

Issue

4

UNDERSTANDING SHAREPOINT JOURNAL

Bjørn Furuknap

SharePoint Designer

Workflows

UNDERSTANDING SHAREPOINT JOURNAL

BPM in SharePoint: SharePoint Designer Workflows

This book is dedicated to my wife.

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Credits

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About Understanding SharePoint Journal

Understanding SharePoint Journal is a periodical published by UnderstandingSharePoint.com. The journal covers few topics in each issue, focusing to teach a deeper understanding of each topic while showing how to use SharePoint in real-life scenarios.

You can read more about *USP Journal*, as well as get other issues and sign up for regular updates, discounts, and previews of upcoming issues, at <http://www.understandingsharepoint.com/journal>.

Other Credits











A great big thanks to Kim Wimpsett for doing the copyedit. The quality of work in this issue is greatly attributed to her skill.

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Introduction

Asking the right question, at the right time, to the right people, can trigger a landslide.

Welcome to the first issue of Understanding SharePoint Journal that is not primarily focused on SharePoint Developers. This time I am focusing on power users and administrators, looking to learn how to utilize or understand SharePoint Designer workflows.

I have been reluctant to go into other fields than my native passion of hard-core development. However, a lot of people have emailed me, asking for issues that does not require what one person described as a “master’s degree in never-went-out-of-my-room-during-youth”. I think that means extreme geekiness and a life-long passion for diving into the hardest of problems, just to see if there is anything interesting hidden below.

So, after serious consideration and, I must admit, far more hours of research than I anticipated, I decided to leap in and write an issue for non-developers.

This issue is a first in other areas as well. As you may or may not know, this is the first issue in a series dealing with business process management in SharePoint. The series will not be sequential, but will be interrupted by some stand-alone issues on other topics.

In addition, this issue is the first issue to be a double feature, with a companion issue focused on a separate workflow product called Nintex Workflow. The release of that companion issue is approximately a week later than this issue, so if you are interested in learning about Nintex Workflow, sign up for the USPJ mailing list and I’ll tell you when that happens.

Before we begin, however, I would like to thank Mark Miller of EndUserSharePoint.com for his assistance in the launch of this issue. When I first started writing online, EndUserSharePoint.com was one of my greatest inspirations, and it is a great honor to collaborate with Mark.

To that end, welcome all new EndUserSharePoint.com readers, I do hope you enjoy your stay ☺

.b

Workflow in a Nutshell

Understanding the path you walk.

Welcome to one of the most powerful features of SharePoint: workflows. Inside that small word lies a world of opportunity and perhaps the single most valuable piece of technology currently available. Workflows bear the promise of business process optimization beyond the wildest dreams of anyone.

OK, I'll stop the marketing talk. We're not here to learn how to market; we are here to understand SharePoint and increase our knowledge of workflows in SharePoint Designer. By that virtue alone, we will become all the marketing required.

Before we can commence any investigation into SharePoint Designer, we need to understand some key concepts in workflows.

ICON KEY

⌘ Valuable
information

✎ Test your
knowledge

📖 Exercise

☠ Caution

Workflows saw a rise in popularity after Microsoft started marketing Windows Workflow Foundation as part of the .NET Framework. Released as part of the .NET 3.0 in 2006, workflows quickly became an important part of business applications even for smaller businesses and projects. These days, it seems you can't walk down the street without stepping into one or more workflows.

Note

Although initially marketed as WWF, the marketing guys and gals in Redmond got a visit from some really huge and scary men wearing funny clothes and masks and sporting names like Hulk Hogan and The Undertaker and decided that they might as well use the acronym WF.

Either that or they realized they didn't need the connection to pandas and other threatened species. In any case, I will be using the official acronym WF throughout this journal.

So, What Is a Workflow Anyway?

Workflows are just what their name implies, flows of work. Think of any process where some set of actions are performed, such as buying an item in a store, taking a shower, filing a letter, or even dating. All of these tasks are composed of tasks or states where some action or event is expected.

Let's take a look at one of them, buying an item in a store.

When you buy an item, you need to do the following:

- Find the correct item
 - Take the item to the counter
 - Receive the price from the attendant
 - Decide between using cash or using a credit card
 - If using cash:
 - Give appropriate amount to the attendant
 - Receive any change
 - Verify change
 - Pocket change
 - If using a credit card:
 - Give credit card to the attendant
 - Receive receipt for signature
 - Verify amount
 - Sign receipt
 - Return receipt to the attendant
 - Put pen in pocket
 - Retrieve item, and run before the attendant notices the missing pen
-

Don't be fooled. This task may seem simple, but that's only because we do it so often it has become routine. Several of these steps require an amount of substeps, and any failure will need to be handled according to some set of rules.

A workflow structures such processes into manageable chunks called *activities*. Each activity performs one or more small operations, such as verifying an amount or stealing a pen, and the workflow makes sure that everything is done in order and handles exceptions to the regular flow.

Sequential and State Machine Workflows

Workflows come in two varieties, as either a sequential workflow or a state machine workflow. Although they're two different terms, the two forms are closely connected.

The simplest form is the *sequential workflow* in which a series of actions occur in a predefined sequence. You can use conditions to branch the workflow, but in the end it is just a matter of going from one end to the other in order. SharePoint Designer workflows are sequential workflows.

A *state machine workflow* is a bit more complex, but if you think of state machine workflows as collections of sequential workflows, they may be easier to understand. Each state in a state machine is really just a separate sequential workflow. Either during or at the end of each such subworkflow you can enter another state and thus trigger a second sequential workflow.

Another difference is that although a sequential workflow always ends, a state machine workflow may keep going indefinitely, at least in theory. Think of a workflow to have someone exchange the calendars in an office at the end of the year; unless time itself stops or we stop using calendars, that workflow will keep going forever.

State machine workflows are particularly well suited for workflows that require human interaction. The reason is that humans rarely behave in a strictly sequential manner and often jump in another direction than the designer of the workflow anticipated.

State machine workflows can cope with this situation much better than sequential workflows because state machines by design encourages jumping between different states depending on the outcome of other states.

This issue of the journal will deal only with sequential workflows, as SharePoint designer sadly only supports sequential workflows. That said, you can simulate a state machine workflow in SharePoint Designer by using a repeating workflow and what are known as secondary workflows. Explaining the details of how to do this is beyond the scope of this issue, and frankly, not recommended.

Workflow Terminology

If you are new to workflows, the terminology used can be confusing at best. To help with this confusion, I have compiled a list and short explanation of the various terms and phrases that comprises the workflow lingo.

Actions

Actions are the individual tasks that a workflow performs during its execution. An action can be sending an email, assigning a task to someone, creating a new list item, or many other tasks.

Actions or Activities?

The terms actions and activities refer to the same thing—the individual tasks performed in a workflow. Throughout this issue, I am using the term action, but you may encounter the term activity in other situations.

We will examine many of the available actions throughout this issue.

Branches

A branch in a SharePoint Designer workflow is an action or set of actions that the workflow performs if a condition is met. A branch can also have no conditions and is then called a default branch.

The default branch will execute if none of the conditions on other branches are met, or if there are no branches with conditions at all.

If multiple conditions are met, the branch defined first in the step will execute.

Branching will be covered in Chapter 5.

Workflow Step

A workflow step is just that, a step of a workflow. Each step comprises at least one branch that again comprises one or more actions. Each step will only perform one branch and thus only one set of actions.

You can have as many steps as you like, or rather, as many steps as you need. I'm sure there is a limit to the number of steps, but you will need to seriously reconsider your design if you ever need a lot of steps.

Variables

A variable is a named value, for example the price of an item, the number of days until Christmas, the name of the manager of a department, and so on. Developers (yes, that means you, as you will be a workflow developer in about 80 pages) can use the name of the variables without knowing the underlying value.

Variables are based on one of five variable types, and the values entered into the variables must conform to those types. For example, for a date variable you need to enter a date and not a number.

Initiation Parameters

Initiation parameters are values that the user starting the workflow enters before the workflow starts. The initiation parameters are stored in variables so you can access the values during the workflow execution.

We will look more at variables as well as initiation variables in Chapter 2.

Workflow Forms

During the execution of a workflow, you might find it necessary to interact with a user, for example to collect data, ask the user to perform a task, or just to start the workflow. The pages that the users see while interacting are called workflow forms.

Mission Statement

Throughout this journal, we will learn about SharePoint Designer workflows. We will do so by creating a simple CRM system where an order is received through email and then followed up until the order has been processed and the customer is happy.

Figure 1 shows a flowchart of the solution.

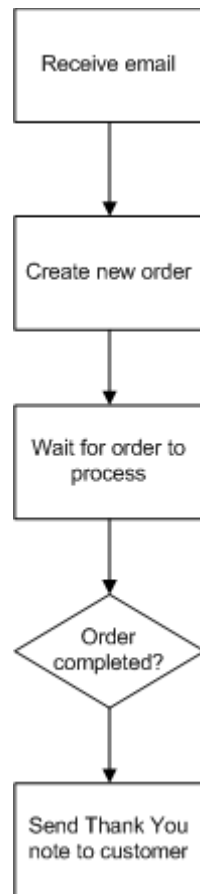


FIGURE 1. SOLUTION FLOWCHART

This solution may seem simple enough, but we will utilize a wide range of SharePoint Designer Workflow features to accomplish our task.

What You Will Need

The first thing you will need is an up-to-date SharePoint installation. You should make sure you get the most recent updates as well, because fixes and updates may alter your experience. You should make sure you have the latest service pack, which at the time of this writing is Service Pack 2.

Besides SharePoint, you will of course need SharePoint Designer. SharePoint Designer was released free of charge on April 2, 2009, so all you need to do now is download and install it.

Third, you should set up a basic Team Site if you want to get the exact results in the exercises. If you do not know how to set up a Team Site, ask your SharePoint administrator to give you a site where you can play around. The workflows here rely on only a few lists, however, so anywhere you can create new lists should suffice.

SharePoint Designer:

<http://www.microsoft.com/spd>

SharePoint Service Pack 2:

<http://www.understandingsharepoint.com/url/10102>

Rules of Engagement

To secure that we work in a manner that is supportable and that we learn how to use SharePoint Designer in an efficient manner, we need to define a set of rules for what we will do:

- **We will use only supportable methods and not harm a single Microsoft-provided file.**
If you modify any file that ships with SharePoint, you will not be able to get support for your solution from Microsoft.
- **We will use the least amount of effort possible.**
As per the introduction, we are going to learn how to utilize SharePoint, not necessarily using the “best practice” for any given scenario. Expect to add or improve error handling and modify texts, for instance.
- **We will utilize SharePoint native techniques whenever possible.**
We might end up taking a step or two back to solve a problem. That is OK; we want to learn to use SharePoint.

Before we dive in and get our feet wet, let’s review and make sure you have understood the key concepts from this chapter. The answers to the questions are on the next page.

REVIEW QUESTIONS

- ❓ 1. Why is a state machine workflow better suited for human interaction than sequential workflows?
 - ❓ 2. What happens if multiple conditions are met in a single step?
 - ❓ 3. What is the difference between an action and an activity?
-

 REVIEW QUESTIONS ANSWERED

- ! 1. State machine workflows are better suited for human interaction because its flexible nature mimics human behavior better than sequential workflows.
 - ! 2. If multiple conditions are met in a single step, the branch defined first in the step will execute.
 - ! 3. Actions and activities refer to the same thing; there is no difference between the two except the name.
-

SharePoint Designer

Workflows

Starting none other than... SharePoint Designer!

Now that we have a good understanding of what a workflow is, we can move on to explore how a workflow is implemented in SharePoint Designer (SPD).

Perhaps a good starting point is to explain what SPD workflows are *not*:

- SPD workflows are not reusable. Once you have defined a workflow, you cannot move that workflow to another list or reuse the workflow somewhere else. Well, you can, but you need to do some configuring magic. I'll show you how later in the chapter, but I don't recommend doing so on a regular basis.
- SPD workflows cannot do loops, at least not by default. By loops, I mean an iterative task performed repeatedly, such as modifying all items in a list or sending an email to remind people about a task every day.
- SPD workflows have a limited set of activities. It is quite possible to utilize these activities to achieve impressive results, but you are still limited more in what you can do than you are in other workflow scenarios, such as Visual Studio workflows. For example, you cannot create state machine workflows without getting very creative.
- Although you can create new activities to use in SharePoint Designer, this requires programming skills, and the upgradability of these custom activities is not certain for the next version of SharePoint.

If none of this makes any sense to you now, I'll explain more throughout this chapter, and you can then return here to see whether everything is a bit clearer then.

So, let's take a look at what SPD workflows are all about.

What Are SharePoint Designer Workflows?

An SPD workflow is an easy, cheap, and somewhat limited entry point to workflow development. They're easy, because most end users and administrators can become workflow developers without too much training. They're cheap, because both SPD and SharePoint are now free. They're somewhat limited, because of the reasons explained in the introduction to this chapter.

The main advantage to SPD workflows, however, is the speed with which you can create simple and custom business processes. Creating a workflow in SPD should not take too long, because if it does, you are likely making a more complex workflow than SharePoint Designer is designed to accommodate.

Let's get down to business and learn by exploring.

Get to Know the SharePoint Designer Workflow Designer

Before we get into the exercises of the following chapters, I would like to show off some of the Workflow Designer options that are available for you. (The Workflow Designer is your main tool for creating workflows in SPD.) We will explore these options in greater detail in the following chapters, so consider this just a tour of what is to come.

You can create a new workflow from several menus in SharePoint Designer. From the File → New menu, you can create a workflow directly, as shown in Figure 2, or you can right-click any of the items in the Folder List and select New → SharePoint Content, as shown in Figure 3.

Note

If you go the New → SharePoint Content route, it does not matter which item in the Folder List you right-click. The Workflow Designer will always ask you on which list or library you want to create the workflow.

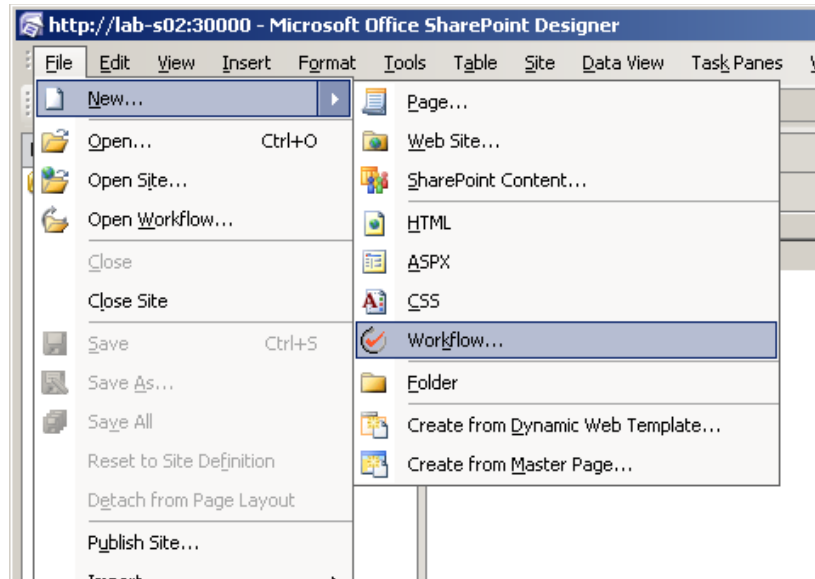


FIGURE 2. FILE → NEW → WORKFLOW

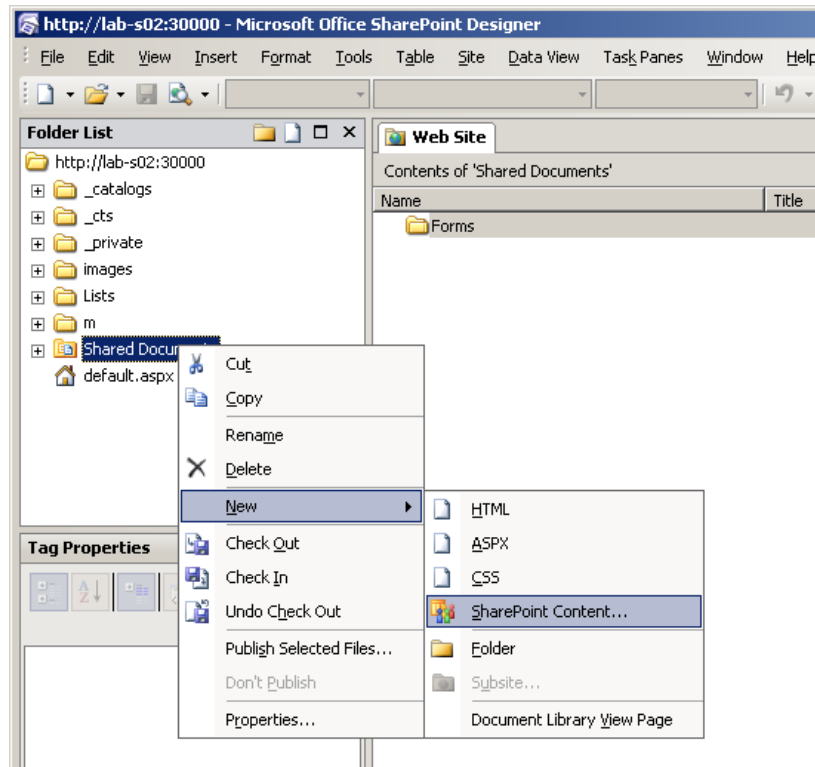


FIGURE 3. NEW → SHAREPOINT CONTENT

If you choose the New→SharePoint Content method, you will get a New dialog box, as shown in Figure 4. Select the Workflow item in the list at the left, and then select the Blank Workflow item to start the Workflow Designer.

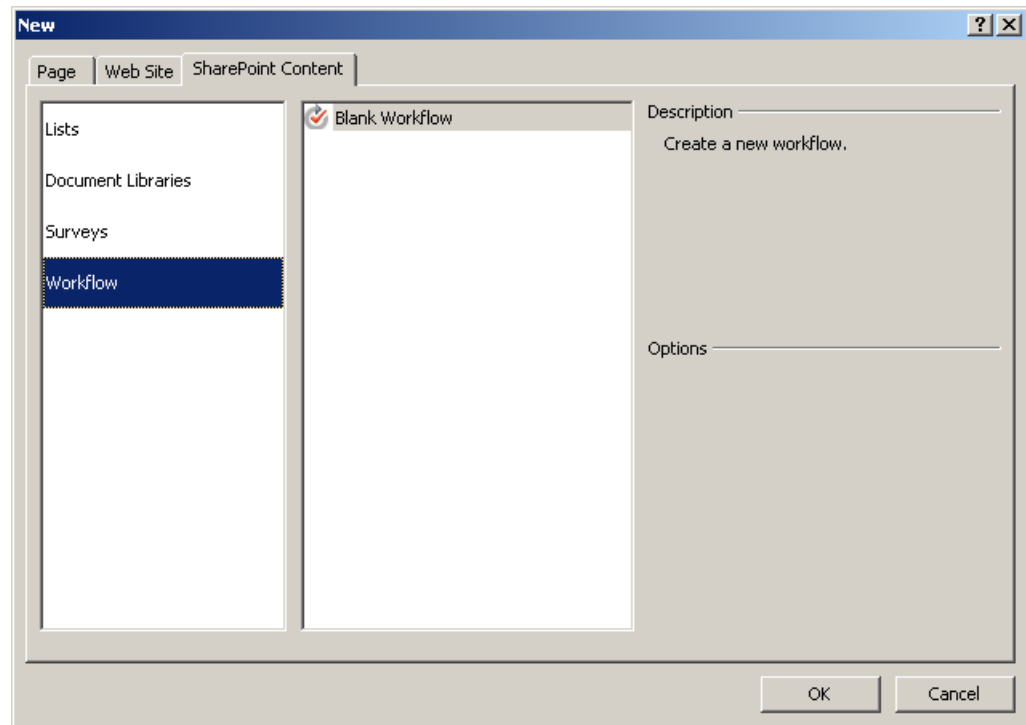


FIGURE 4. NEW DIALOG BOX

If you choose the File→New→Workflow menu option, the Workflow Designer launches directly.

The first page of the Workflow Designer, shown in Figure 5, requests information about where the workflow should be created and the options for how the workflow should launch. It also gives you access to workflow variables management.

The location here is very important, because once you have selected the location and saved the workflow once, you cannot easily change the location. As I mentioned in the introduction to this chapter, SPD workflows are not reusable, so once you have set the location, the workflow locks to that list or library.

Tip

The other options on the Workflow Designer front page are changeable later. For example, for testing an automatically starting workflow, you might want to initially allow manual start to enable testing without having to create new items for each test. We will do this later in the exercises in Chapter 3.

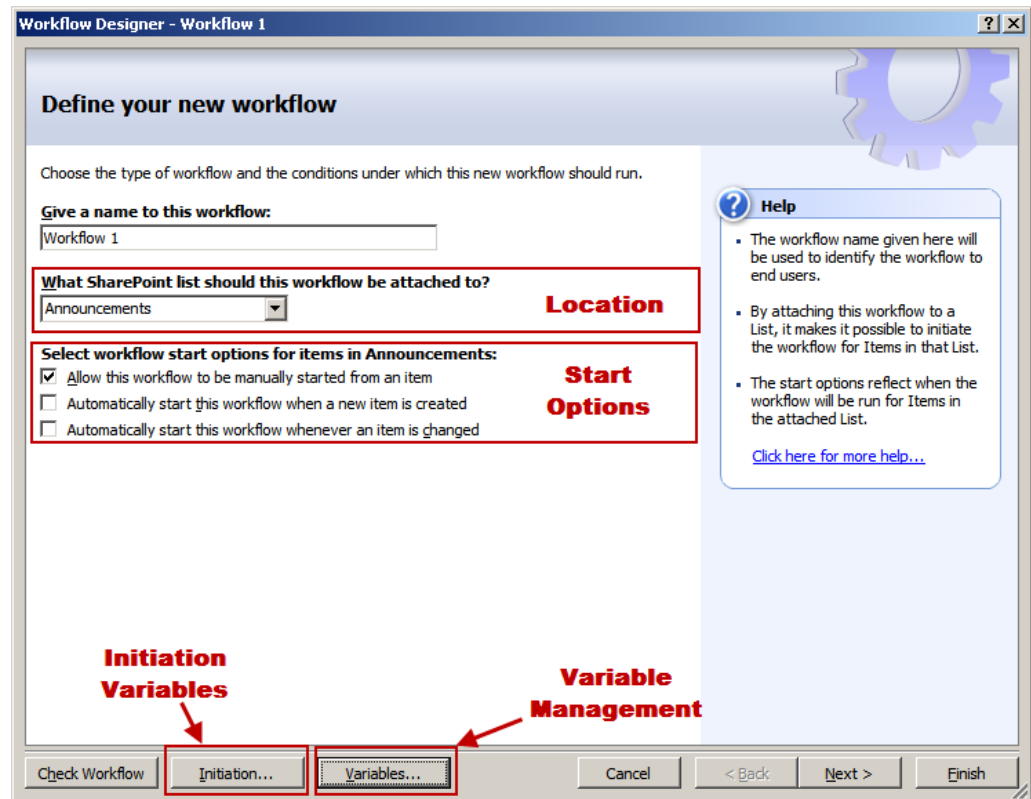


FIGURE 5. WORKFLOW DESIGNER FRONT PAGE

The start options determine how your workflow should trigger. Your options, and you can select them all, are to start workflows manually and to automatically start workflows either when an item is created or when an item is changed.

A very common setup during development of automatic workflows, as mentioned earlier, is to enable the manual option while you are developing. Then, after you have completed developing your workflow, you can reopen your workflow and disable the manual start.

You may also want to set up initiation variables on this page, although you can create these on the next page as well. Initiation variables will be covered later in this chapter, but for now, just know that these are values the user can fill in when starting the workflow.

Once you have completed the first page, you should click Next to go to the main page of the Workflow Designer, as shown in Figure 6.

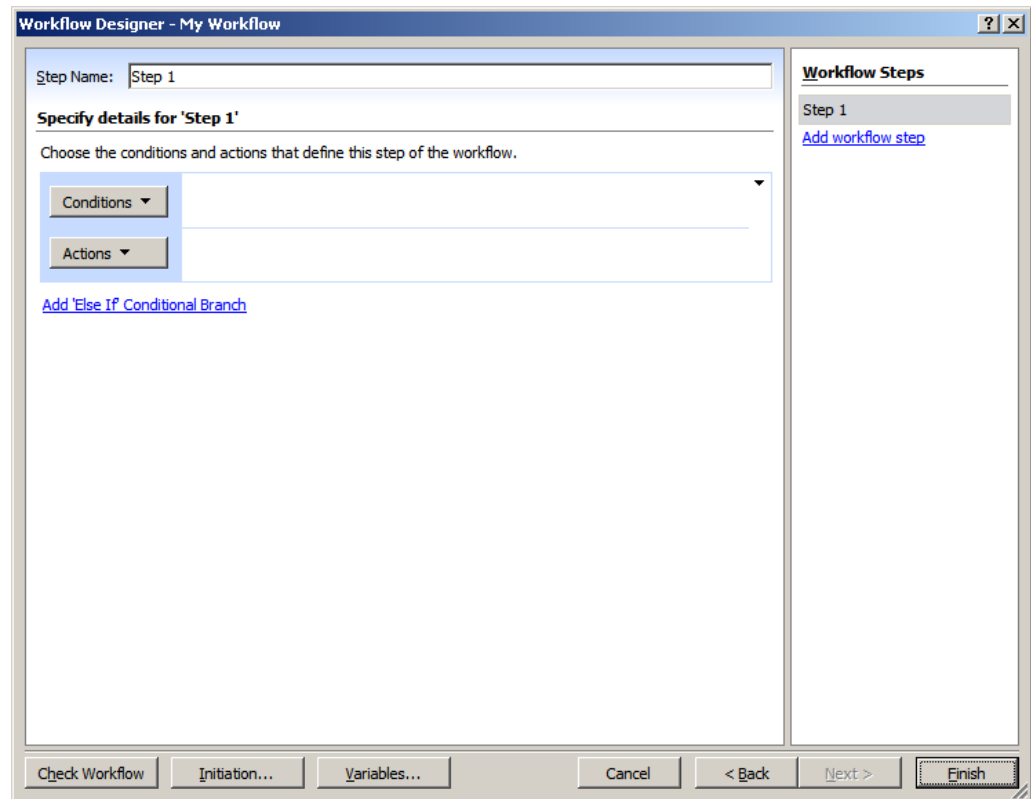


FIGURE 6. MAIN WORKFLOW DESIGNER PAGE

Note that the buttons for initiation variables and workflow variables are also present on the main page.

The main page of the Workflow Designer is where you add the actual logic to your workflow. On the right side, you see the various steps of the workflow, while the left side is where you specify the details of each step.

Each step can also perform multiple actions. For example, if you want to send an email, you may want to construct the text of the email as one action, the subject as a second action, and the sending of the email as the third action. These three actions still constitute a single step.

To make matters even more complex, the actions of each step can also be grouped inside one or more branches, with each branch performing a set of actions depending on a condition. We'll be adding conditional branches in Chapter 5.

If, at this point, your head is spinning a bit, don't worry. I'll explain everything and show you how this all works throughout this chapter.

Branching

The left side, as mentioned, is where you add the logic to your steps. The entire workflow step design process is done inside the Conditions and Actions row, called a *branch*. Initially, only a single branch is added, as shown in Figure 7.

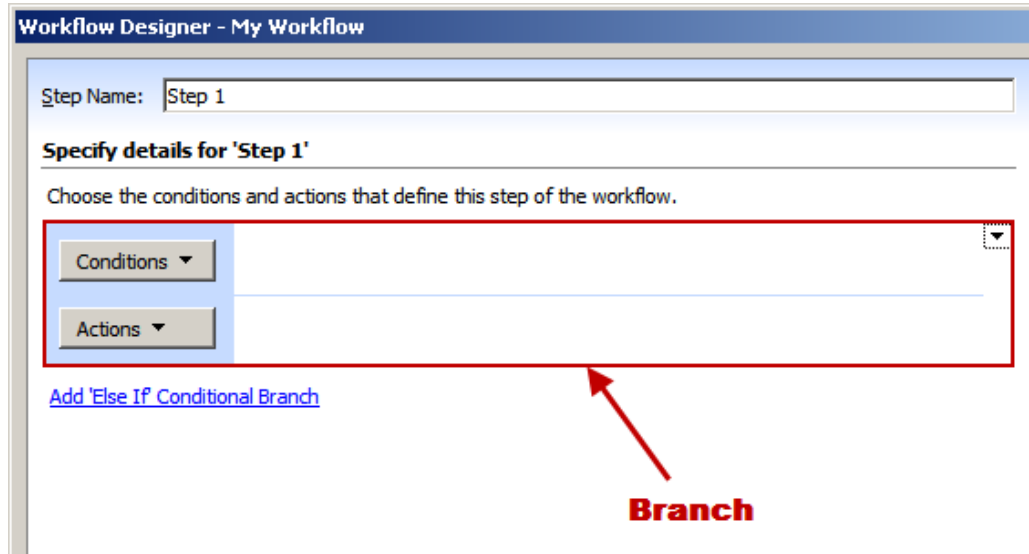


FIGURE 7. WORKFLOW STEP BRANCH

Branching is useful if you want to perform a certain set of actions only if a certain condition is met. Consider the flowchart in Figure 8.

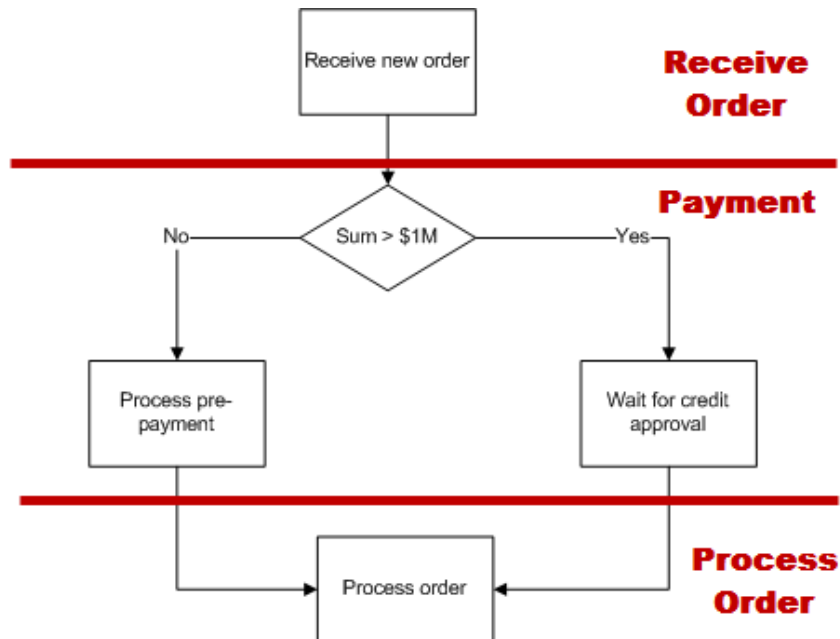


FIGURE 8. CONDITIONAL FLOWCHART

In this workflow, the method for the payment of an order differs depending on whether the order sum is greater than \$1 million. The Payment step is still a single step, but with two sets of actions. Which “path” the step will take depends on the sum, but both paths are still considered the same step.

SharePoint Designer does not support nested branching. For example, in the flowchart shown in Figure 8, if you need to perform a separate set of tasks if the credit is denied, you would need to get creative. Doing so is not difficult, but you need to think a bit outside of the normal way SharePoint Designer works. I’ll show you how in Chapter 6.

If you want to create a conditional branch, you would first click the Conditions button. Doing so will open a menu that allows you to select what kind of comparison you want to make, as shown in Figure 9.

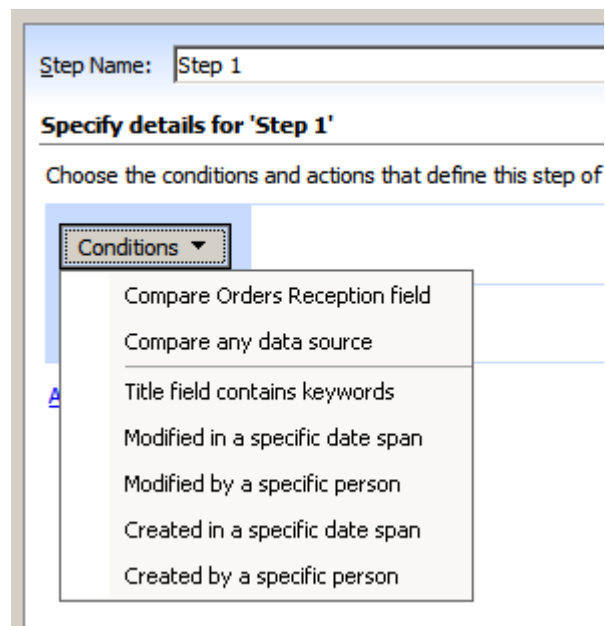


FIGURE 9. TYPES OF CONDITIONS

In Figure 9, the text Orders Reception refers to the list name to which I am adding this workflow.

Once you select the type of condition, the *condition editor* appears next to the Conditions button, as shown in Figure 10.

Step Name:

Specify details for 'Step 1'

Choose the conditions and actions that define this step of the workflow.

Conditions ▼ Add 'Else If' Conditional Branch

FIGURE 10. CONDITION CONFIGURATION

We will spend a lot of time with these editors, because they are also used to configure actions, but I want to just introduce you to how these editors work.

In general, any text that is underlined is something you can configure. For example, clicking the “field” text in Figure 10 will display a drop-down control that lets you select which field to test. Clicking the text “equals” will allow you to change the operator, and clicking “value” allows you to set the value to which the field should be compared. In Figure 11, I have set up a condition to test whether the Title field contains the text New Order.

Step Name:

Specify details for 'Step 1'

Choose the conditions and actions that define this step of the workflow.

Conditions ▼

Actions ▼

[Add 'Else If' Conditional Branch](#)

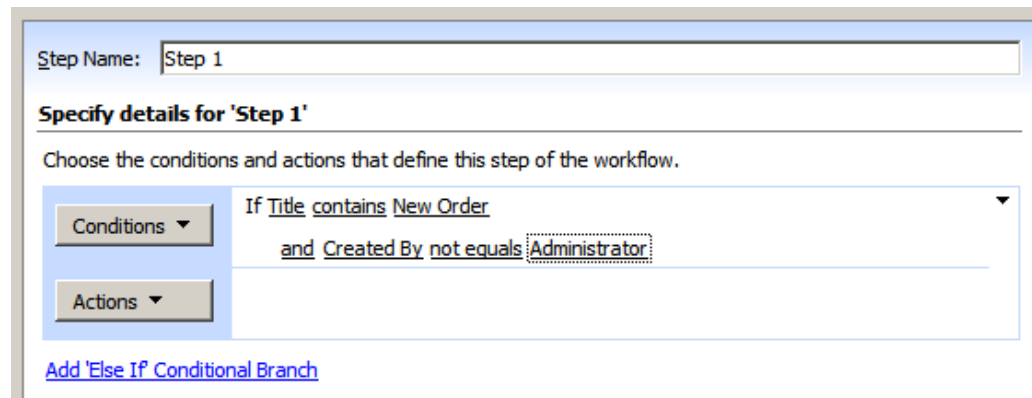
FIGURE 11. SAMPLE CONDITION

The behavior and appearance of the editors vary greatly. Some editors are quite simple, while others are very complex, with several levels of nested lookups to configure a condition or action. We’ll see more of these editors later.

You can also set up more than one condition in a single branch. For example, you may check whether the sum of an order is more than \$1 million *and* that the order came from a new customer that has not previously been approved for credit.

To add a second condition to the same branch, simply click the Conditions button again, and select the second type of condition. Doing so will add the second condition under the first condition and also give you *and* and *or* text where you can select whether both conditions or just one must be true in order to perform the actions. If you click the text *and*, you change the text to *or*, meaning either of the conditions must be true for the branch to perform.

Figure 12 shows an example of multiple conditions. In this branch, I'm testing whether the Title contains the text New Order AND that the item was NOT created by the Administrator user.



The screenshot shows the 'Specify details for Step 1' interface. At the top, the 'Step Name' is 'Step 1'. Below this, there is a section titled 'Specify details for Step 1' with the instruction 'Choose the conditions and actions that define this step of the workflow.' On the left, there are two buttons: 'Conditions' and 'Actions'. The 'Conditions' button is active, and the current condition is 'If Title contains New Order'. Below this, there is a logical connector 'and' followed by another condition 'Created By not equals Administrator'. The 'Administrator' value is enclosed in a dashed box, indicating it is being edited. At the bottom, there is a link that says 'Add Else If Conditional Branch'.

FIGURE 12. MULTIPLE CONDITIONS

The editor for selecting the value for the Created By field comparison is very different from the editor used to select the value for the Title field comparison. We will see more such editors later in this chapter and in the following chapters.

Finally, you can add a second branch in the same step. To do so, you click the down-arrow in the upper right of an existing condition and select Add New Branch. Doing so adds a second set of Conditions and Actions buttons in a new branch. In the second branch, you can set conditions as well. Figure 13 shows how this would look.

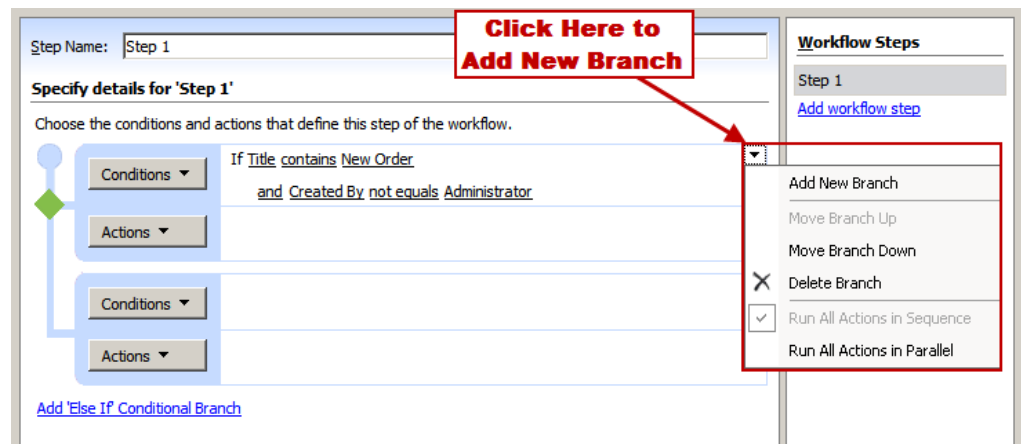


FIGURE 13. MULTIPLE BRANCHES

Let's get some work done and look at the actions.

Workflow Actions

The actions are the bread and butter of any workflow. Actions are what perform, well, actions. Without actions, you will have a very boring workflow.

To add actions to your workflow, click the Actions button of any branch. You will notice a similar pop-up menu as for the Conditions button, but the Actions menu is a bit different. See Figure 14.

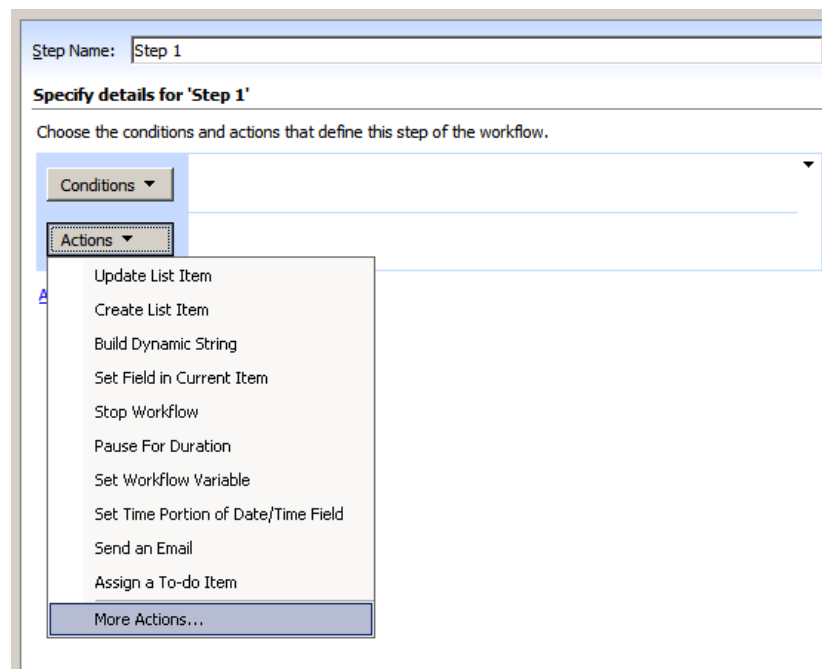


FIGURE 14. ACTIONS MENU

First, notice the More Actions item at the bottom of the menu. The range of available actions is greater than can fit in a single menu, so clicking this option will open a new dialog box. More on that in a moment.

Second, and you will not see this from the figure, the items on the Actions menu are ordered in the order you last used them so that the most recently used action is on the top of the list.

When you click any action in the Actions menu, that action is added to the branch. You then need to configure the action, with an editor that resembles the editor for the conditions. We will explore several of these actions and their editors during the course of the remaining chapters.

When you click the More Actions menu options, you get a second dialog box that displays all installed and available actions, as shown in Figure 15.

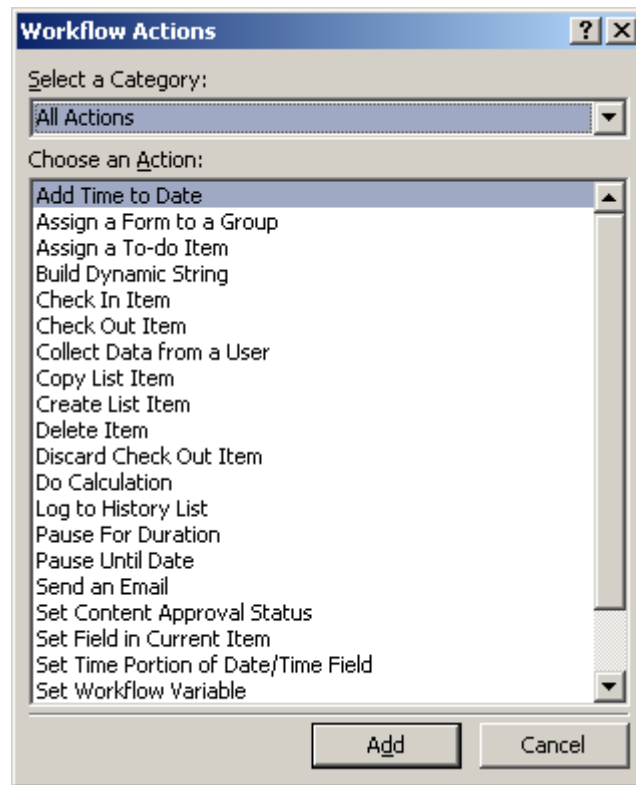


FIGURE 15. MORE ACTIONS DIALOG BOX

This list represents the complete actions buffet, categorized into three categories: core, list, and task actions. You can filter the actions by these categories in the top drop-down menu.

Adding an item from the More Actions dialog box is the same as adding from the Actions menu in the Workflow Designer window.

As for the conditions, you can also add several actions to a single branch. If you do, however, you can decide whether the actions should be performed in sequence or in parallel. If you look back at Figure 13, you will notice an option in the branch menu called Run All Actions in Parallel. Selecting this menu option will cause all actions to be started more or less at the same time, rather than run one after another.

Finally, back in the Workflow Designer window, notice that when you hover over an action, you get a context menu drop-down, as shown in Figure 16. This menu allows you to reorder actions in a branch or delete actions you no longer need.

This context menu is also available for other items in the Workflow Designer, for example, for steps on the right side of the designer. The options for each menu vary slightly, but the options aren't difficult to understand.

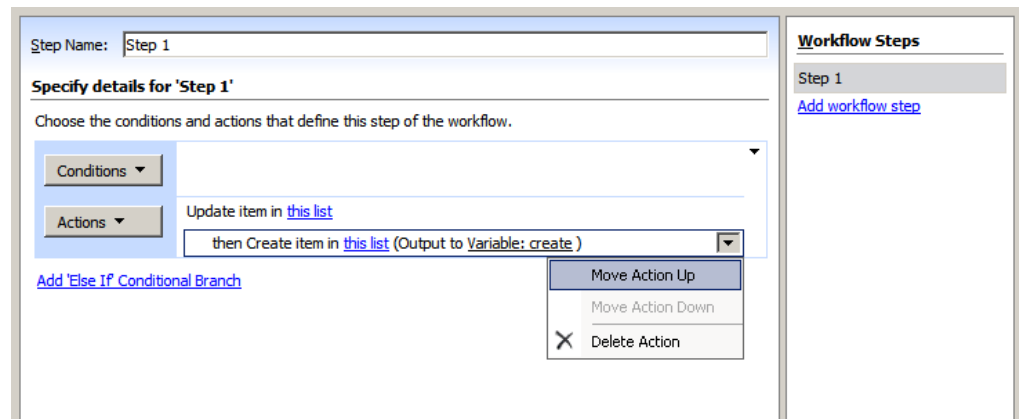


FIGURE 16. ACTION CONTEXT MENU

We will explore many of these actions in later chapters of this issue. Before we move on to those chapters, however, we need to look at another important concept of workflows.

Working with Variables

Workflow variables are vitally important to any but the simplest of workflows. *Variables* allow you to store information retrieved either at the beginning or during a workflow run.

You have access to two different types of variables: initiation variables and workflow variables. The biggest difference is how these variables are created. *Initiation variables* are created by asking the user to enter a value, while *workflow variables* are created from the logic of the workflow itself.

The variables store data in one of five different data types, as shown in the following table:

Workflow Data Type	Initiation Data Type	Description
Boolean	Yes/No	Stores a value that is either on or off, such as True/False, Yes/No, and so on
Date/Time	Date and Time	Stores a Date value
List Item Id	N/A	Store a reference to an item in a list
Number	Number	Stores any number
String	Single line of text or Multiple lines of text	Stores nonformatted text.
N/A	Choice	Lets user select from a drop-down list box or a set of radio buttons

Note that the Choice data type is available only in the initiation data types. The value selected by the user is stored as a string, though, so when you are working with that value in the workflow, you can treat it as a string.

Initiation Variables

If you want to request that the user provide initial values for the workflow, you can add one or more initiation variables. When you do, SharePoint Designer will add controls to the workflow initiation page. In Figure 17, I have added a few initiation variables to a new workflow to show you how the different initiation variable data types are rendered to the user.

FIGURE 17. INITIATION FORM DATA TYPES

The really cool thing here is that SharePoint will create an ASPX form for you to hold the initiation values. This page is called the *initiation form*.

Once you are done with your workflow, you can then modify the initiation form to change appearance or functionality. We will look into how to do so in Chapter 4.

Default Initiation Values

Another important concept with initiation variables is the default values. Consider what will happen if you need initiation variables for a workflow that starts automatically when a new item is created. No user is prompted to start the workflow, and no one ever sees the initiation form.

This is where the default values are important. If you select default values for the initiation variables, these values are used when the workflow starts automatically. If you do not set default values, however, the initiation variables will have no value at all, which may cause problems for your workflow.

You are warned when creating an automatically triggered workflow to set default values for initiation variables. Also, when you save an automatic workflow where initiation variables do not have default values, you are asked whether you really want to associate the workflow, as shown in Figure 18.

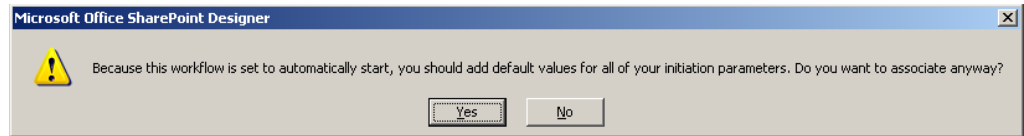


FIGURE 18. INITIATION VARIABLE WARNING

Don't worry, your workflow will still run, but if you rely on initiation variables having values and your workflow is started automatically, you may run into problems.

Before we move on, let's take a short break and stretch our bodies. Then, look at the following review questions to make sure you understand the key concepts discussed in this chapter.

REVIEW QUESTIONS

- ❓ 1. How can you reuse SharePoint Designer workflows in a different list?
 - ❓ 2. What are the available start options for a SharePoint Designer workflow?
 - ❓ 3. Where would you find additional actions not present on the Action button menu?
 - ❓ 4. What is the value type returned from a Choice initiation variable?
-

 REVIEW QUESTIONS ANSWERED

- ! 1. You cannot reuse a SharePoint Designer workflow in other lists at all. While hacks exist, these usually entail more effort than recreating the workflow in the other list.
 - ! 2. The available start options for a SharePoint Designer workflow at manual, automatic on new item, and automatic on item change.
 - ! 3. You would find additional actions on the Actions button menu by clicking the More Actions option.
 - ! 4. The Choice initiation variable returns a string value.
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