Lab 15: Create a New Workflow Process with Activiti Designer

Goal

In this lab you create and deploy three versions of a workflow using the Activiti Explorer and other tools. The goal is to become familiar with using Activiti as a workflow authoring tool.

Objectives

Upon completion of this exercise, you should be able to:

- Create an update user workflow process
- Test the update user workflow process

Requirements

- BPMN Editor
- Eclipse IDE (Mars 2 build)
- Activiti Explorer
- openidm/workflow directory
- Validate that Apache Tomcat is running
- A user named user1 with a password of Welcome1

Exercise 1: Create and deploy a simple workflow in Activiti Designer

In this exercise you use the Activiti Designer to:

- Create a simple workflow project
- Deploy the workflow project
- View the workflow in the OpenIDM Admin UI
- Start an instance of the project and access it as a user
- Install Eclipse and Activiti Explorer on Linux or Windows

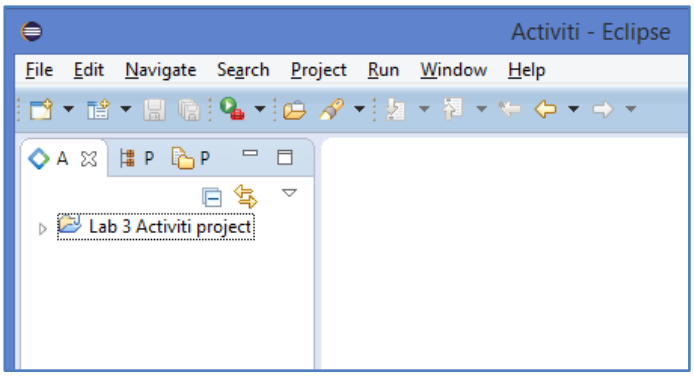
Task 1: Create a user account

This lab requires a user named user1 with a password of Welcome1. If that user is not present on your instance of OpenIDM already, create the user as the OpenIDM administrator. Go to Manage/Users and select New User to create the user and password with the following values:

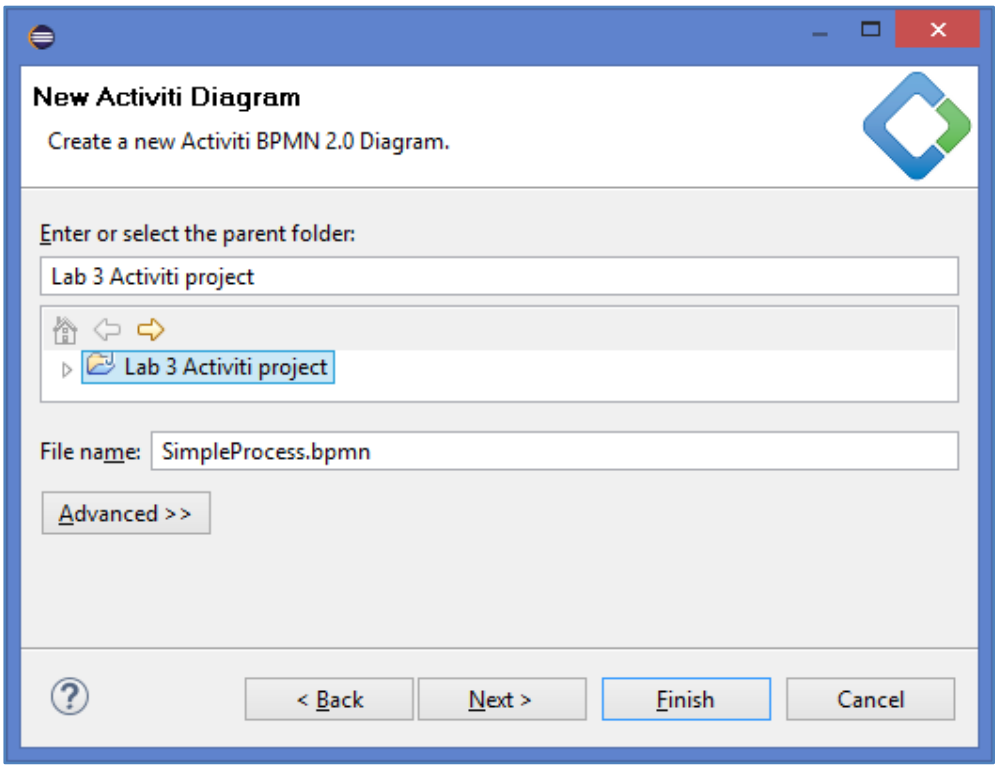
- Username: user1
- First name: User
- Last name: One
- Email address: user1@example.com
- Password: Welcome1

Task 2: Create the SimpleProject workflow

1. Start the Eclipse IDE.
2. Create a new Activiti project. Select New Project, then select Activiti Project. Click Next.
3. Give your project a name, like Lab 3 Activiti Project, and click Finish. The new project opens in the Activiti tab.



4. Add a new BPMN diagram. Select New/Other and select Activiti Diagram. Select the project, then in the File name field enter enter SimpleProcess.bpmn. Click Finish. This creates the project BPMN file.

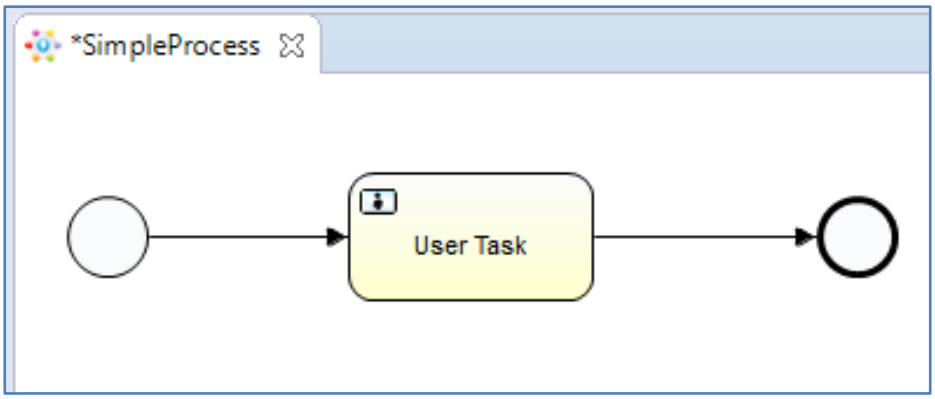


5. Add a Start Event, end End Event, and User Task. To add an item from the Palette, select it then click on the Canvas. Once added you can move and align objects.

6. Link the steps together:

a. Hover the cursor over the Start Event, select the Create Connection arrow, and drag it to the User Task.

b. Similarly, select the User Task and drag the arrow from the User Task to the End Event. Your workflow should now look like this:



c. Save the project.

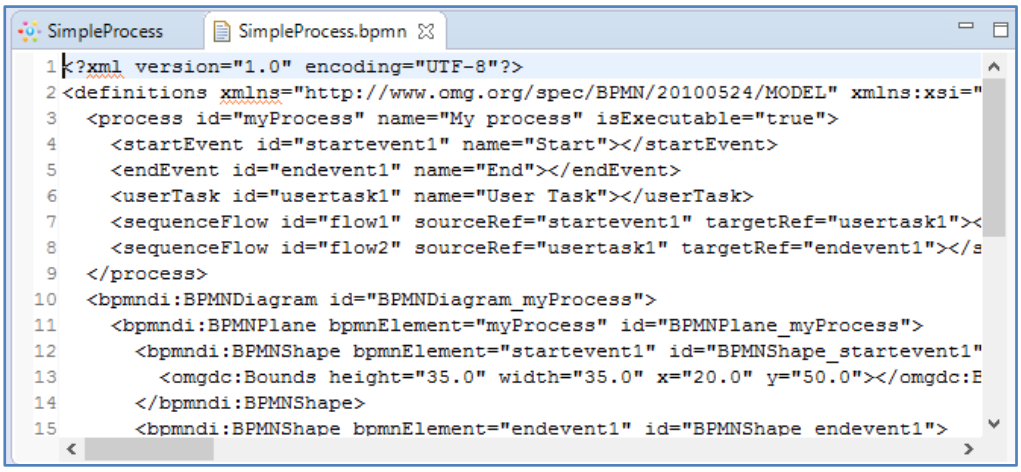
Task 3: Deploy the project

1. Create a workspace directory outside of your OpenIDM directory (/opt/workflow_workspace).

2. Create a workflow directory in your OpenIDM directory:

```
$ cd /opt/openidm
$ mkdir workflow
```

3. View the BPMN file. In the Workspace panel, expand the Activiti and right-click the SimpleProcess.bpmn file at the bottom of the window. Then select Text Editor or XML Editor. The BPMN file opens in a new tab.



4. Select all of the text and paste it into a text editor. Then create a new file in the workflow_workworkspace directory, name it SimpleProcess.bpmn20.xml and paste the copied content into it and save the file. The bpmn20 extension is required to tell OpenIDM that it is a valid business process.

5. Create a bar file in your workflow_workspace:

```
$ zip SimpleProcess.bar SimpleProcess.bpmn20.xml
```

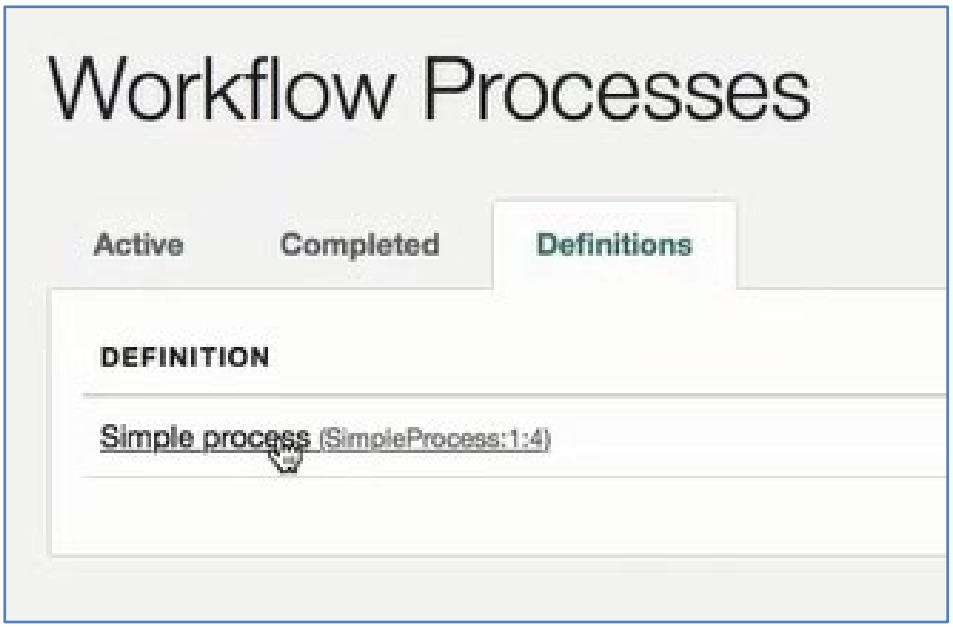
6. Copy your bar file to the OpenIDM Workflow directory:

```
$ cp SimpleProcess.bar /opt/openidm/workflow
```

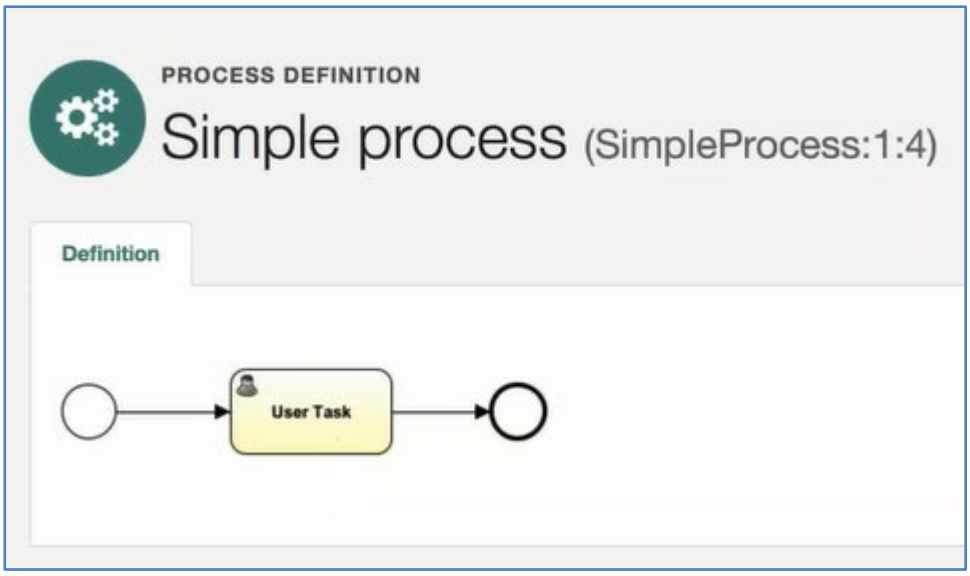
Task 4: View the workflow in OpenIDM

1. Login to OpenIDM in the Admin view as openidm-admin:openidm-admin.

2. Open the MANAGE/PROCESS menu and select the Definitions tab. The deployed Simple Process workflow appears.



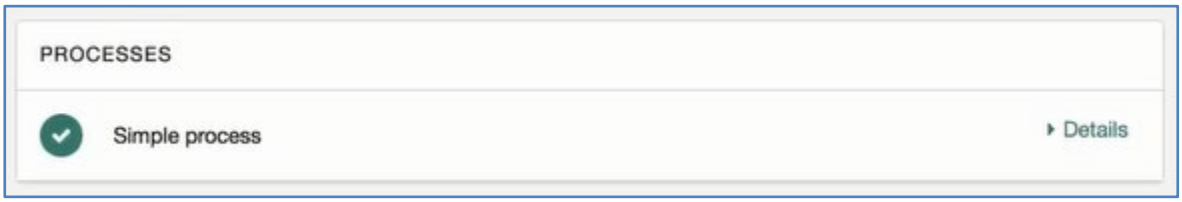
3. Click the Simple process link to view the workflow.

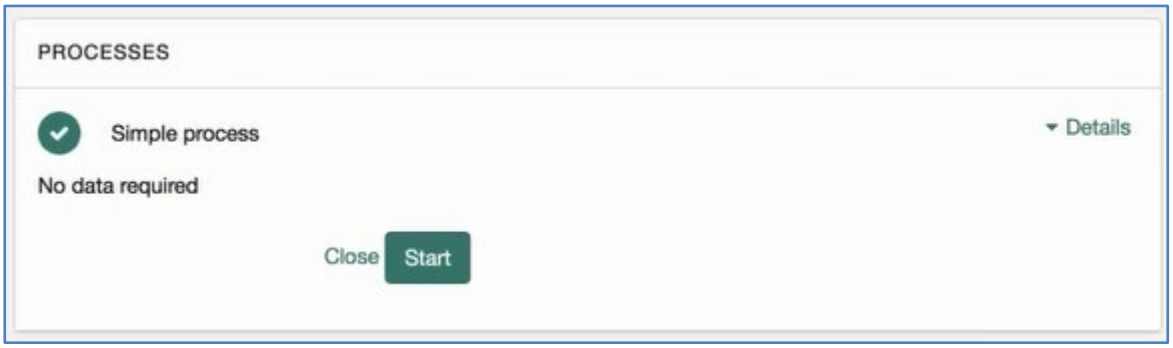


Task 5: Start an instance of the workflow as a user

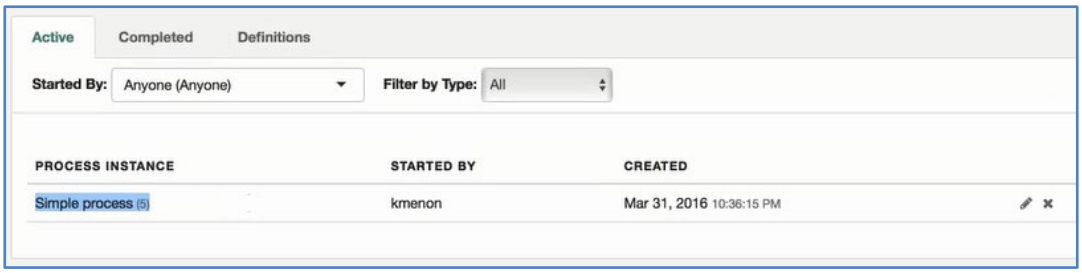
1. Log out as openidm-admin and log back in as user1 with a password of Welcome1.

2. The workflow process is listed under PROCESSES. Click Details and start an instance of the Simple process.

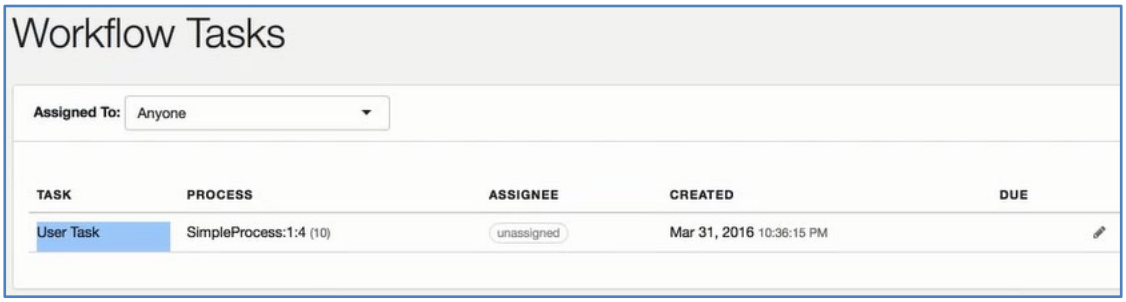




3. Log out as User1 and log back in as openidm-admin. Under MANAGE/PROCESSES, the Active tab shows that an instance of the process is now running.



4. Click MANAGE/TASKS to see the User Task initiated by the workflow process. Currently the task is unassigned because there are no assignees in the workflow XML file.



Exercise 2: Add an initiator, assignee and a form to the SimpleProcess workflow.

In this exercise, you make a copy of the SimpleWorkflow.bpn20.xml file and modify it to include an assignee and simple form.

For this example, you can use the workflow_lab.txt file to aid editing the xml file. Optionally you can simply use the completed xml file in the workflow_labfiles directory. If you use the completed file, make sure to review it carefully along with the steps in this exercise so you understand what was done.

Task 1: Create the SimpleWorkflowWithForm file

1. Go back to your workflow_workspace directory and make a copy of SimpleWorkflow.bpn20.xml named SimpleWorkflowWithForm.bpn20.xml.

2. Open SimpleWorkflowWithForm.bpn20.xml in a text editor. Change the process id to SimpleProcessWithForm and change all instances of the name Simple Process to Simple Process With Form so you can identify the process in the UI.

3. Locate the startEvent ID tag near the top of the file and add activiti:initiator=”startUserId” right after the name tag. Refer to the completed SimpleProcessWithForm.bpmn20.xml file in the workflow_labfiles if you need guidance on where to place the activiti:initiator. You can also copy and paste the code segment from the workflow_lab.txt file.

```
<startEvent id=”startevent1” name=”Simple Process
With Form”
activiti:initiator="startUserId"></startEvent>
```

4. Add an initiator to the userTask element.

```
<userTask id=”usertask1” name=”Simple Process With
Form”
activiti:initiator="${startUserId}"></startEvent>
```

5. Add a form to the userTask tag. The form is defined with the <extensionElements>. You can view this in the SimpleProcessWithForm.bpmn20.xml file. XML code that you can copy and paste is in the workflow_labfiles.txt file.

Task 2: Deploy the SimpleProcessWithForm project

1. In your workflow_workspace directory, create the bar file for this project:

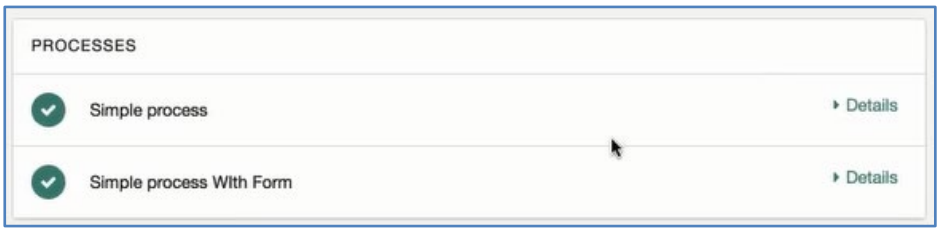
```
$ zip SimpleProcessWithForm.bar
SimpleProcessWithForm.bpn20.xml
```

2. Copy the bar file to the openidm/workflow folder:

```
$ cp SimpleProcessWithForm.bar /opt/openidm/workflow
```

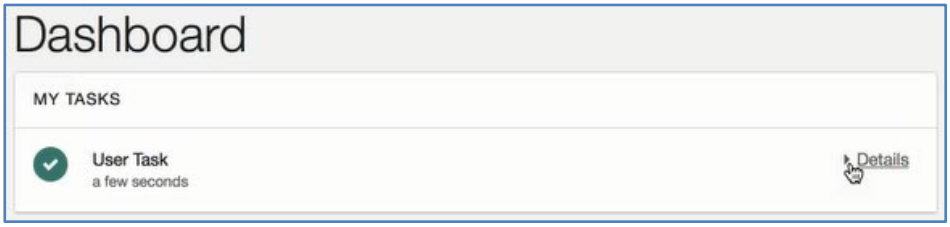
3. Log into the Admin View as openidm-admin:openidm-admin and view the DEFINITION tab of the Workflow Processes page (MANAGE/PROCESSES). The new workflow is present in the Definitions tab.

4. Go to Self-Service to see that the process has been deployed:

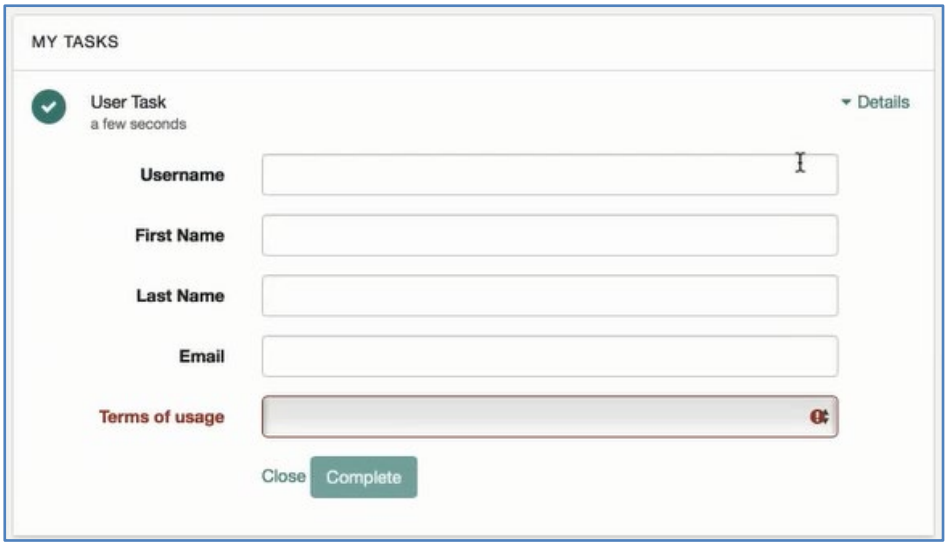


5. Log out of the Admin interface and log in to Self Service as user1.

6. Start a new instance of Simple process with form. Click Details, then click Start. The new task appears in user1's My Tasks because it has been assigned.



7. Click Details for User Task to view and complete the form.



8. Completing the form completes the task, which is removed from the task list.

Exercise 3: Add external validation to the workflow

In this exercise you make further modifications to the workflow:

- Split the previous form into two parts
- Populate form fields with data from within the workflow so they appear in the task

Use the file SimpleProcessWithSplitForm.bpmn20.xml as a guide, or simply deploy that project, making sure to review the file along with the lab instructions so you can understand what it's doing. Refer to the workflow_lab.txt file for XML code to use if you want to try editing the file yourself.

Task 1: Split the form into two parts

In this task you modify the SimpleProcessForm.bpmn20.xml file so the form appears in two parts. The first part of the form is embedded in the startEvent, allowing you to prepopulate data. The second part of the form is embedded in the userTask.

1. Copy the SimpleProcessForm.bpmn20.xml file and name it SimpleProcessWithSplitForm.bpmn20.xml, or use the pre-built file in your workflow_labfiles directory.

2. Edit SimpleProcessWithSplitForm.bpn20.xml to add new extensionElements to display the form in two distinct parts. Refer to the SimpleProcesWithSplitForm.xml file in your workflow_labfiles directory to see the entire project, and the workflow_lab.txt file if you'd like try to make the modifications yourself.

   In the SimpleProcesWithSplitForm.xml, the form is divided between the `<startEvent>` and `<userTask>` tags. The portion of the form in `<startEvent>` can be pre-populated with data.

3. Create a bar file and deploy it to the openidm/workflow directory:

```
$ zip SimpleProcessWithSplitForm.bar
SimpleProcessWithSplitForm.bpmn20.xml
$ cp SimpleProcessWithSplitForm.bat
/opt/openidm/workflow
```

4. View the new process as user1 and start it, populating data into the form before clicking Start to start the proces. When the process appears in My Tasks for user1, it is populated with the data entered into the form fields. The task can then be completed.

Task 2: Add an external XHTML file for form field validation

In this task, you add an XHTML file to the project for validation. Since this introduces an "external" element to the project, it is necessary to create a bar file to deploy to OpenIDM.

The XHTML file is named userCreateForm.xhtml and it is in your workflow_labfiles directory. Make sure to examine that file as part of this task.

1. Copy the SimpleProcessWithSplitForm.bpmn20.xml file and name it SimpleProcessWithXHTML.bpmn20.xml.

2. Open the file and add a formKey parameter to to the startEvent tag that points to userCreateForm.xhtml. This file does the form validation. Refer to the SimpleProcessWithXHTML.bpmn20.xml and the workflow_lab.txt file for guidance if needed.

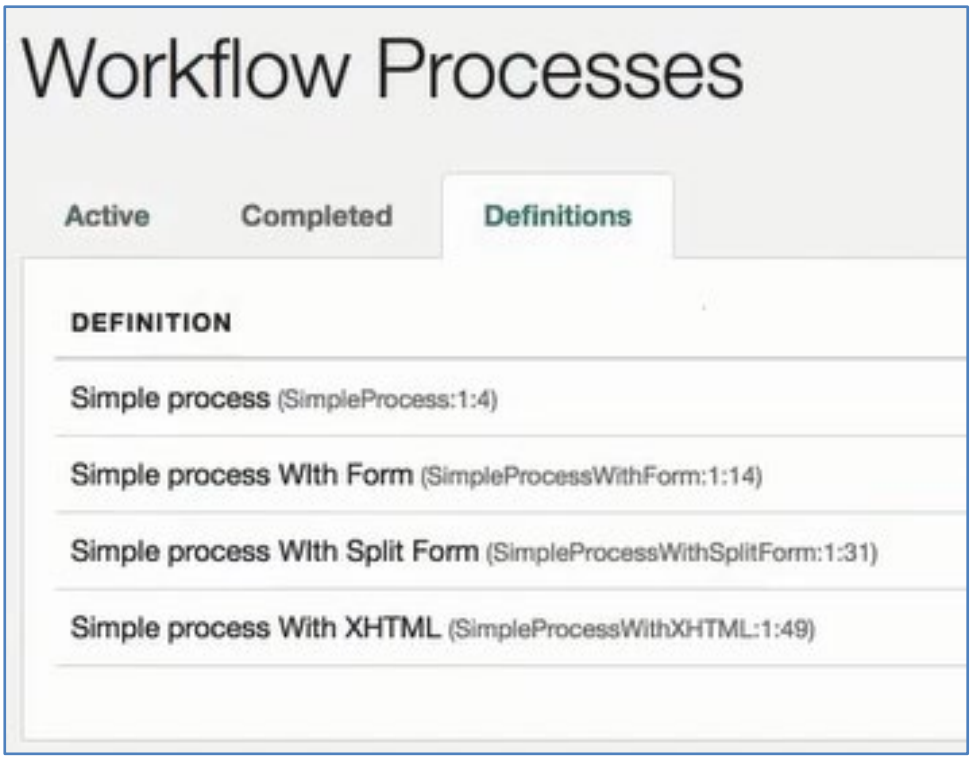
```
<startEvent id="startevent1" name="Start"
activiti:initiator="startUserId"
activiti:formKey="userCreateForm.xhtml">
```

3. Since the process now introduces an external element, createUserForm.xhtml, the project must now be saved as a bar file. To create the bar file specify both elements of the project, SimpleProcessWithXHTML.bpmn20.xml and userCreateForm.xhtml:

```
$ zip SimpleProcessWithXHTML.bar
SimpleProcesWithXHTML.bpmn20.xml
userCreateForm.xhtml
```

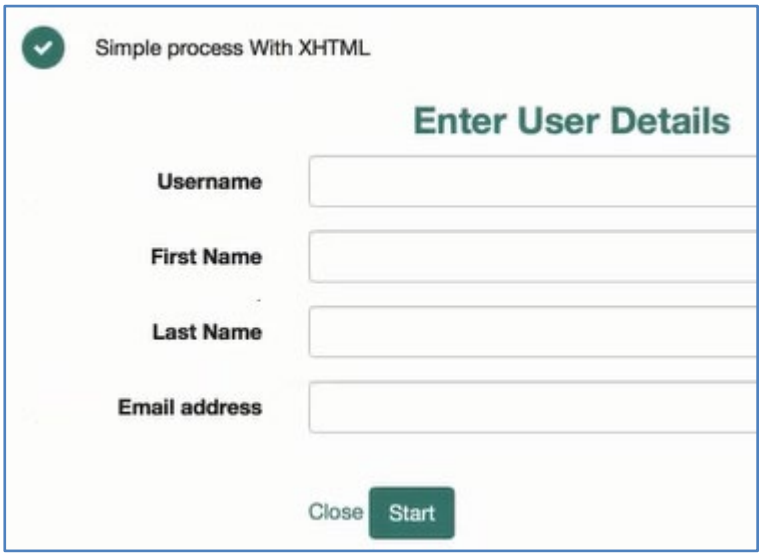
4. Deploy the bar file by copying to your openidm/workflow folder.

5. Log into the Admin UI with openidm-admin:openidm-admin and view the processes:



6. Log out of the Admin UI and then log in as user1 (Welcome1) and view the process there. Notice that the form has changed because it is now using the userCreateForm.xhtml file. The form now has validation on the Username and Email address fields.

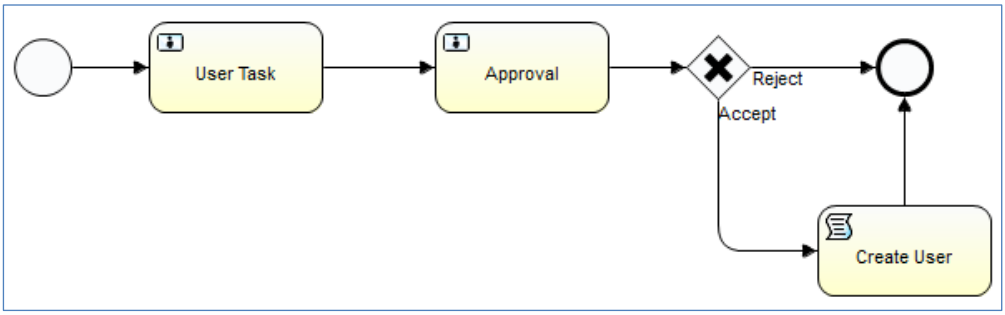
The process requires a unique username and a valid email address. Start the process and try entering an invalid email address to see what happens:



The XHTML version of the form validates the Username and Email address fields. If you enter your currently logged-in Username or an invalid email address, you will get a validation error.

Exercise 4: Add approval using Activiti

In this exercise, you add approval steps and additional logic to your project using the Activiti BPMN editor. Refer to the diagram while creating this in Activiti:



Task 1: Create an approver user

Log into the OpenIDM Admin UI as openidm-admin:openidm-admin and create a new user named **approver** with a password of Welcome1.

Task 2: Create the Complete Process project

1. In Activiti Explorer, create a new Activiti diagram named Complete Process:

   a. In the File menu, select New/Other, then select Activiti Diagram.

   b. Select the Lab 3 Activiti project as the parent folder (or whatever project you have been using up to this point).

   c. For the File name, enter CompleteProcess.bpmn.

   d. Click Finish.

2. Open the CompleteProcess.bpmn file in the XML Editor:

   a. In the Activiti Explorer window, expand your project and select the CompleteProcess.bpmn file.

   b. Right-click the file and select Open With/XML Editor. Select the Source tab. This opens the empty bpmn file.

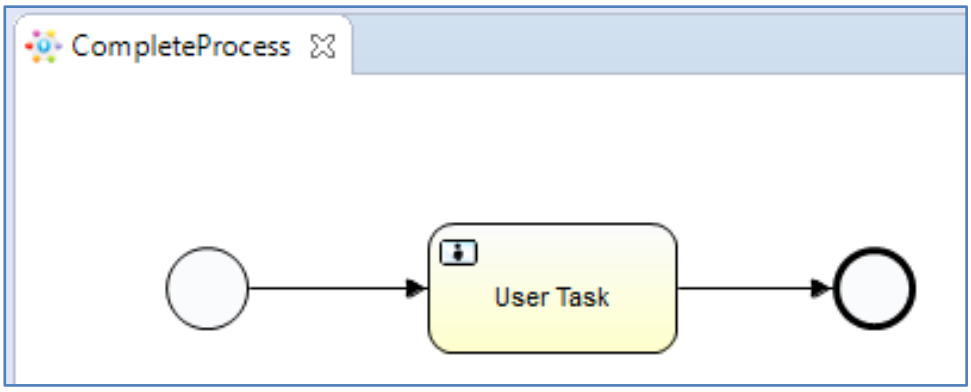
3. In a text editor, copy the contents of the SimpleProcessWithXHTML.bpmn20.xml file and paste it into the CompleteProcess.bpmn file.

4. Modify the process ID to CompleteProcess and change the name to Complete Process:

```
<process id="CompleteProcess" name="Complete
Process" isExecutable="true">
```

5. Close the CompleteProcess windows then open the CompleteProcess.bpmn file in the Activiti Diagram Editor. Right-click the bpmn file and select Open With/Activiti Diagram Editor. The diagram is identical to the SimpleProcessWith XHTML.

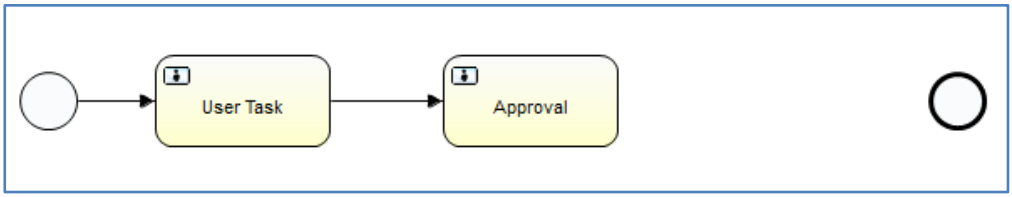
6. Open the CompleteProcess project in the Activiti Diagram Editor and examine the steps, forms, etc. They are currently identical to the SimpleProcessWithXHTML project because it has nearly identical xml except for the name elements.



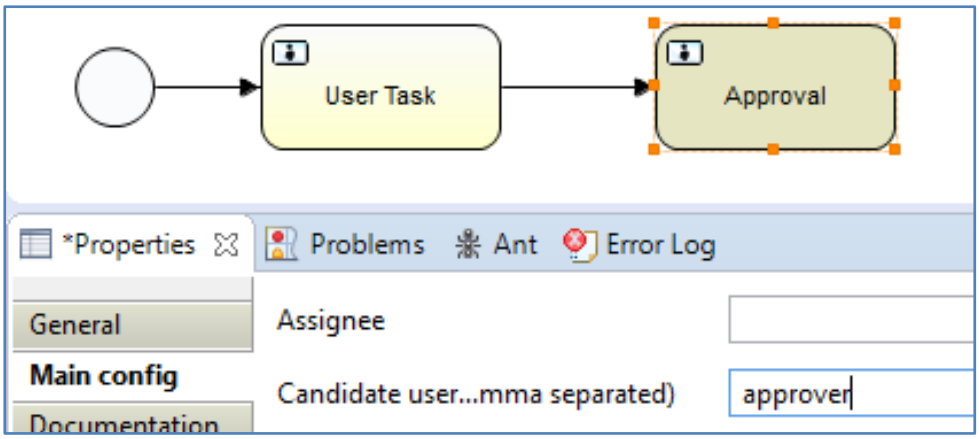
Task 3: Add approval tasks to the project

In this task you add the approval task and specify the approver.

1. Add a User Task and name it Approval, then link the User Task to the Approval task. Rearrange the elements as shown:



2. Select the Approval step and under Properties select Main config, then add **approver** as the Candidate user.

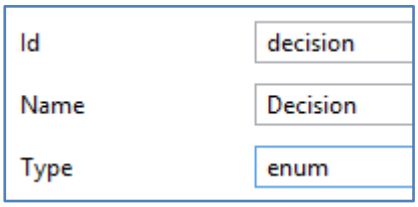


3. Add a form to the Approval step:

   a. With the Approval step still selected, click Form in the Properties panel. Then click New.

   b. Enter:

   - .id: decision
   - Name: Decision
   - Type: enum

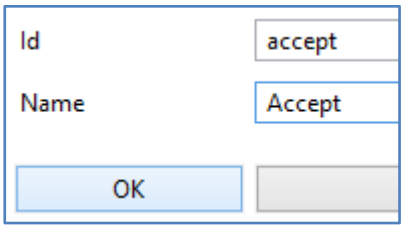


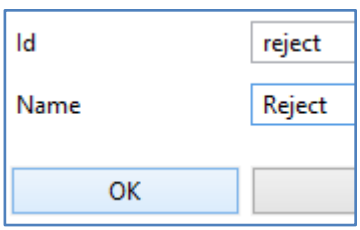
4. Enter new Form Values for the decision – accept and reject. In Form values, click New and specify the values for the accept condition:

   - id: accept
   - Name: Accept

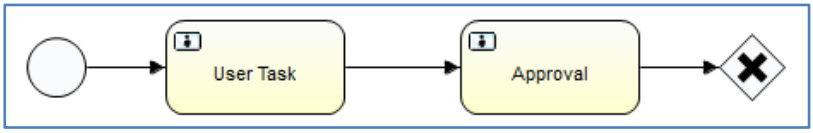
   Click OK and then repeat for reject:

   - id: reject
   - Name: Reject

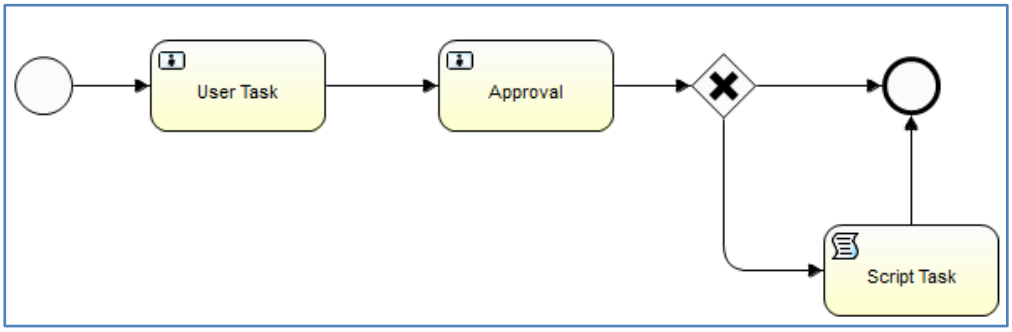




5. Add an Exclusive Gateway from the Palette under the Gateway tab. Add it after the Approval step. Then link the Approval step to the exclusive gateway.



6. Add a Script Task that will create the user upon approval. Select Script Task from the Palette under Task and place it near the Exclusive Gateway step. Name it Create User. Then link it as shown.



Task 4: Configure the Create User script task

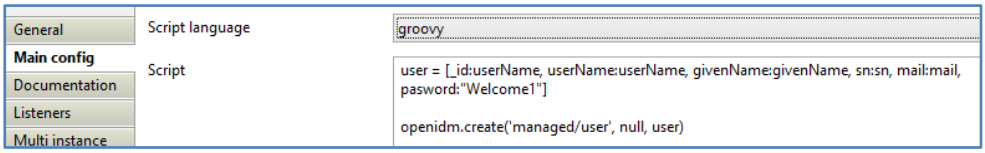
1. Select the Script Task and in Properties, select Main Config. In the General tab, enter Create User for the Name. You don't need to change the ID.

2. Select the Main Config tab in the Properties panel and enter the Groovy script to create a new user in OpenIDM. Select Groovy as the Script Language from the pull-down menu, then enter the script in the Script field:

```
user = [_id:userName, userName:userName,
givenName:givenName, sn:sn, mail:mail,
pasword:"Welcome1"]

openidm.create('managed/user', null, user)
```

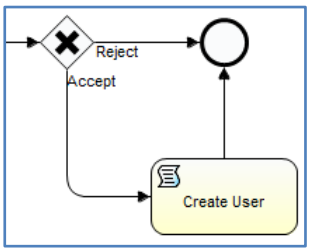
The Groovy script is in your workflow_lab.txt file and you can copy and paste from there.



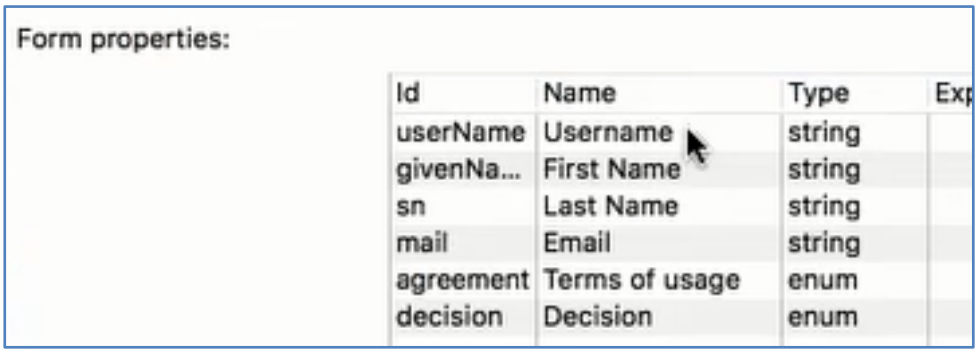
Task 5: Add Accept and Reject conditions

1. Configure the Accept and Reject conditions. Select the flow linking the Exclusive Gateway to the Create User task. In Properties/General, enter the Accept into the Name field. Then select Properties/Main Config and enter the condition: `${decision=='accept'}`.

   Repeat for the Reject flow, naming it Reject and entering `${decision=='reject'}`



2. Add additional fields to the Approval form. Select the Approval task and in the Form properties, enter the fields as shown below:



Task 6: Deploy the workflow

1. Open the CompleteProcess.bpmn file with a the text editor. Select all of the text and then paste into a file named CompleteProcess.bpmn20.xml in your workflow_labfiles directory.

2. Deploy the workflow by creating the bar file with the zip command from the command line. The archive must contain the CompleteProcess XML and the userCreateForm xhtml file:

   ```
   $ zip CompleteProcess.bar CompleteProcess.bpmn20.xml
   userCreateForm.xhtml
   ```

3. Copy the CompleteProcess.bar file to the opt/openidm/workflow folder:

```
$ cp CompleteProcess.bar /opt/openidm/workflow
```

4. Log into OpenIDM as the openidm-admin user and open the Admin view, then select Manage/Processes to see all of the workflows including the Complete Process workflow you just deployed. Select the Complete Process workflow and examine it in the Admin UI.

5. Run the workflow to create the Approver user.

6. Log out and log back in as user1. Start the workflow, entering unique user data.

7. The task moves to the Approval User's queue. Log out as user1 and log in as the approver user, approver:Welcome1. Since the approver user was created as a candidate user, the task appears under My Group's Tasks when approver logs in.

8. Open the assignment menu and select Assign to me. The task now appears under My Tasks.

9. View the Details, select a decision (accept), and complete the process. This removes the task from the queue and creates the user.

10. Log out and then log back into the Admin view as openidm-admin. Under Manage/Users the new user appears.

Exercise 5: Install Eclipse and Activiti Explorer on Linux or Windows (Optional)

If you are interested in exploring workflow, you will need your own installation of Eclipse and Activiti Designer. The instructions below are for Windows and Linux.

Eclipse requires JDK which you can download from Oracle:

http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html

Or just do a Google search for a particular version.

Task 1: Install Eclipse

1. Download Eclipse for your platform from:

   http://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/mars2

2. Then follow the instructions for Windows or Linux.

Windows

1. Once Eclipse has downloaded, open eclipse-inst-win64.exe or eclipse-inst-win64.exe, depending on the version you downloaded.

2. When the installer starts, select Eclipse IDE for Java Developers. This is the Mars edition of Eclipse.

3. Click Install, accepting any defaults you are prompted for.

4. Once installed you can start and run Eclipse like any other Windows application.

5. Skip ahead to Task 2 to install the Activiti Designer plugin.

Linux

1. Open a terminal window and switch to the root user:

```
$ su -
Password: root_password
```

2. Change to the directory that contains the downloaded installation file.

3. Unpack the installation file. The example below is for version 2 and will be different for other versions:

```
$ tar -xvzf eclipse-java-mars-2-linux-gtk-
x86_64.tar.gz -C /opt
```

This steps unpacks the installation archive to `/opt/eclipse`.

4. Make all files in `/opt/eclipse` readable:

```
$ chmod -R +r /opt/eclipse
```

5. Create an Eclipse executable in `/usr/bin`.

   a. Create the `/usr/bin/eclipse` file:

```
$ touch /usr/bin/eclipse
```

   b. Open the empty `/usr/bin/eclipse` file with a text editor (this example uses `gedit`):

```
$ gedit /usr/bin/eclipse
```

   c. Add the following text to `/usr/bin/eclipse`:

```
#!/bin/sh
export ECLIPSE_HOME="/opt/eclipse"

$ECLIPSE_HOME/eclipse $*
```

   d. Make `/usr/bin/eclipse` executable.

```
$ chmod +x /usr/bin/eclipse
```

6. Create a desktop launcher.

   a. Create the eclipse.desktop file:

```
$ cd /usr/applications/desktop
$ touch eclipse.desktop
```



```
$ gedit eclipse.desktop
```

b. Add the following text to the file:

```
[Desktop Entry]
Encoding=UTF-8
Name=Eclipse
Comment=Eclipse Mars.2
Exec=eclipse
Icon=/opt/eclipse/icon.xpm
Terminal=false
Type=Application
Categories=GNOME;Application;Development;
StartupNotify=true
```

c. Save the file and exit as the root user.

7. Open the Applications/Programming menu – you will see the Eclipse icon there.

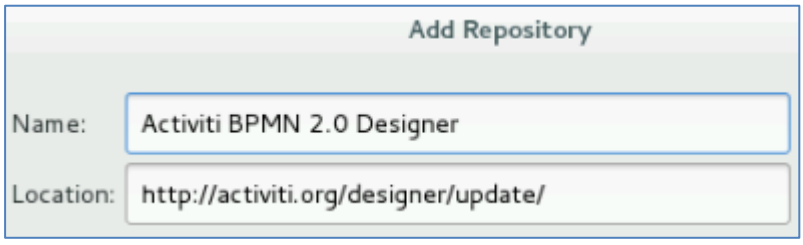
Task 2: Install the Activiti Designer plugin.

1. Start Eclipse.

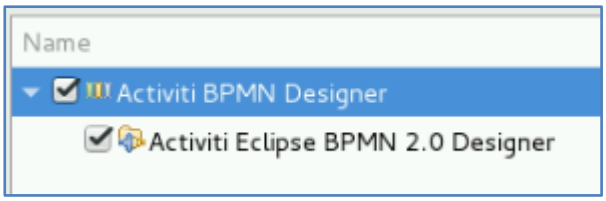
2. When Eclipse starts, select Help/Install New Software.

3. In the Work With field, enter http://activiti.org/designer/update/ and click the Add button.

4. In the Add Repository dialog box, enter Activiti BPMN 2.0 Designer in the Name field and click OK:



5. When Activiti BPMN Designer appears, click the arrow next to the name to expand the branch. Then select the checkbox next to Activiti BPMN Designer and ensure that both items are selected. Then click Next.



6. Review the items to be installed, then click Next.

7. Accept the license terms then click Finish. When you see a warning about installing unsigned content, click OK.

8. Click Yes to restart Eclipse.

9. To access Actviti Designer, select New/Other and select Activiti Project. Once your project is created, you can create a new diagram with New/Other/Activiti Diagram.

