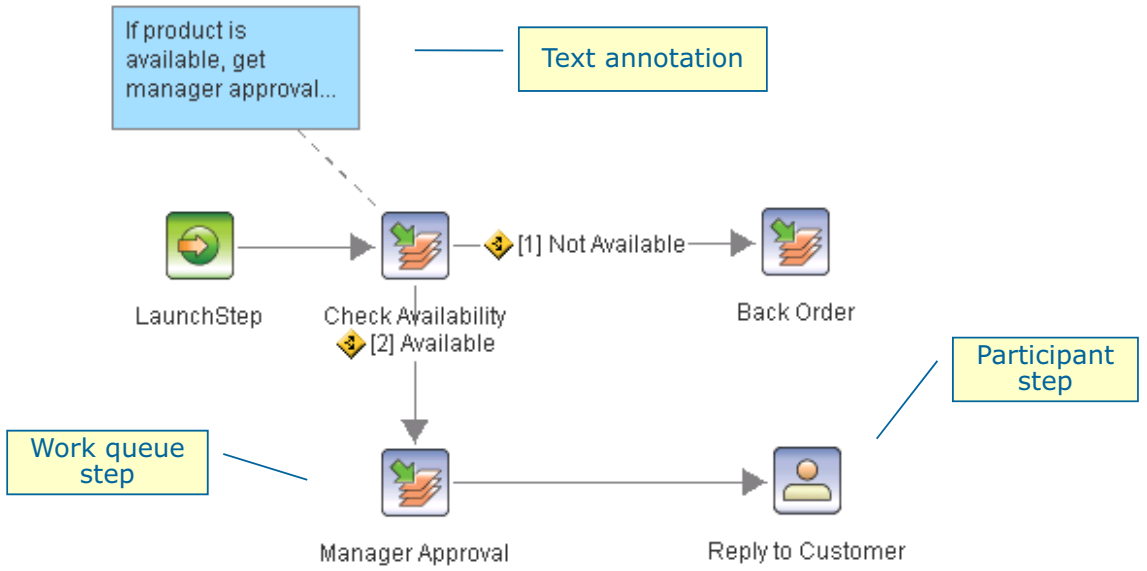
A workflow definition might have multiple workflow maps that work together to complete the business process. In the Process Designer map area, only one map is displayed at a time and is available for editing.

Click the arrow on the map toolbar to select a map to display from the list of all maps in the workflow.

IBM Training

Example workflow map

- You add and position step and route symbols on the map.
- Multiple selection of elements, cut, copy, paste, and delete are available to edit the map.



Create a workflow definition

Figure 1-6. Example workflow map

This page shows an example workflow map with steps and routes. Reading the map from left to right, the first step is called the launch step and is named LaunchStep. The launch step is the first task that is executed when the workflow is launched. When you create a new workflow, a launch step is automatically placed on the workflow map for you. You set the properties of the launch step, except for the step type. You do not assign the launch step to a participant or work queue. At run time, the system runs the Launch step.

The Manager Approval step is an example of a work queue step, which uses a queue to distribute the work. The icon for this type of step symbolizes the queue.

The Reply to Customer step is an example of a participant step in which a specific assigned user or group of users complete the step. The icon for this type of step symbolizes a person.

The two routes from the Check Availability step are labeled Available and Not Available. You can choose to label a route or to leave the label blank.

This example map shows the use of a text annotation associated with the Check Availability step. The annotation is for documentation purposes and does not contain any executable information. Annotations provide instructions for the workflow author who is working in Design Mode. Business Analysts can add annotations in Diagram Mode.

IBM Training

Add an activity step to a map

- Activity step is used for tasks that are assigned to a specific participant or group of participants or to a work queue
- Some general properties of an activity step:
  - Step name used for identification
  - Activity type specifies who must complete the step
  - Instructions for the participant that are displayed in the step processor
  - Which step processor is used to process the step

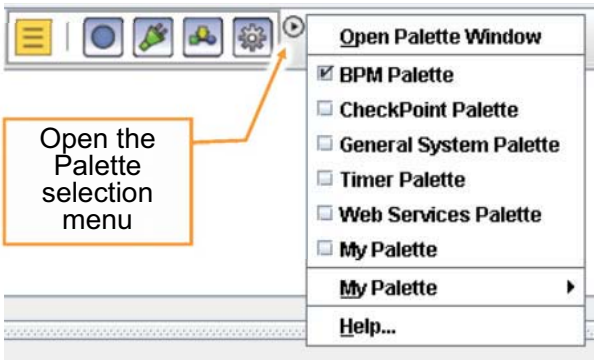


Figure 1-7. Add an activity step to a map

Help paths

FileNet P8 Platform 5.2.0>Integrating workflow into document management>Designing workflows>About steps>Working with steps>Add a step

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.0/com.ibm.p8.pe.designerui.doc/bpfdh090.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>About Activity steps

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh001.htm

Select a step from the BPM Palette

The step palettes contain various types of steps that are used to build a workflow map. The step palettes can be docked on the map toolbar or can be displayed in a separate floating window. You add a step to a workflow map by selecting a step type from one of the step palettes and dragging the step onto the map. Each step palette contains a collection of predefined steps that represent different types of activities in a workflow. Several step palettes are available to the designer.

The BPM Palette contains steps for general business processes. The activity step in the BPM Palette is typically the most frequently used type of step in a workflow. Use an activity step to represent an activity in a workflow that is processed either by one or more workflow participants or by a work queue.

Specify step properties

After adding an activity step to a workflow map, you specify the step properties in the properties pane. Properties of a selected objected are displayed in the properties pane at the bottom of the Process Designer window. The properties pane is organized into various tabs. On the General tab, you can specify several properties, including step name, activity type, instructions to the participant, and the step processor that is used to process the step.

A step processor is an application that provides the information and resources for a participant to complete a step in a workflow. Step processors can be IBM-provided or custom step processors built and configured by an application developer.

Two IBM-provided step processors are available for selection in the general properties for a step. The default step processor, called Approval HTML (FileNet), displays any step parameters, such as data fields and attachments, on the initial page of the step processor user interface. The other IBM-provided step processor, called HTML (FileNet), displays step parameters for the user on separate pages.

Other types of step properties that affect how a step is processed are discussed in later lessons.

IBM Training

Draw a route

- Routes connect the steps on a workflow map and indicate the path or flow of processing.
- Each step on a map has one or more outgoing routes (except the last step).
- You can specify route properties:
  - Route name used for identification on the map
  - Route conditions, responses, and expressions

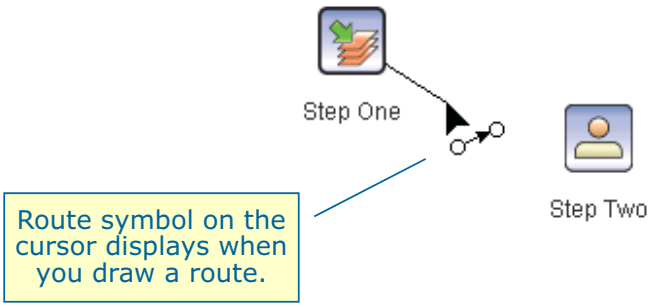


Figure 1-8. Draw a route

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About routing>Create a route between steps

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh039.htm

Routes on a workflow map specify how work progresses from one step to the next. Similar to steps, you can specify the properties of a route by using the Properties pane. You can specify a route name that appears on the map for identification purposes. Route names are especially useful when you have more than one route that leaves a step. In the Properties pane, you can indicate that a route taken is “always true” or that the route conditions are based on a conditional expression.

Each step on a map has one or more routes from it. The only exception is the last step on a map. When multiple routes exit a step, step responses and conditional expressions determine which route to take.

You can use routes and route properties to model simultaneous processing of multiple routes from a single step (called parallel processing or AND-split).

To draw a route between two steps:

1. Add the two steps to the map.
2. Use the cursor to point to the edge of the origin step until the route symbol appears.
3. Draw a route to the destination step.

The diagram on this page shows an example of drawing a route between two steps.

Step menu commands

- Right-click a step to open the menu.
- Commands available:
  - Cut
  - Copy
  - Delete
  - Add to MyPalette
  - Change step type

Figure 1-9. Step menu commands

In addition to dragging steps around on the map area and drawing routes between them, you can also cut, copy, delete steps by using the menu commands. You can also change the step type. Step types available from this menu are Activity step, Submap step, System step, and Component step.

Workflow definition file

- Is an electronic representation of a process that includes:
  - Workflow maps
  - Steps (tasks and properties)
  - Routes (routing logic and properties)
  - Information (data and resources)
- A single-process workflow definition is saved as a PEP file.

Figure 1-10. Workflow definition file

A workflow definition is the electronic representation of the maps, tasks, resources, and information that is needed to accomplish a business process. The workflow definition is a processing template that is used by the Content Platform Engine to run and manage a business process. In Case Foundation, a workflow definition consists of the following elements.

- One or more workflow maps that show the sequences of step in the process.
- Specifications and properties of each step, including who processes the work and what information is needed for processing.
- Routing logic that specifies how the work moves from one step to the next during processing.

For a single-process workflow definition file, the file is saved in PEP format, which is a type of XML file. PEP format is the standard format for Process Designer.

IBM Training

Save a workflow definition

- Save and Save As menu options
  - Saves a workflow definition to the local file system
  - The file can be used to launch the workflow only from Process Designer.
  - Good practice is to save interim changes locally as you design a workflow.
- FileNet Add New menu option
  - Saves a major version in the object store
  - Uses the Workflow Definition document class
  - Initiated when you transfer a workflow

Figure 1-11. Save a workflow definition

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>Getting started in Design mode>Save a workflow definition in Design mode

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh043.htm

You can save a workflow definition document either in an IBM FileNet repository such as an object store or to your local file system.

If you want to launch a workflow definition, you must add the file to an object store as a major version of the Workflow Definition document class. In Process Designer, use the File > FileNet > FileNet Add New menu option. To launch the workflow, you must first transfer it. When you transfer the workflow definition, you are prompted to save it in the object store.

IBM Training

Workflow definitions in the object store

- Workflow definition versions are maintained in the object store.
  - Managed by using the Workflow Definition document class
- FileNet Checkin menu option
  - Saves changes to a workflow definition file that is checked-out
- FileNet Save menu option
  - Saves working content of checked out file temporarily to the object store
  - Must use FileNet Checkin to permanently save changes
- IBM Case Manager solutions
  - Use File > Solution menu options.

Figure 1-12. Workflow definitions in the object store

The File > FileNet > FileNet Checkin menu option saves changes to an existing workflow definition file that is checked out from the object store. This command increments the major version, unlocks the file in the object store, and closes the workflow definition in Process Designer. Minor versions are not used for Workflow Definition documents.

In contrast, the File > FileNet > FileNet Save menu option saves changes temporarily to an existing, checked-out workflow definition file in the object store. This command leaves the file open in Process Designer so that you can keep working with the file. This option saves to a temporary work area and does not create a new version of the workflow definition in the object store. FileNet Save does not increment the version of the file in the object store. You must use the FileNet Checkin command to permanently save your changes to the object store.

Process Designer workflow preferences contains an automatic “Add/Check in Before Transfer/Launch” option. If this option is selected, the system automatically prompts you to save your changes to the object store when you transfer or launch a workflow.

IBM Case Manager solutions

If you are working with an IBM Case Manager solution, use the File > Solution menu option to edit and save a solution on the Content Engine that was defined in IBM Case Manager Builder. Information about IBM Case Manager solutions is covered in other courses.

IBM Training

Instructor demonstration

- Open Process Designer
- Process Designer Layout
- Create a workflow definition

Figure 1-13. Instructor demonstration

If you are taking this course as a self-paced virtual course, return to the main course menu to play the pre-recorded demonstrations.

IBM Training

Unit summary

- Create and save a workflow definition

Figure 1-14. Unit summary

IBM Training

Exercise: Create a workflow definition

Requires:
Course Exercises Guide
Student system

Create a workflow definition

Figure 1-15. Exercise: Create a workflow definition

IBM Training

Exercise introduction

- Open Process Designer.
- Create steps and routes in a workflow map.
- Save a workflow definition.

Figure 1-16. Exercise introduction

If you are taking this course as a self-paced virtual course, return to the main course menu to select the exercise for this unit.

Unit 2. Configure workflow properties

Estimated time

01:00

Overview

This unit shows how to use workflow properties and step parameters to add data to the workflow definition.

How you will check your progress

- Successfully complete the lesson exercises.

References

Knowledge Center

http://www.ibm.com/support/knowledgecenter/SSNW2F/welcome

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Why is this lesson important to you?

- You are designing a workflow application. You must set the global properties for your workflow definition and use properties in steps. At runtime, users see and update the properties.
- You want to be able to find and track the loan process workflows separately from other workflows in the system. You assign a separate roster and event log.

Figure 2-1. Why is this lesson important to you?

IBM Training

Unit objectives

- Add workflow properties to a workflow definition
- Add step properties to a step
- Validate and launch a workflow
- Identify system fields.

Figure 2-2. Unit objectives

IBM Training

Workflow properties

- Workflow properties
  - Name
  - Subject
  - Data fields
  - Attachments
  - Workflow groups
  - Milestones
- Workflow collection properties
  - Collection name
  - Application space
- System properties
  - Defined by the workflow system.

Figure 2-3. Workflow properties

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>Define workflow properties

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh162.htm

All workflow properties are assigned from the Workflow Properties tab in the object properties pane.

- Workflow name is a required property assigned by the designer. Each workflow must have a unique name in the processing region. This name is used to identify the workflow in the list of workflows transferred to the Process Engine. The workflow name is defined in the General tab.
- Subject is a title that describes the workflow. When the workflow is launched, the subject text appears in a participant's inbox or public queue and can be used to identify the workflow. The workflow subject is defined in the General tab.
- In the Data Fields tab, you define data fields to hold values that are used by a participant or automated process at a step. Data fields are also used in conditional tests or decisions. You must define all data fields that are used in any step in the workflow. Data fields are used as parameters at one or more steps. For each step, you assign specific data fields that are used as parameters in that step.

IBM Training

Workflow and database fields

- Workflow fields
  - Associated with a single workflow.
  - **User fields** hold values for step parameters and conditional testing.
    - Example: LoanAmount
  - **System fields** hold values that are required by the workflow system.
    - Example: F_Subject
- Database fields (also called "exposed fields")
  - Defined in rosters, queues, and event logs.
  - Used for:
    - Search filters
    - Database indexes
    - Logging information to the event log

Figure 2-4. Workflow and database fields

Help paths

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

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfwd018.htm

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Defining the workflow system>Coordinating workflow design>Workflow options>Database fields and indexes>Managing user database fields

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc300.htm

Two types of fields are used by the workflow system: workflow fields and database fields. Workflow fields include user fields and system fields.

- User fields are defined by the user in Process Designer. They provide information to participants as step parameters, and are editable. User fields acquire values when the workflow runs and these values can be edited or changed, but remain constant until changed. For example, a Loan Amount value remains $30,000 within a single workflow until a user or process changes it.

- System fields are defined by the workflow system, and are not editable. Although you can reference or index system fields.

Database fields also include user and system fields.

- A user database field stores the value of a corresponding source field, such as a workflow field, so that the value becomes searchable. User system fields are created when you add them to event logs, rosters, or queues.
- A system database field stores the value of a corresponding source field, such as a workflow field. You can manage system database fields that are part of a workflow structure, such as a roster, workflow queue, or event log.

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Using data fields as step parameters

- Data fields hold values for steps, conditional tests, or decisions
- Data field values are available in subsequent steps

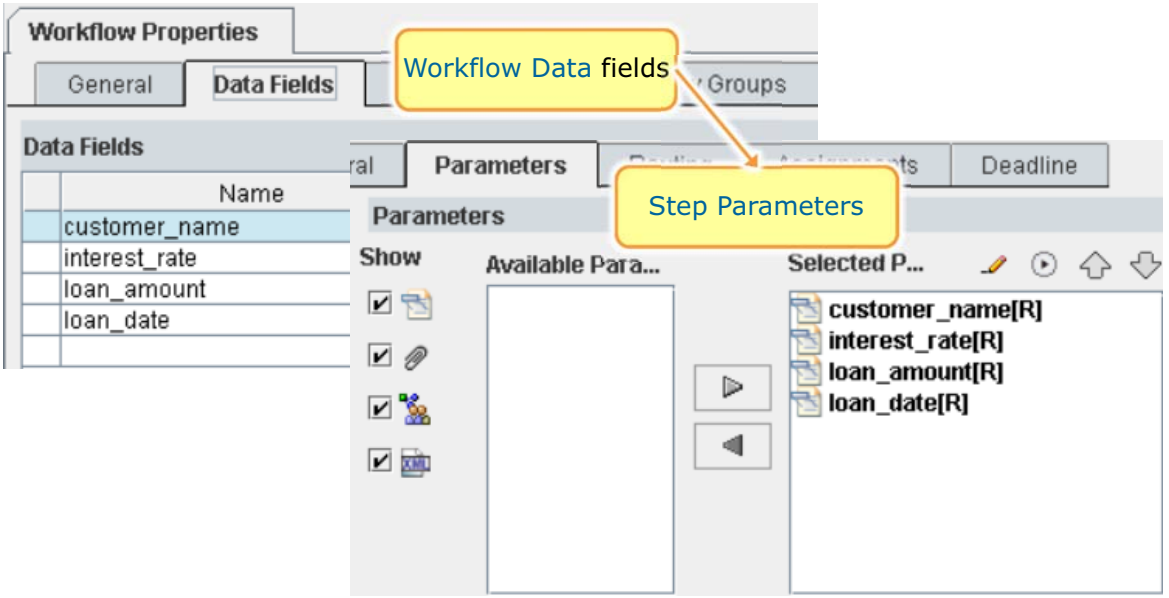


Figure 2-5. Using data fields as step parameters

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>Define workflow properties>Workflow properties - data fields

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh172.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Data types

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe000.htm

On the Data Fields tab of Workflow Properties, you designate data fields to hold information that can be used at various steps in a workflow. In this window, you must define all data fields that are used in any step. Subsequently, when you define each step, you indicate which data fields are parameters for that step, and the user access rights to the field values.

When the workflow is running, a field value set at one step is available in subsequent steps that use the same field. The value of each field in a workflow is limited to the current instance of the workflow. Each time the workflow runs, the values in the fields can be different and can change as the workflow is processed.

In the Workflow Properties Data Fields tab, you specify the data field name, data type, initial value of the field, field merge behavior when using an AND-split, and an optional description.

The description text is displayed when you select the data field as a parameter for a step in the workflow. You can change the description of each parameter at each step in the step Properties pane.

Content Platform Engine supports literals and variables of the following simple data types: Boolean, Float, Integer, String, and Time. Content Platform Engine also supports single-dimensional arrays of these simple data types. Arrays begin with an index value of 1. When specifying an array, you must specify an initial value for at least one array element.

IBM Training

What are system fields?

- A system-defined workflow field that is used by the Process Engine to process workflows
  - Begins with “F_” characters
- Examples of system fields
  - F_Originator (integer)
    - The user ID of the user that launched the workflow
  - F_Subject (string)
    - The default subject that is assigned in the workflow properties or by the user when a workflow is launched
  - F_Comment (string)
    - Contains current comment made by the user at a step
    - Does not persist across steps; history retained in event log
    - If specified, allows the participant to view the history of comments

Configure workflow properties

Figure 2-6. What are system fields?

Help path:

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

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfwd039.htm

The Process Engine automatically creates the system fields that it needs to process a workflow. Although you can use and reference system fields in your workflow, you cannot directly edit the values of most system fields. Certain system fields can be assigned a value in a step. You can use system fields at a step when testing for conditions. You can reference system fields when you search for workflows and events, and when you create or use index keys. System field names begin with the character string “F_”.

This page contains some examples of system fields. For a complete list, see the FileNet P8 help topic “System fields defined.”

Other lessons in this course describe the use of various system fields.

F_Comment system field

This string field contains the comments made by a specific user for a step. The comment field does not retain its value from one step to the next. The F_Comment field is initialized to a null value at the start of every step. However, a history of these comments is retained in the event logs. In Process Designer, you can allow a participant to view this history of comments for all preceding steps by setting the participant privileges for a step. You enable this feature for a step by selecting the “View workflow history” check box in the step properties. The History view includes which participants processed previous steps and lists responses and comments entered by participants at previous steps.

IBM Training

Roster and event log properties

- In Workflow Properties > Advanced tab, assign the roster and event log that a workflow uses.
  - Setting applies to all workflows launched from the workflow definition.
  - Value of properties cannot change during workflow processing.
- Use extra rosters and event logs to increase application efficiency.
  - You can search a roster for active workflows that use the roster.
  - You can search an event log for history of workflow activity.

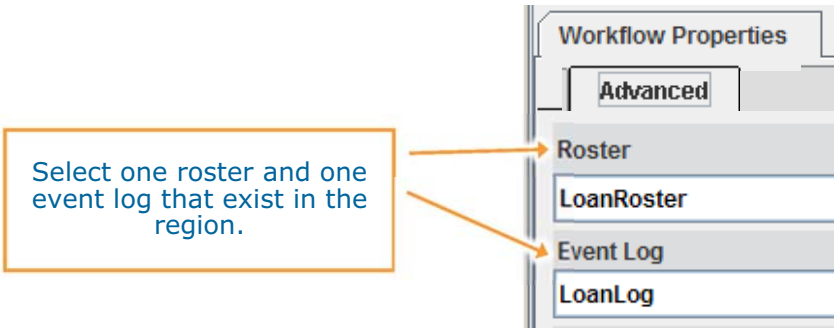


Figure 2-7. Roster and event log properties

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>Define workflow properties>Workflow properties – Advanced

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

Advanced workflow properties

In the Process Designer Workflow Properties, on the Advanced tab, you can specify the roster and the event log that this workflow uses. The roster and event log must exist for the region. You can select from the list of rosters and event logs in the current isolated region. Unlike other workflow properties, the value of these properties cannot change during workflow processing.

Generally, you coordinate the selection of a roster and event log with the solution architect and the workflow system administrator. Multiple rosters can help a workflow administrator locate work items more quickly. Application developers can use multiple rosters to more efficiently present workflow information to users in custom applications. Multiple event logs can distribute the data over multiple logs and help a workflow administrator or custom programs find log information more quickly. Application and system requirements typically determine the need for extra rosters and event logs.

The queues and rosters must exist before you can specify them for a workflow definition.

Use Administration Console for Content Platform Engine to create Queues and rosters.

The screen capture on this page shows an example of the Advanced Workflow Properties window where the LoanRoster roster and LoanLog event log are selected.

Important: After a workflow definition is transferred to the workflow system, you cannot specify a different roster or event log for the workflow. The originally specified roster or event log is in effect for all versions of the workflow definition. This behavior occurs because each time a workflow definition is transferred, a new workspace is created in the workflow system. The workspace points to the executable version of the workflow and to the latest revision of the previously transferred workflow definitions. The system identifies the executable version by the workflow name.

If you want to change the roster or event log settings for a previously transferred workflow, you must update and then transfer the workflow definition with a new workflow name.

IBM Training

Guidelines for working with Process Designer

- Validate a workflow
  - In Process Designer
  - Click File > Validate Workflow Collection.
- Transfer a workflow
  - In Process Designer
  - Click File > Transfer Workflow Collection.
- Launch a workflow
  - From a workflow-enabled Content Navigator desktop
  - Right-click the workflow definition
  - Click Workflow > Launch Workflow

Figure 2-8. Guidelines for working with Process Designer

IBM Training

Instructor demonstration

- Explore user and system database fields.

Figure 2-9. Instructor demonstration

If you are taking this course as a self-paced virtual course, return to the main course menu to play the pre-recorded demonstrations.

IBM Training

Unit summary

- Add workflow properties to a workflow definition
- Add step properties to a step
- Validate and launch a workflow
- Identify system fields.

Figure 2-10. Unit summary

IBM Training

Exercise: Configure workflow properties

Requires:
Course Exercises Guide
Student system

Configure workflow properties

Figure 2-11. Exercise: Configure workflow properties

IBM Training

Exercise introduction

- Set workflow properties
- Assign a roster and a log
- Set step properties

Figure 2-12. Exercise introduction

If you are taking this course as a self-paced virtual course, return to the main course menu to select the exercise for this unit.

Unit 3. Explore workflow step types

Estimated time

01:00

Overview

This unit shows how to select among the various step types that you can use in a workflow definition. You learn to use the step palettes and how to use a system step.

How you will check your progress

- Successfully complete the lesson exercises.

References

Knowledge Center

http://www.ibm.com/support/knowledgecenter/SSNW2F/welcome

IBM Training

Why is this lesson important to you?

- As a designer of a workflow application, you need to use various types of steps in your workflow definition to accomplish specific tasks, including system steps.

Figure 3-1. Why is this lesson important to you?

IBM Training

Unit objectives

- Select step types for a scenario
- Use system steps in a workflow

Figure 3-2. Unit objectives

IBM Training

Step palettes

- Step palettes contain predefined steps that represent different types of activities in the workflow.
- You can switch between palettes to find the steps that you need.
- Palettes:

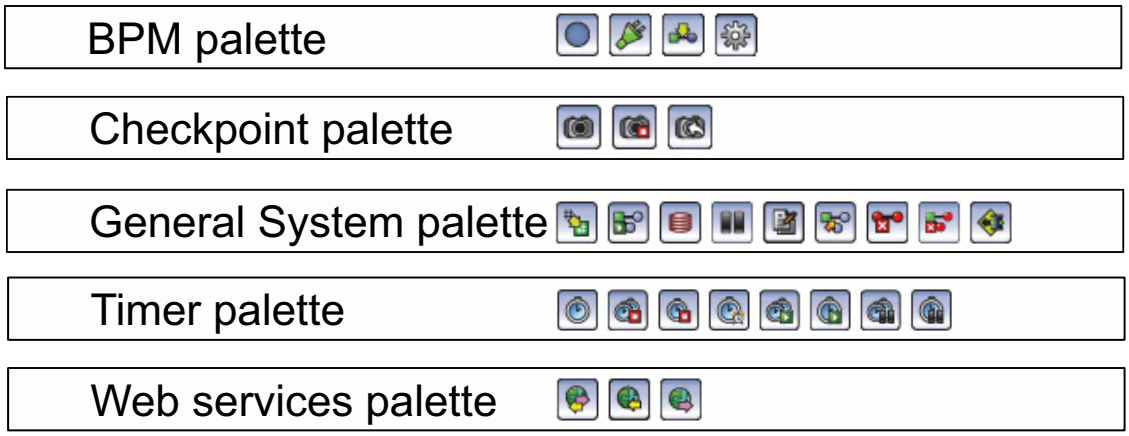


Figure 3-3. Step palettes

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>Working with steps>Step Palettes

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh055.htm

BPM palette

- Activity step
- Component step
- Submap step
- System step

Checkpoint palette

- BeginCheckpoint
- EndCheckpoint
- RollbackCheckpoint

General System palette

- Assign
- Create
- DbExecute
- Delay
- Log
- Return
- TerminateBranch
- TerminateProcess
- WaitForCondition

Timer palette

- BeginTimer
- EndAllTimer
- EndTimer
- ExpirationTimeTimer
- ResumeDeadlineTimer
- ResumeTimer
- SuspendDeadlineTimer
- SuspendTimer

Web services palette

- Invoke
- Receive
- Reply

IBM Training

Assemble a custom step palette

- Customize your own step palette with the My Palette feature.
- Add steps to My Palette and save the palette to a local file or object store.
  - Right-click a step on the map and click Add to My Palette.
  - Configured properties for the step are also saved.
- The Palette menu provides options for file save, checkin, checkout, delete, and so forth.
- Saves design time when you want to reuse a step in multiple workflow definitions

Figure 3-4. Assemble a custom step palette

In addition to system-supplied steps and palettes, you can assemble your own palette of steps, called My Palette. For example, if you have a step on your workflow map that you want to use in several locations in your workflow or in other workflow definitions, you can add that step to My Palette. A step that is copied and saved in My Palette contains all of the parameters defined for the original step on the workflow map.

To copy a step to My Palette, right-click the step on the map and then click Add to My Palette. To delete a step in My Palette, open the Palette window, right-click the step in My Palette, and click Delete.

Use a custom step palette

On the Palette menu, the My Palette submenu provides options to open, save, check in, and check-out your own custom step palette. If you change steps in My Palette, Process Designer prompts you to save your palette changes and your workflow changes when you close the workflow definition.

IBM Training

Step types and the BPM Palette

- Activity step
  - Can be assigned to a participant or to a work queue
  - Can remain unassigned to perform calculations
- System step
  - Assigns one or more functions to be the system
- Component step
  - Assigns a function to a custom Java or JMS application component
- Submap step
  - Represents a call to another map in the workflow definition
- Launch step
  - The first step in a workflow
  - Automatically placed on the main workflow map
  - Not available in the BPM Palette

Figure 3-5. Step types and the BPM Palette

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh004.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>Working with steps

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh204.htm

Several types of steps are used by the workflow author when building a workflow map. This page lists these categories of steps. Except for the launch step, these step types are found in the BPM Palette.

As described in another lesson, the step palette pane at the bottom of the Process Designer window contains collections of predefined steps that represent different types of activities in the workflow. The BPM Palette contains the steps that are most frequently used in building a workflow map:

- Activity
- System
- Component
- Submap

The launch step is the first step in a workflow. In Process Designer, the launch step is automatically placed on the main workflow map and cannot be deleted, copied, or placed on another map. You configure the step properties for the launch step in the Properties pane the same as you do for other step types.

IBM Training

Overview of activity step properties

- For each step, you define properties that are used only in that step:
  - General tab
    - Activity type, participant privileges, instructions, and step processor
  - Parameters tab
    - Data fields, attachments, workflow groups, and access rights for each
  - Routing tab
    - Responses, incoming and outgoing routing information
  - Assignments tab
    - Dynamically assigned values for data fields before or after processing a step
    - Milestones
  - Deadline tab
    - Time limit and reminder
  - Custom Attributes
  - Description
  - Advanced

Figure 3-6. Overview of activity step properties

In Process Designer, select a step in the map area to display the properties for that step in the object properties pane. Different step types have different properties.

For each activity step in the workflow, you define properties that are used only in that step. The properties are on a tab in the Properties pane. Depending on the step type, you can define properties in the following categories.

General tab

You specify activity type, participant privileges, instructions to the participant, and step processor assignment. Various system-provided step processors are provided, such as Approval Launch HTML and Approval HTML step processors. The Participant Privileges option allows the designer to control how work can be viewed or if work can be reassigned at a step.

Parameters tab

You specify data fields, attachments, workflow groups, and access rights for each step. Workflow groups are described in another lesson in this course.

Routing tab

You specify responses, incoming and outgoing routing information, and conditional logic. Workflow routing is described in the next lesson in this unit.

Assignments tab

You specify Milestones and Field Assignments. Milestones are described in another lesson in this course.

Deadline tab

You specify a time limit in which to complete the step and a reminder relative to the pending deadline. Deadlines and reminders are described in another lesson in this course.

Custom Attributes

You can specify one or more custom values as attributes of a step. The value exists only while the step is active and it cannot be used by any other step in the workflow. The value must be a literal, not an expression.

Simulation tab

You specify step duration and expected weights of outgoing routes for simulation scenarios. This feature is used together with Process Simulator to simulate workflows performance through "what-if" scenarios. Process Simulator provides workflow authors with information to help streamline business processes.

Description

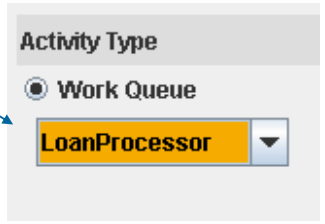
You can optionally create a text description for documentation purposes. This information is not used when the step is processed.

IBM Training

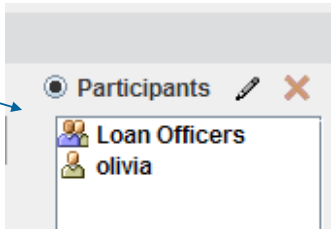
Activity type

- For an activity step, you specify how the step is processed:
  - By Work Queue or Participants

Work Queue step:
No specific assignment
- Participants with [QP] queue access privileges can select and process work.
- Set security for queue in Configuration tool.



Participants step:
Work is assigned and placed in the Inbox for
- LDAP users and groups
- Workflow groups



Explore workflow step types

Figure 3-7. Activity type

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>About Activity steps>Activity step - general properties>Specify a participant to process a step

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh095.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>About Activity steps>Activity step - general properties>Specify a work queue as the step destination

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh166.htm

Work Queue activity type assignment

When an activity step is assigned to a work queue, any workflow participant with the appropriate access privileges to the work queue can select from the work items that the queue contains. For example, any member in an accounting group is allowed to review payment requests in the Accounting work queue. Access rights for participants are assigned to the Accounting work queue

in the Configuration view of Process Designer or in Administration Console for Content Platform Engine.

You select a work queue from the list of all work queues available in the isolated region.

The top screen image on this page shows an example work queue activity type and LoanProcessor work queue is selected.

Tip: Your user ID must have access privileges for the work queue. Otherwise, the queue is not available to you for selection in Process Designer.

Participant (Inbox) activity type assignment

A step participant is any user or group that is assigned to process work at one or more steps in a workflow. You can assign participants at design time, or participants can be assigned during execution of a step. When a workflow is launched, work assigned to a participant appears in that participant's Inbox when the associated step becomes active.

You can also define workflow groups within a workflow definition, which are placeholders for one or more users or groups. A workflow group can be assigned as a participant for any step. The members of a workflow group typically do a particular job function in a workflow, for example, accounts payable clerks or supervisors. A designer can use workflow groups to configure a step so that workflow participants can dynamically assign users to process work, either at launch time or during processing.

The bottom screen image on this page shows an example participant step destination assigned to a group (Loan Officers) and a user (Olivia).

Participant privileges for a step

You can also specify participant privileges for a step by using the General step properties tab. By selecting the Reassign check box for a step, you allow a workflow participant to reassign work at this step. The participant can assign another user to take over the role or can delegate the work to another user, and then review it before moving the work to the next step.

Other participant privileges are “View status” and “View history.”

IBM Training

System steps

- Specify a process that the workflow system completes, **not** a workflow participant
- Provide a way to include one or more system functions in a workflow
  - System functions provide control over logic and flow
- Found on palettes the following palettes:
  - General System palette
  - Checkpoint palette
  - Timer palette
  - Web Services palette

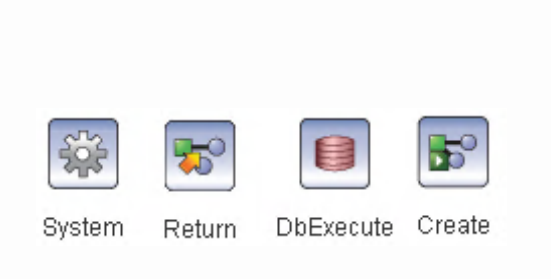


Figure 3-8. System steps

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>About system steps

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh006.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>System functions

http://www.ibm.com/support/knowledgeenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh007.htm

IBM Training

Add a system step to a map

- To add a system step that runs a **single** system function
  1. Drag the specific system step directly onto the map from a palette.
  2. Configure the step parameters, if any, in the step properties pane.
- To add a system step that runs **multiple** system functions
  1. Add a System step from the BPM palette to the map.
  2. In the Properties pane, select one or more system functions to be run at that step.
  3. For each function, double-click and configure function parameters, if any.

Figure 3-9. Add a system step to a map

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>About system steps

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh006.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>Working with steps>Add a step

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh090.htm

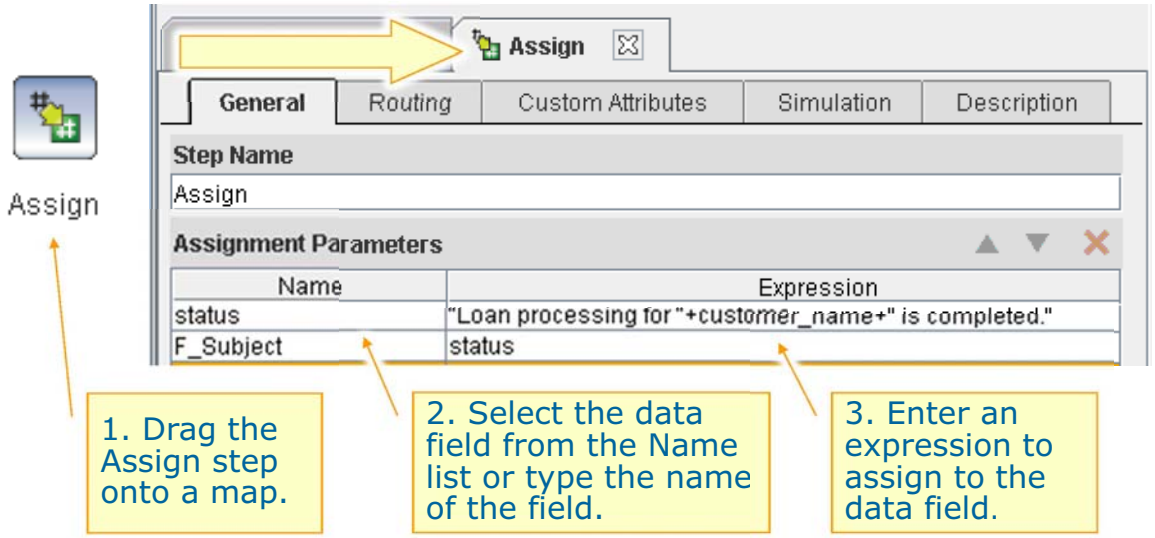
The system steps that appear in the General System palette, Checkpoint palette, Timer palette, and Web Services palette are preconfigured to run a single, specific system function. For example, the Return step that is found in the General System palette is configured to run the Return system function.

The System step that appears in the BPM palette is not preconfigured. You configure this type of step to run one or more available system functions. If you specify more than one system function, arrange the list of functions in the order that you want the functions to run.

IBM Training

Example: Assign system step

- Executes the Assign system function
- Is found on the General System step palette
- Assigns values to workflow data fields
- Allows for one or more fields to be assigned an expression



Explore workflow step types

Figure 3-10. Example: Assign system step

Help path

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

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh096.htm

The Assign system step, found on the General System step palette, executes the Assign system function. The Assign system function assigns one or more values to workflow data fields during workflow processing at the point that the function is executed in the workflow. Assignments are performed in the order listed in the Assignment Parameters list.

You can specify up to 100 assignments in a single Assign system function. Each assigned data field must be defined in the workflow properties in the workflow definition. You can also specify system fields in an assignment.

In this example screen capture, status and customer_name are a string type fields defined in the workflow properties. In the first assignment, the status field is assigned the concatenated string value of “Loan processing for “ and customer_name and “ is completed.” In the second assignment, F_Subject, a system field, is assigned with the string value of the status field. The assignments are processed in order as listed from top to bottom.

Termination steps

- A work item terminates when it reaches the end of its branch or a TerminateBranch system step.
- A workflow terminates when all work items have terminated or if it reaches a TerminateProcess system step.

Figure 3-11. Termination steps

Once terminated, there is no more record of the workflow (or work item) in the queues and rosters.

Only information remaining would be in the event log, if such event logging is activated.

Each event is recorded in the event table.

IBM Training

Instructor demonstration

- No Demonstration for this unit.

Figure 3-12. Instructor demonstration

IBM Training

Unit summary

- Select step types for a scenario
- Use system steps in a workflow

Figure 3-13. Unit summary

IBM Training

Review questions

1. You need a step to be processed by someone in a work queue.
   A. Participant step
   B. Activity step
   C. Work queue step
   D. Invoke step
2. You need a step to get the document ID of an attachment.
   A. Activity step
   B. Create step
   C. Component step
   D. DbExecute step

Figure 3-14. Review questions

If you are taking this course as a self-paced virtual course, return to the main course menu to select the quiz for this unit.

IBM Training

Review questions (2)

3. You want to end a child process of a workflow.
   A. Activity step
   B. TerminateProcess step
   C. Terminatebranch step
   D. End Checkpoint step
4. You want a step that launches a new workflow.
   A. NewWorkflow step
   B. Activity step
   C. Submap step
   D. Create step

Figure 3-15. Review questions (2)

IBM Training

Review questions (3)

5. You want a step that opens another map within the same workflow.
   A. System step
   B. Submap step
   C. Activity step
   D. Create step

Figure 3-16. Review questions (3)

IBM Training

Review answers

1. You need a step to be processed by someone in a work queue.
   A. Participant step
   B. Activity step
   C. Work queue step
   D. Invoke step

   The answer is B.
2. You need a step to get the document ID of an attachment.
   A. Activity step
   B. Create step
   C. Component step
   D. DbExecute step

   The answer is C.

Figure 3-17. Review answers

Review answers (2)

3. You want to end a child process of a workflow.
   A. Activity step
   B. TerminateProcess step
   C. Terminatebranch step
   D. End Checkpoint step

   The answer is C.

4. You want a step that launches a new workflow.
   A. NewWorkflow step
   B. Activity step
   C. Submap step
   D. Create step

   The answer is D.

Figure 3-18. Review answers (2)

IBM Training

Review answers (3)

5. You want a step that opens another map within the same workflow.
   A. System step
   B. Submap step
   C. Activity step
   D. Create step
   E. The answer is B.

Figure 3-19. Review answers (3)

IBM Training

Exercise: Explore workflow steps

Requires:
Course Exercises Guide
Student system

Explore workflow step types

Figure 3-20. Exercise: Explore workflow steps

IBM Training

Exercise introduction

- Use system steps in a workflow

Figure 3-21. Exercise introduction

If you are taking this course as a self-paced virtual course, return to the main course menu to select the exercise for this unit.

Unit 4. Build expressions

Estimated time

01:00

Overview

This unit shows how to use Expression Builder to build expressions that you can use to calculate and assign property values.

How you will check your progress

- Successfully complete the lesson exercises.

References

Knowledge Center

http://www.ibm.com/support/knowledgecenter/SSNW2F/welcome

IBM Training

Why is this lesson important to you?

- You need to use complex expressions with data fields and functions in your workflow to generate property values. You can use these property values to help users respond and to determine which route the workflow takes.
- The workflow administrator exposed important database fields in the queue and roster that can be used in indexes and searches. To use these data fields, create expressions to assign values to them either before or after a step in your workflow.

Figure 4-1. Why is this lesson important to you?

IBM Training

Unit objectives

- Use Expression Builder
- Build expressions to calculate property values
- Assign property values

Figure 4-2. Unit objectives

4.1. Expressions

Figure 4-3. Expressions

IBM Training

Topics

- Expressions
  - Expression Builder
  - Assignment

Figure 4-4. Topics

IBM Training

What is an expression?

- An expression is a formula or set of symbols that returns a single result.
- Uses:
  - Data fields definitions
  - Routing conditions
  - Workflow field assignments
  - Expression parameters
- A simple expression is a single variable or a literal.
  - A variable can be one of the supported simple data types or an array.
- A complex expression is a combination of workflow fields, system fields, operators, literals, and functions.
- Expressions can also be used at run time, when searching for work in Process Administrator.

Build expressions

Figure 4-5. What is an expression?

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Personal Work Manager>Inbox work items>Expressions

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfwm005.htm

FileNet P8 Platform 5.2.0>Integrating workflow into document management>Process applications concepts>Expressions>Variables

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.0/com.ibm.p8.pe.user.doc/bpfe020.htm

An expression is a formula or set of symbols used for obtaining a single result. Expressions can be simple or complex depending on the context. A simple expression is a single variable or literal. A complex expression is any valid combination of variables, literals, operators, and functions.

When you use an expression to define the value of a data field, you can either type the expression directly, or use Expression Builder.

IBM Training

Data types and arrays

- An array is one-dimensional list of elements of the same simple data type.
  - Must be of type Boolean, float, integer, string, or time
- Array elements are delimited by braces: { }
  - Example: {13.29, 98.34, 1.5} is a float array with three elements
- Arrays must always have at least one element (which might be empty).
- Array size is adjusted automatically to contain all elements.
  - Indexes that are assigned out of sequence create all intermediate elements
- Specialized functions are available that work only with arrays.
  - Example: **`elementcount(array_field)`** returns the number of non-null and empty elements in array_field

Build expressions

Figure 4-6. Data types and arrays

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Functions>Array functions

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe003.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Data types

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe000.htm

An array is a list of one or more elements of the same type indexed by an integer (starting with 1). You must specify an initial value for at least one array element when declaring an array.

The Process Engine supports single-dimensional arrays for all of the supported simple data types (Boolean, float, integer, string, and time).

Arrays automatically adjust their size to contain all current elements. For example, if an array currently contains three elements and you assign a value to the seventh element, the array resizes

to include elements 4, 5, and 6. Elements that are added to an array during an automatic adjustment are assigned a value, based on the following information.

- For a Boolean data type, the value that is assigned is true.
- For a float data type, the value that is assigned is 0.0.
- For an integer data type, the value that is assigned is 0.
- For a string data type, the value that is assigned is <blank> or “”.
- For a time data type, the value that is assigned is <today's date and time> (for example, 11/28/09 9:18 AM).

Array size

You can put approximately 256,000 elements into an array. This limit applies to internally stored arrays, and the limit might not apply to arrays that are passed to and from Content Platform Engine by using API calls.

Array functions

Special array functions return information about arrays, such as nextelement and elementcount. For a description of these functions, see the FileNet P8 Help.

Workflow groups and attachments

Workflow groups and attachments are special types of arrays. When evaluating workflow groups and arrays, it might be helpful to create an empty workflow property of that type to use for comparison. For example, create an attachment that is named empty_attachment that has no assigned attachments. Use this attachment field to test for a null attachment.

4.2. Expression Builder

Use Expression Biulder to build simple and complex expressions.

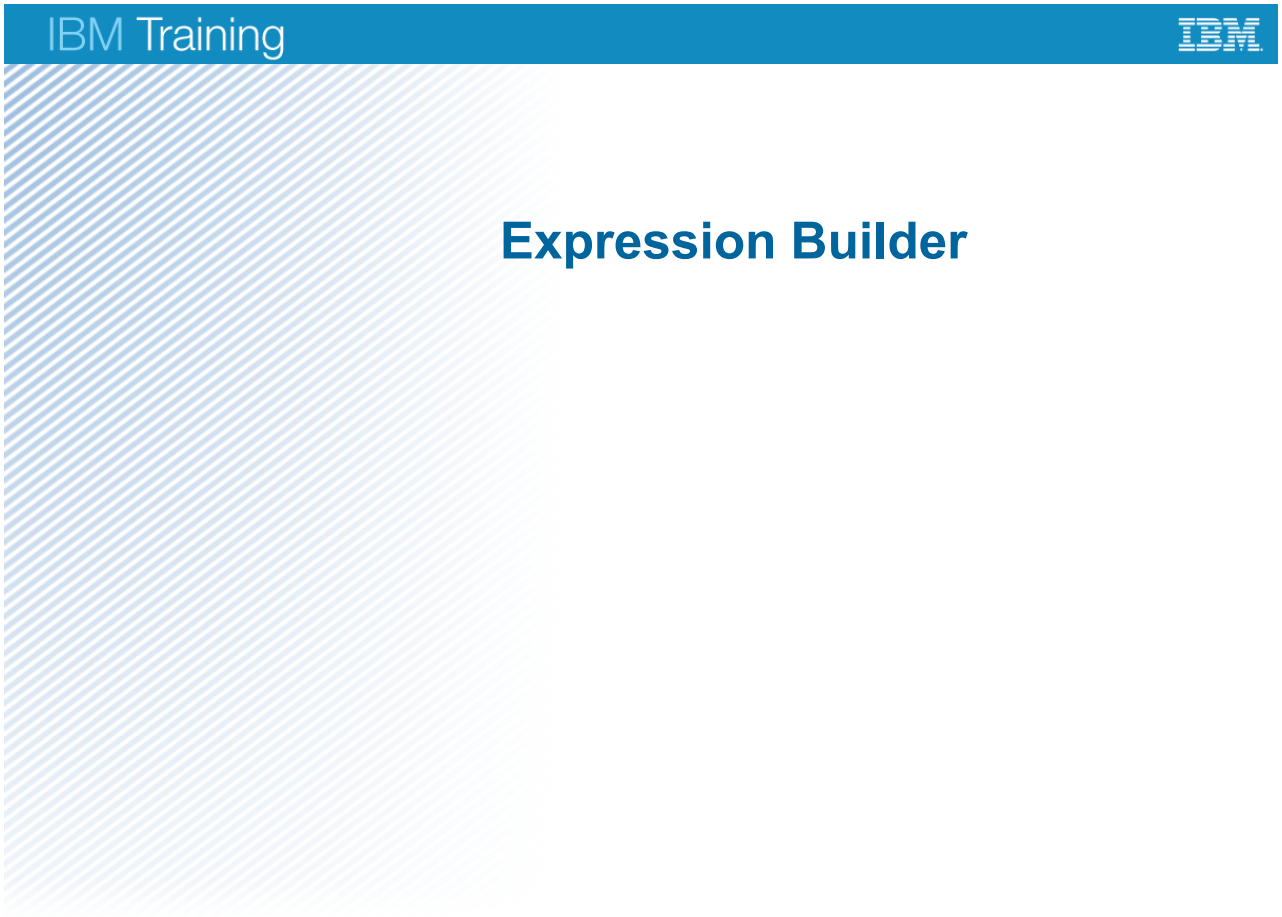


Figure 4-7. Expression Builder

IBM Training

Topics

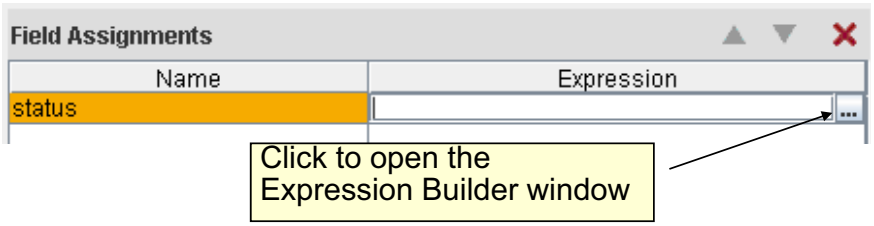
- Expressions
- Expression Builder
- Assignment

Figure 4-8. Topics

IBM Training

Expression Builder

- Use Expression Builder to create expressions.
  - Access is available from a field where you can use complex expressions.
  - You can choose from several options to develop the expression.



- To set initial values of array fields, use the Expression Array Builder window to build an expression for each element in an array.

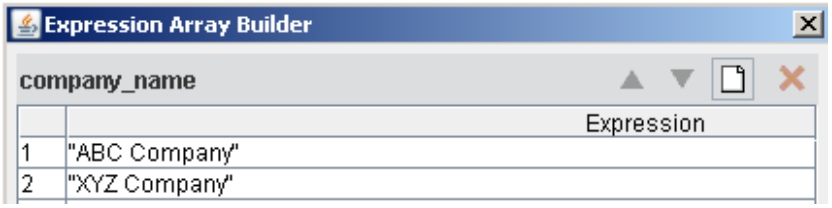


Figure 4-9. Expression Builder

Help paths

FileNet P8 Platform 5.2.0>Integrating workflow into document management>Designing workflows>Define workflow properties>Expression Builder

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.0/com.ibm.p8.pe.designerui.doc/bpfdh147.htm

FileNet P8 Platform 5.2.0>Integrating workflow into document management>Designing workflows>Define workflow properties>Expression Builder>Expression Array Builder

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.0/com.ibm.p8.pe.designerui.doc/bpfdh146.htm

Expression Builder displays the elements of an expression such as field names, attachments, workflow groups, and functions. You can select various elements of an expression and insert them into the expression area by using the buttons that are provided, or you can type the expression directly into the expression area. In the Expression Builder window, you can choose from the following options to build an expression:

- Data fields
- Attachment fields

- Workflow groups
- XML data fields
- System fields
- Partner links
- Functions

You can access the Expression Builder windows in different ways, depending on where you are defining the expression.

- Click the Expression Builder icon (an ellipsis) where it is displayed
- Select the <Build Expression…> selection in a field where it is displayed
- Click the Modify (pencil) icon
- Double-click in the expression text area

How to build an expression

The name of the item for which you are building the expression is displayed in the title bar of the window. Build the expression in the text expression area by inserting the names of existing fields and operators. Alternatively, you can type directly into the expression text area.

Expression array builder

When you are defining initial values for an array field, you can use the Expression Array Builder window to define each element in the array.

IBM Training

Literals and operators in expressions

- You can use literals of all data types, except time
  - Boolean examples: **`true, false`** (These values are case-sensitive.)
  - Float examples: **`3.25  0.2536  -1.5e-25`**
  - Integer example: **`477`**
  - String example: **`"a string field"`** (Quotation marks are not considered part of the string.)
  - Array example: **`{1.25, 3.67, 333.2}`**
- Use operators when building expressions. Operators are evaluated in order of preference
  - Parentheses () for logical grouping
  - Arithmetic operators: **`+ - / *`**
  - String concatenation: **`+`**
  - Relative operators: **`<  >  =  <=  >=`**
  - Logical operators: **`not, and, or, like, is null, is not null`**

Build expressions

Figure 4-10. Literals and operators in expressions

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Literals

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe017.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Operators

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe018.htm

The time data type does not have a literal value. However, you can use the systemtime() function. This function returns the current time on the server where the function is evaluated.

Operators are evaluated in order of preference and are described in the FileNet P8 Help topic for Operators.

IBM Training

Functions

- System-provided functions are available to build expressions
  - **Not** the same as the system functions used in a system step and found in the General System palette (example: Assign step)
- Selected examples of available functions
  - General functions
    - `if (boolean_expr, expr2, expr3)`
    - `max (expr_1, expr2_, … expr_n)`
  - String functions
    - `len (string_expression)` returns the length of a string
  - Data type conversion functions
    - `convert (source_exp, type_name)`
  - Time functions
    - `adddays(time_expr, number_of_days)` and similar time units

Build expressions

Figure 4-11. Functions

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Functions

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe002.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Design and run workflows>Workflow and database fields>Valid date/time formats

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfwd030.htm

Process Designer provides an extensive set of system-provided functions to use in any expression. Some example categories and functions are listed on this page. For a complete listing of all available functions, see the “Functions” topic in FileNet P8 Help for Process Designer.

Example expressions

- expense_amount >= 100.00
- company_name = “XYZ”
- priority = 9 and (Customer <> “” or Amount = 0.0)

- weekday (systemtime( ))
- myAttachment = “||0|0||” [testing for null single attachment]
- sizeof(myAttachments)<=1 and myAttachments[1] = “||0|0||” [for arrays]
- if (myTestArray[1]=emptyArray[1], “The array is empty”, “The array has contents”)

The time functions use elapsed, calendar time. For example, adddays is using the calendar days, not business days.

IBM Training

Data type conversion

- Functions are available for explicit data type conversion
  - Convert an expression from one type to another
    - Example: **`convert (0, boolean)`** evaluates to false
  - Convert by using a mask: number to string, string to time, time to string
    - Example: **`numbertostring (Num1, "###.##")`** evaluates to the value 45.33 if Num1 = 45.3394
  - Determine whether an expression is a valid value that can be converted
    - Example: **`is_valid ("34.55", float)`** evaluates to true
- Implicit conversion occurs for certain data type combinations to ensure that the data type satisfies the operator or function
  - Float to integer conversion
    - Example: 123.57 assigned as the initial value of an integer data field is converted to 123
  - Integer to float conversion
    - Example: 2 is converted to 2.0 in the expression 10.75 + 2

Figure 4-12. Data type conversion

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Functions>Data type conversion functions

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe005.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Functions>Implicit conversion

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe016.htm

Several functions are available to convert from one data type to another, including composite data types (arrays). For details on these functions and their use, see the FileNet P8 Help topics.

IBM Training

Expression examples

- Time evaluation
  - **`adddays(systemtime(),7)`** returns a time 7 days ahead of current time
  - **`weekday(systemtime())`** returns an integer that represents the day of the week for current time
- Array evaluation
  - You can test for equivalency of two array elements:
    `array1_name[1] = array2_name[1]`
  - Do **not** use **`array1_name = array2_name`** because it results in a malfunction at run time.
- String concatenation operator (+)
  - Example where customer_name is a string data field:
    `"The order is for " + customer_name + "."`
- Verify assignment of a single attachment
  - Create an empty_attachment field and compare:

```
if (attachment_field1 = empty_attachment,
"Attachment not assigned", "Attachment is assigned")
```

Build expressions

Figure 4-13. Expression examples

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Functions>Time functions

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe013.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Expressions>Functions>General functions

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfe006.htm

Test for an empty attachment

Create an attachment that is called empty_attachment that has no assigned attachments. Use this attachment field to test for an empty attachment. Example:
if (attachment_field1 = empty_attachment, "Attachment not assigned", "Attachment is assigned")

Alternative test for an empty attachment

For an attachment, the character string "||0|0||" indicates an empty attachment. It is a string representation of an attachment value, where the vertical bar (|) character is a delimiter that

separates fields that indicate the attachment name, attachment type, library or object store name, and so forth. You can use this string value to test whether a single attachment is assigned. For example, attachment_field1 = "||0|0||" returns true if no attachment are assigned to the attachment_field1 workflow field.

IBM Training

Database fields (Exposed data fields)

- The workflow administrator exposes data fields in a queue, roster, or event log.
- An exposed field
  - Is readable in its original format without opening the work item in a step processor
  - Is available to use in a search filter to define an index, and to store information in an event log
  - Changes the way work items are contained and used
- Why expose data fields?
  - To create indexes from the fields that can be used to track, search, and sort
  - To export field values to other IBM FileNet components, such as Process Analyzer and Rules Engine

Build expressions

Figure 4-14. Database fields (Exposed data fields)

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Java step processor>Work with attachments, fields, and workflow groups>Workflow and database fields

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfsp008.htm%23bpfsp008

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Configuring the workflow system>Getting started with Process Configuration Console>Queue, roster, and event log properties>Managing system fields

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.configui.doc/bpfc018.htm

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Configuring the workflow system>Getting started with Process Configuration Console>Queue, roster, and event log properties>Managing data fields>Choosing from a list of user database fields

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.configui.doc/bpfc047.htm

A data field can be configured for exposure in isolated region queues and rosters by using Administration Console for Content Platform Engine, Process Configuration Console, or the Configuration view in Process Designer. Some system fields are exposed by default in various region data structures.

When an exposed data field is specified for a region object, it changes the way work items are contained and used. The exposed field can be used to create an index to speed searching and sorting of work items and for use when developing custom applications.

The Exposed Data Fields window helps you coordinate field names and types by listing all exposed fields that exist for the isolated region. To use exposed data fields, the names and types of the data fields that you define in Process Designer must match the names and types of the fields configured on the isolated region objects.

The workflow author, the administrator, and the application developer typically work together to determine what fields are needed and how to use them. Generally, not all workflow data fields need to be exposed. Use exposed data fields only when needed to satisfy the application requirements.

IBM Training

Exposed Data fields window

- Access in Process Designer Workflow Properties window
  - Helps achieve consistency in exposed field names
  - Field names and data types must match
- To use the Exposed Data fields window
  1. Open Workflow Properties and select the Data fields tab.
  2. On the Data fields tab, click the Exposed Data Fields button. 
     The Exposed Data fields window opens and lists all exposed fields defined by the administrator and committed in the region.
  3. To see where a field is defined, select a field and click Details.
  4. Choose from the list to create a workflow data field of the same name and data type as the exposed field.

Build expressions

Figure 4-15. Exposed Data fields window

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Configuring the workflow system>Getting started with Process Configuration Console>Queue, roster, and event log properties>Managing data fields>Choosing from a list of user database fields

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.configui.doc/bpfc047.htm

You use the Exposed Data Fields window to help coordinate the data field names and data types with the exposed fields defined on the region objects. The Exposed Data Fields window ensures consistency in exposed field names across queues and rosters in the isolated region.

4.3. Assignment

Assign property values before and after step execution.

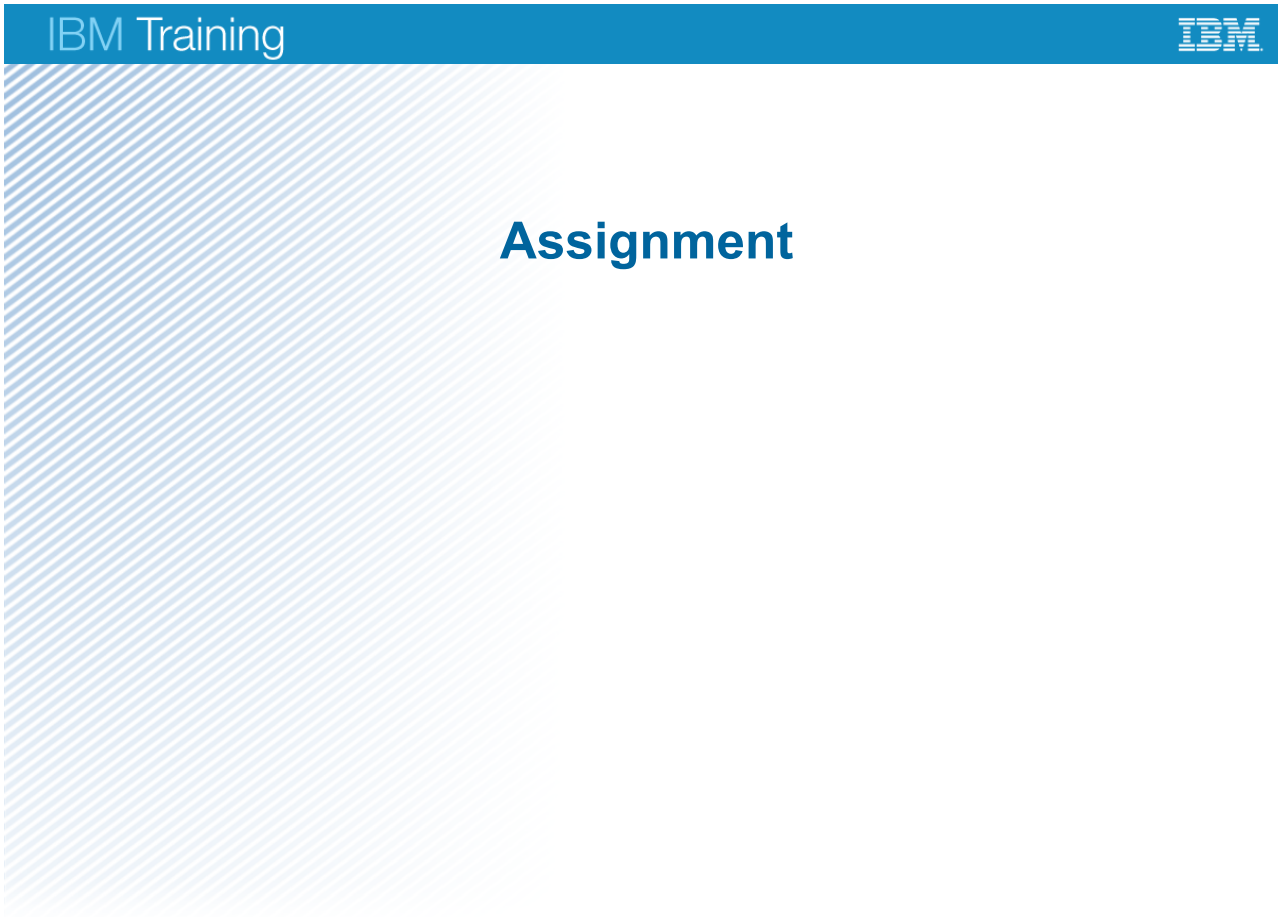


Figure 4-16. Assignment

IBM Training

Topics

- Expressions
- Expression Builder
- Assignment

Figure 4-17. Topics

IBM Training

Assignment before and after a step

- Two assignment options are available in step properties:
  - Assignment before execution
  - Assignment after completion
- Access from step properties pane
  - Select Assignments tab > Before Execution or After Completion.
  - Select the workflow field to assign and then use the Expression Builder window to define the expression.
- Use these options as an alternative to the Assign system function.

Figure 4-18. Assignment before and after a step

Help paths

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>About steps>About Activity steps>Activity step - assignments

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh062.htm

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

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfwd014.htm

From a high-level perspective, a workflow step is a single activity or task performed by a user or an automated process. In reality, a step goes through a series of discrete phases or states during its processing. These step states are not apparent to the workflow participant. However, a workflow author or application developer might need to understand step states to make informed decisions in workflow design. Assignment before execution and assignment after completion are examples of two-step states: preassignment and postassignment.

IBM Training

Example: Assign F_Comment after step completion

- Use case scenario
  - You want to display user comments from one step to users who process the next step.
  - You do **not** want to expose all previous comments or history.
  - View History option is not suitable for this case.
- Design solution example
  - Use Assignment After Completion option and a data field to persist the F_Comment field from Step 1 to Step 2.

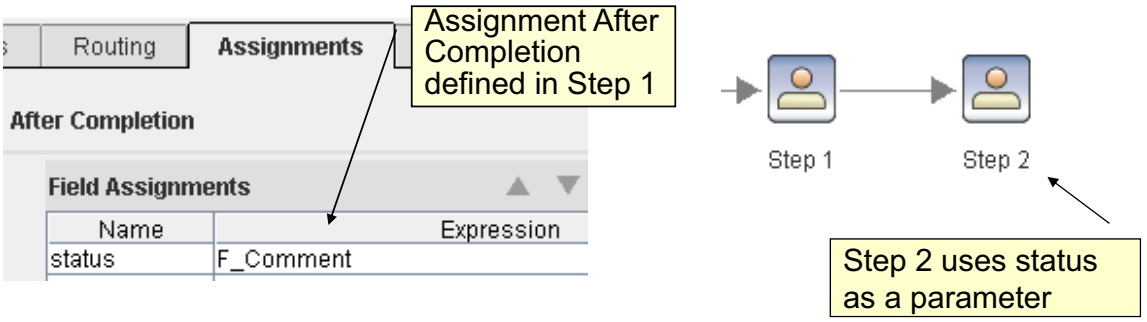


Figure 4-19. Example: Assign F_Comment after step completion

F_Comment contains the current comment made by the user at a step. F_Comment does not persist from one step to the next. It is initialized to null every time a step starts. However, the value of F_Comment is included in the event log for each item recorded there.

In this example use case, you want to display user comments from one step to the users who process the next step. However, you do not want to expose all previous comments or history of the workflow. You cannot use the View History option because this option allows the participant to see workflow history and all previous comments. The View History option is set on the General tab in the Properties pane. If you select the View History option, a workflow participant can view all previous comments and a history of the steps processed in the workflow up to the current step.

The diagrams on this page show an example design solution for this scenario. The diagram at the lower left shows the assignment after completion in Process Designer. The diagram at the lower right shows an example process map with two steps. The status field is a string data field. The assignment is done in Step 1 and the status field is used as a parameter in Step 2.

IBM Training

Limitation of the Assign system function

- The Assign system function **cannot** be used to assign any of the transitory system fields that have a value only at a step.
  - Examples: F_Responses and F_Comment have null values outside of a step.
  - If you use them in an Assign step, the assigned values do **not** persist to the next step.
    - No Process Designer validation error or runtime error occurs.

Figure 4-20. Limitation of the Assign system function

Help path

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

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh096.htm

The Assign system function can be used to assign multiple parameters in a single, separate system step. You can use Expression Builder to define complex expressions to assign to workflow fields. The assignments are executed in the order listed. These features are similar to that of the assignment before execution and assignment after completion options.

The Assign system function cannot be used to assign any of the transitory system fields that have a value only at a step, such as F_Responses and F_Comment. To assign these fields, you must use an assignment before execution or assignment after completion.

IBM Training

Instructor demonstration

- Using the Expression Builder
- Field assignment

Figure 4-21. Instructor demonstration

If you are taking this course as a self-paced virtual course, return to the main course menu to play the pre-recorded demonstrations.

IBM Training

Unit summary

- Use Expression Builder
- Build expressions to calculate property values
- Assign property values

Figure 4-22. Unit summary

IBM Training

Exercise: Build expressions

Requires:
Course Exercises Guide
Student system

Build expressions

Figure 4-23. Exercise: Build expressions

IBM Training

Exercise introduction

- Use Expression Builder to build simple and complex expressions
- Assign database field values in a workflow

Figure 4-24. Exercise introduction

If you are taking this course as a self-paced virtual course, return to the main course menu to select the exercise for this unit.

Unit 5. Launch workflows with subscriptions

Estimated time

01:00

Overview

This unit shows how to use workflow subscriptions to launch workflows automatically with an initiating attachment.

How you will check your progress

- Successfully complete the lesson exercises.

References

Knowledge Center

http://www.ibm.com/support/knowledgecenter/SSNW2F/welcome

IBM Training

Why is this lesson important to you?

- You are implementing a workflow application. A workflow must be launched automatically when a certain incoming document is received. The document is then used in the workflow. To accomplish this scenario, you must create a workflow subscription to launch the workflow with an initiating attachment.

Figure 5-1. Why is this lesson important to you?

IBM Training

Unit objectives

- Create a workflow that launches from an initiating attachment
- Create a workflow subscription that automatically launches a workflow.
- Map properties from a document to workflow data fields.

Figure 5-2. Unit objectives

IBM Training

Methods of launching a workflow

- Manual launch
  - IBM Content Navigator desktop that is workflow-enabled.
- Automatic launch
  - Based on a workflow subscription and an event that occurs on a document, folder, or custom object
  - From a custom solution that uses Content Java and Process Java APIs

Figure 5-3. Methods of launching a workflow

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Process applications concepts>Design and run workflows>About launching a workflow>Automatically launch a workflow

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.user.doc/bpfwd005.htm

An important design consideration is how a workflow is launched in a workflow application. Manual and automatic launch options are available.

Manual launch from a workflow definition file

In a workflow-enabled client, you can browse to locate a workflow definition file and launch a workflow from the menu for that file. Alternatively, you can launch a workflow from a document that is associated with a workflow subscription that specifies manual launch.

Automatic launch with a workflow subscription

A workflow subscription that is defined for a class (document, folder, or custom object) can launch a workflow based on actions such as adding a document object or checking in a new version of a document. A workflow subscription can also be defined on an individual document, folder, or

custom object. The actions that can trigger automatic launch differ depending on whether the subscription is defined on a document, folder, custom object, or class.

For example, if you want to launch a workflow automatically each time a document is checked in, you can assign a subscription to the document class. Similarly, if you want to launch a workflow automatically each time an object is added or removed from a specific folder, you can assign a subscription to the folder class.

A workflow subscription definition can be configured for automatic or manual launch.

Automatic launch from a custom solution

IBM provides Content Java and Process Java APIs that you can use to develop custom programs that launch workflows.

IBM Training

Attachments

- An attachment is a link to information outside the workflow
  - Can be a document, folder, or custom object in an object store, stored search, web address, file on a shared disk, or attachment array.
- Defined in Workflow Properties tab
  - Design time or runtime assignment

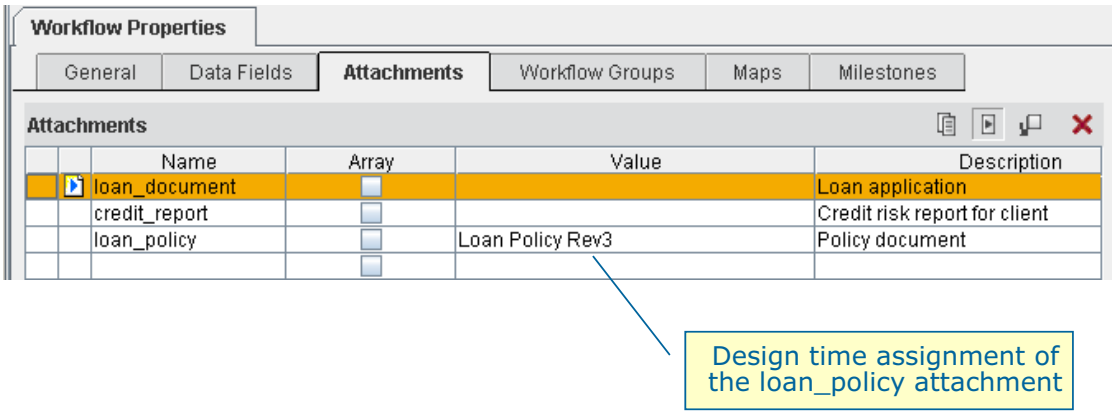


Figure 5-4. Attachments

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>Define workflow properties>Workflow properties – attachments

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh171.htm

Definition of an attachment

An attachment is a link (a pointer) to information that a participant uses to complete a step in a workflow. The specific item that an attachment links to is referred to as a target. The most common target is a document in an object store. In addition, document arrays, custom objects, stored searches, folders, web addresses, or files on a shared disk can also be targets of an attachment.

You define attachments as part of the workflow properties in the workflow definition file, and then indicate which attachments are used at each step.

This page contains an example of the Attachments tab of the Workflow Properties tab, in which three attachments are defined. The loan_policy attachment was assigned a value at design time.

Design time or runtime assignment

To provide flexibility, you can either assign a target to an attachment in the workflow definition at design time or allow the target to be assigned when the workflow is launched or in progress. You assign a target to an attachment if the same target is going to be used every time that the workflow runs. If a different target is going to be used each time that the workflow runs, you define an attachment, but do not assign a target.

In the Value field in the Attachments tab, you specify a target, for example a specific document or folder in an object store. Alternatively, if you leave the Value field blank, the target is assigned by either the launch user or by a participant during processing. Document access and security are configured at the step level.

Initiating attachment

- The attachment that is used to launch the workflow is assigned to the designated initiating attachment at launch time.
  - Only one attachment in a workflow definition can be designated as initiating.
- This attachment is generally a Content Engine object that launches the workflow.

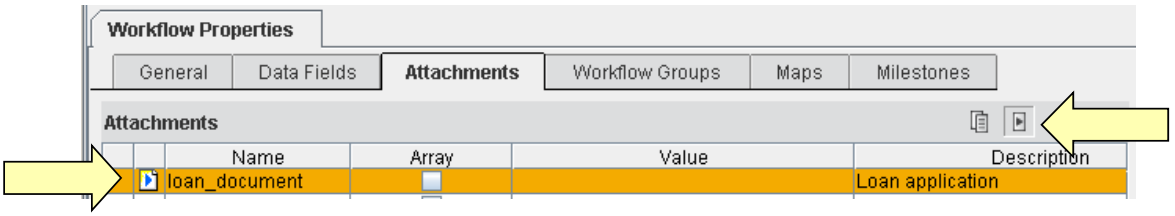


Figure 5-5. Initiating attachment

Help path

FileNet P8 Platform 5.2.1>Integrating workflow into document management>Designing workflows>Define workflow properties>Workflow properties – attachments

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.designerui.doc/bpfdh171.htm

In Workflow Properties, an attachment can be designated as an Initiating Attachment. This designation means that the attachment used to launch the workflow is assigned to the selected attachment. You make this designation by clicking the Initiating Attachment button at the top of the Attachments tab. A workflow definition can have only one initiating attachment.

For example, in an employee expense report approval workflow, the initiating attachment might be the expense report document. The creation of the employee expense report launches a workflow that approves the expenses and provides reimbursement to the employee.

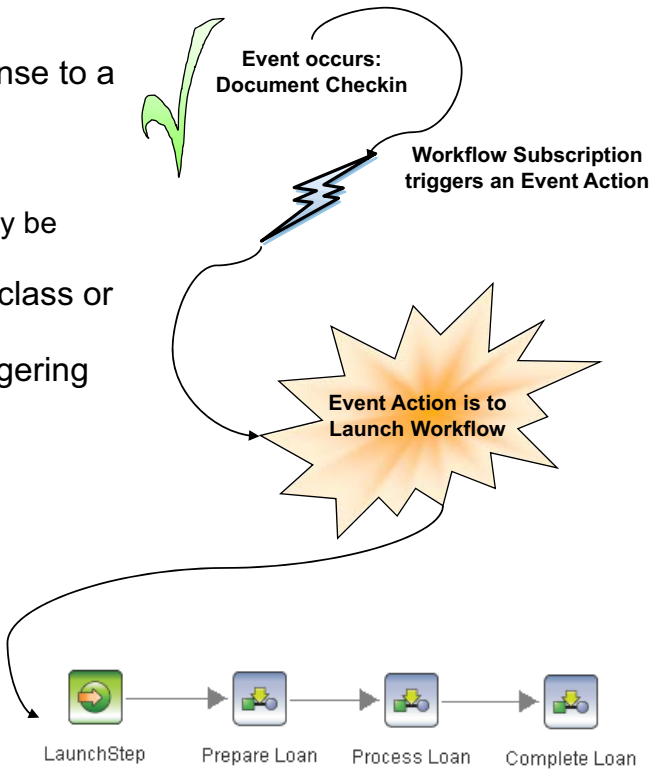
Another example of an initiating attachment is the loan application document created by an application in a loan processing workflow.

This page contains an example of the Attachments tab in Workflow Properties, in which a loan_document attachment is defined as an initiating attachment.

IBM Training

Overview of a workflow subscription

- A workflow subscription
  - Launches a workflow in response to a trigger event
  - Can use manual or automatic workflow launch
    - Workflow definition must already be transferred
  - Can be assigned to an object class or to an individual object
  - Can map properties in the triggering object to workflow data fields



Launch workflows with subscriptions

Figure 5-6. Overview of a workflow subscription

Definition of workflow subscription

An event subscription is an association of a particular event trigger (for example, adding a document) and an event action (for example, filing the document). A workflow subscription is an event subscription with a special type of event action that launches a workflow. The subscription can specify which events trigger an automatic launch of the workflow or can specify whether a user must launch the workflow manually. The trigger event can occur on a document, folder, or custom object. For example, an expense approval workflow might launch automatically when a user adds an expense report to an object store.

How is a workflow subscription used?

A workflow subscription launches a workflow in response to a trigger event that occurs on an associated document, folder, or custom object on the object store.

To ensure consistency in how the system manages a set of common objects, assign subscriptions to classes rather than to the individual objects. This strategy also limits the number of subscriptions that might run simultaneously, which can slow down system performance.

In a workflow subscription, you can map properties of an object with workflow data fields.

When you create a workflow subscription, you must select a transferred workflow definition.

Important

The subscription-launched workflow definition must not use the F_Originator workflow group. Because no user is launching the workflow, the work item is assigned to the Content Engine administrative user.

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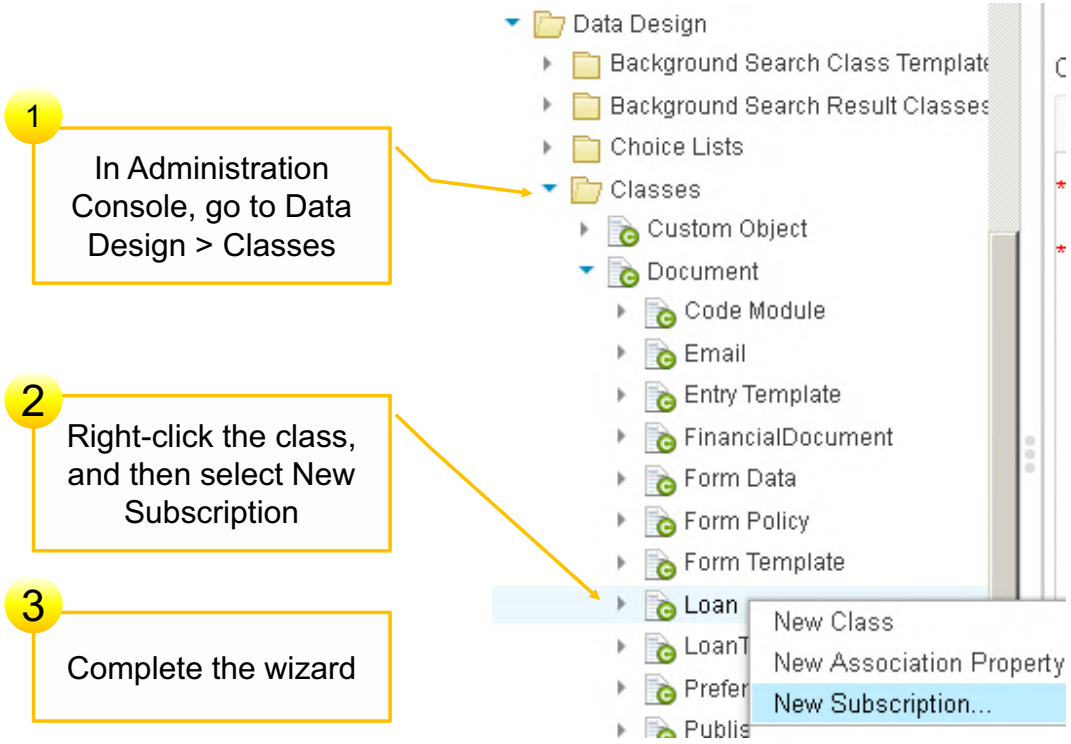
Create a workflow subscription



Launch workflows with subscriptions

Figure 5-7. Create a workflow subscription

Help path

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Changing objects>Subscribing to events>Managing subscriptions>Creating a subscription

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc040.htm

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Example subscribed events

Event	Applies to	Description
Creation Event	All class objects	Add an item to the object store
Update Event	All class objects	Update property values or content of an item
Deletion Event	All class objects	Delete an item
Check-in Event	Documents only	Check in a new version of a document
Check-out Event	Documents only	Check out a document
Promote Version	Documents only	Promote a document version
Demote Version	Documents only	Demote a document version
Update Security Event	All class objects	Update the security setting for an item
Classify Complete Event	Documents only	Add a document by using an entry template with the Auto-Classify option set

Launch workflows with subscriptions

Figure 5-8. Example subscribed events

Help paths

FileNet P8s Platform 5.2.1>Developing FileNet P8 applications>Content Engine Development>Content Engine Java and .NET Developer's Guide>Reference>Subscribable and Auditable Events

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.dev.ce.doc/events_reference.htm

FileNet P8 Platform 5.2.1>Administering>Administering Content Platform Engine>Managing objects>Tracking object activity>Enabling audit logging>Configuring a class to log events>Creating or modifying a custom event

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.ce.admin.tasks.doc/p8pcc013_class.htm

This chart describes some examples of the subscribable events that can be specified in a workflow subscription. These events cause the workflow to launch from a workflow subscription. The events available depend on the type of target object selected for the subscription. The chart lists the subscribed events, the objects that the event applies to, and a description of the events.

You can also enable custom events for your site. If available, custom events are displayed in the workflow subscription wizard with an asterisk after the name.

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Property mapping in a workflow subscription

- You set property maps for object properties and workflow data fields.
  - [Workflow data field] = [object property]
  - When the workflow is launched, the [Workflow data field value] is set by using the [property value].
- Example
  - Workflow subscription property mapping: loan_amount = LoanAmount

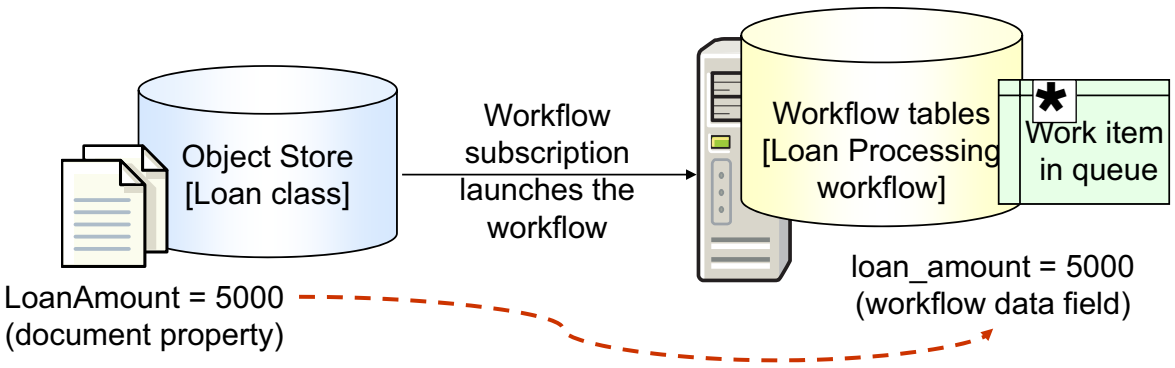

Figure 5-9. Property mapping in a workflow subscription

Example

This page shows a conceptual example of mapping the object properties and the workflow data fields. A Loan Processing workflow has a workflow data field called LoanAmount. In the object store, the Loan class has a custom object property called loan_amount. The Loan class is the target object class designated in a workflow subscription. In the workflow subscription, you map the workflow data field to the custom object property, by using the property mapping loan_amount = LoanAmount. When the Loan Processing workflow is launched by the workflow subscription, the value of the LoanAmount object property is assigned to the loan_amount workflow data field.

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Instructor demonstration

- Create a workflow subscription

Figure 5-10. Instructor demonstration

If you are taking this course as a self-paced virtual course, return to the main course menu to play the pre-recorded demonstrations.

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Unit summary

- Create a workflow that launches from an initiating attachment
- Create a workflow subscription that automatically launches a workflow.
- Map properties from a document to workflow data fields.

Figure 5-11. Unit summary

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Exercise: Create a workflow subscription

Requires:
Course Exercises Guide
Student system

Figure 5-12. Exercise: Create a workflow subscription

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Exercise introduction

- Create a workflow definition with an initiating attachment.
- Create a workflow subscription that automatically launches a workflow.
- Map properties from a document to workflow data fields.

Figure 5-13. Exercise introduction

If you are taking this course as a self-paced virtual course, return to the main course menu to select the exercise for this unit.

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