IBM Business Automation Manager Open Editions
Demos and Labs 2025

Explore the BAMOE Canvas with Kubernetes

V 1.0 (for IBM BAMOE 9.2)

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Table of Contents

1 Introduction

This hands-on lab is exercises is designed to guide you through the essential aspects of process automation using BAMOE Canvas. Whether you are a developer or an architect, these labs will equip you with the skills needed to leverage BAMOE Canvas for modern, cloud-native business automation solutions effectively.

*Includes **four exercises**. We recommend performing them sequentially.*

***Duration:** Approximately 2 hours (each exercise lasts about 30 minutes).*

***Audience:** Anyone who wants to learn how to use IBM Business Automation Manager Open Editions.*

1.1 IBM Business Automation Manager Open Editions

IBM Business Automation Manager Open Editions (IBM BAMOE) is a powerful open-source solution that serves as a foundation platform for tailoring long-lasting business automation solutions for the hybrid cloud.

With a developer-centric approach, this comprehensive and flexible platform makes it easy for teams to collaborate through Open Standards and efficient development tools suited for different personas.
Each automation solution can be shaped to perfectly address each scenario: business applications are flexible and can effortlessly integrate with external systems of your existing architecture.

Designed for the hybrid cloud, IBM Business Automation Manager Open Editions, accelerates the application modernization and cloud adoption journeys, as the lightweight design tools, business applications and other product components can be containerized and deployed with popular technologies such as Kubernetes and OpenShift.

For more information, see IBM documentation and other useful links:

- IBM Business Automation Manager Open Editions Documentation
- Open Editions Community

2 Lab Setup Instructions

2.1 Access the environment

You received this email with instructions on how to access the environment using your IBMid.

If necessary, this is the Windows credential:

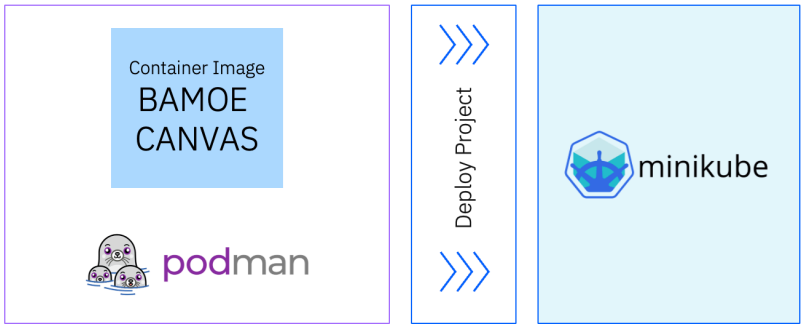
```
User: techzone
Password: IBMDem0s!
```

2.2 About the environment

This environment was built based on the official product documentation, so be sure to check it out for more information about the new BAMOE Version 9.2.

We will be updating this environment with new materials and resources as often as possible.

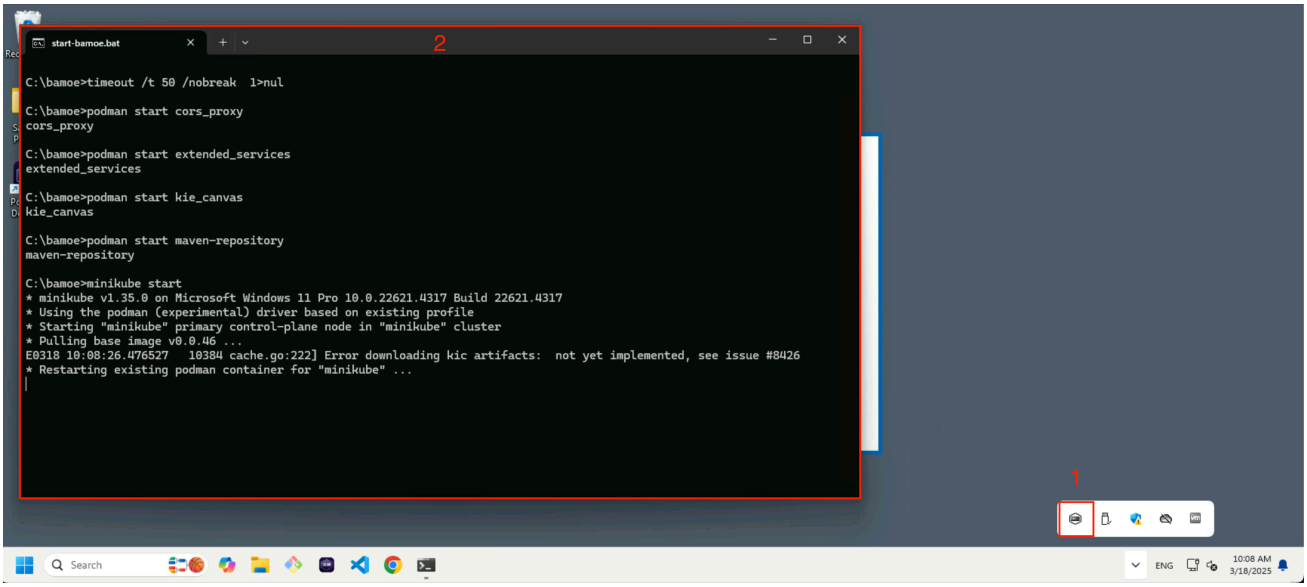
IBM BAMOE was installed and configured locally, using Podman and Minikube. The configurations were based on the official product documentation: Running locally with Docker or Running locally with Docker Compose.



2.3 Prerequisites

Once your VM starts, wait a few minutes for the Podman Machine to start running, then a .bat file will be executed to start all the containers needed to use BAMOE. See the reference for each of them:

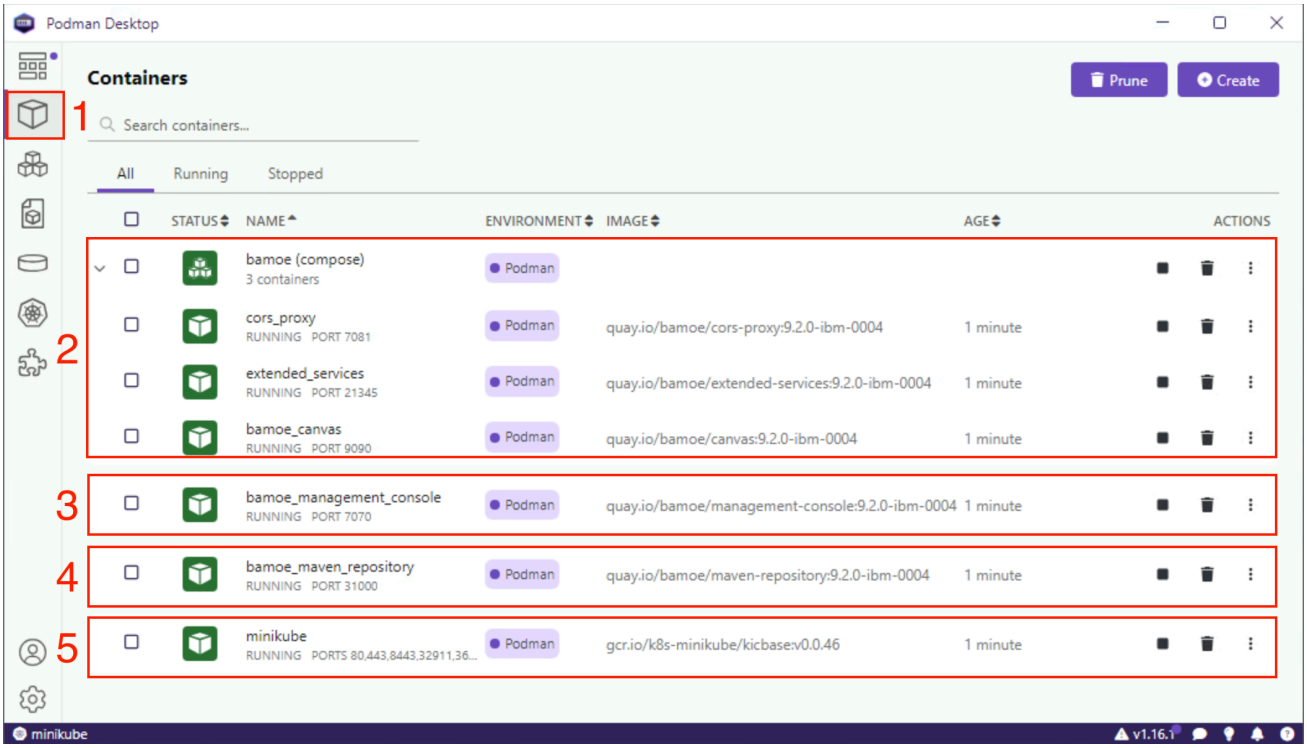
2.3.1 Podman Machine and *.bat* file:



Item	Description
1	Icon shows that the podman machine is already running. For more details just open Podman Desktop.
2	This file *"start-bamoe.bat"* contains the commands to start all Podman containers. In the next step, you will see how to check the status of each one. **Remember: if you reboot your VM, you must wait until all services are up and running.**

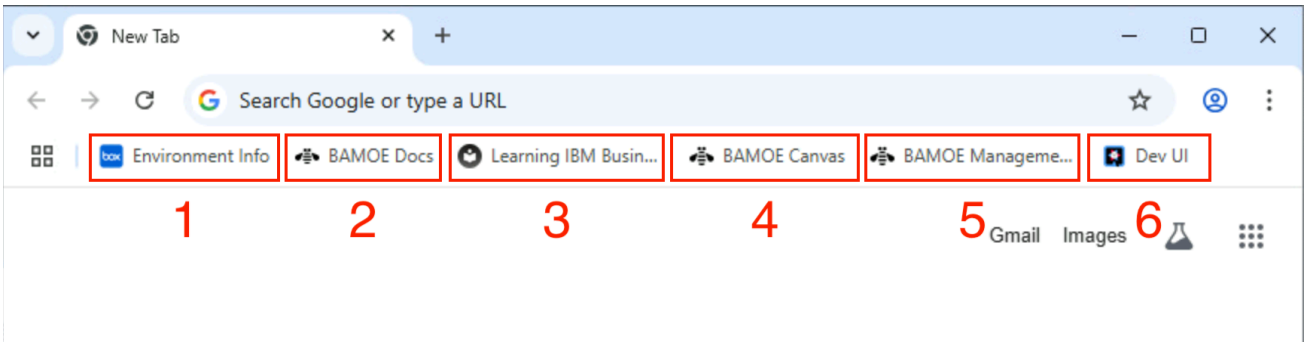
2.3.2 Check Podman containers:

Open Podman Desktop (available on your desktop) to check the important containers that are running:



Item	Description
1	In the side menu, select the 2nd button ("Containers")
2	**Container Group "bamoe (compose)":** This set of running containers are the 3 images required to run BAMOE Canvas. Reference: "Installing BAMOE Canvas"
3	**Container "bamoe_management_console"** BAMOE Management Console is an admin tool for managing Workflow applications. Reference: "Installing BAMOE Management Console"
4	**Container "bamoe_maven_repository":** Repository that stores Maven artifacts, which you can deploy to your infrastructure. Reference: "Intalling BAMOE Maven repository"
5	**Container "minikube":** To deploy your project via BAMOE Canvas, a Minikube cluster has been created and must also be running. Next, you will see how to connect your Canvas to the Minikube Cluster.
Recommendation	*Make sure the containers are running, if not, try starting them manually (by clicking on the "actions" menu or by command line).*

2.3.3 Useful links:

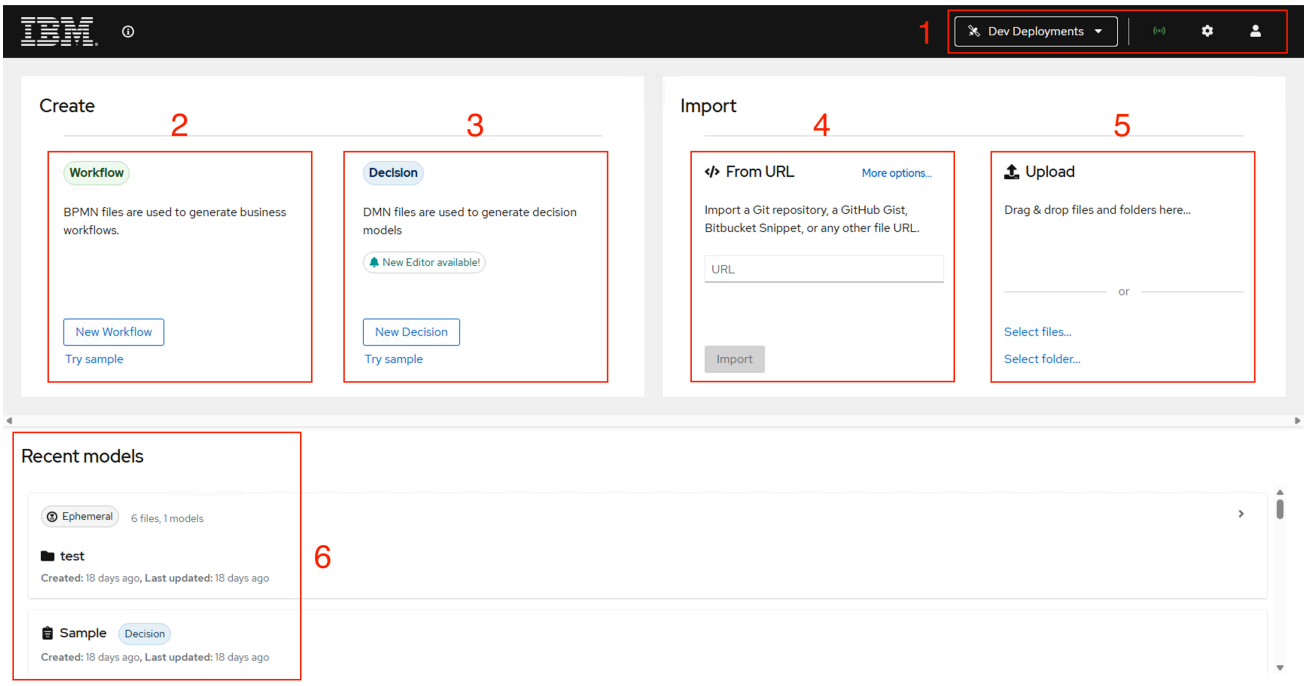


Item	Description
1	**"Environment Info":** Access this document available in Box.
2	**"BAMOE Docs":** Access the official product documentation.
3	**"Learning IBM Business Automation Open Edition":** A great guide for users who are trying IBAMOE for the first time. Recommended getting started guide.
4	**"BAMOE Canvas":** You can access BAMOE Canvas through the URL: *http://localhost:9090*
5	**"BAMOE Management Console":** You can access BAMOE Management Console through the URL: *http://localhost:7070*
6	**"Dev UI":** For projects run by VS Code, you can access the Dev UI via the URL: *http://localhost:8080/q/dev-ui*

2.4 Exploring the Features of BAMOE Canvas

IBM has been investing a lot of time and effort into improving Canvas into a full-featured authoring tool for decisions and processes. In this lab, we will use BAMOE Canvas in **Google Chrome**. You will explore examples of a DMN model and a BPMN model, as well as some of the features found in them, and then deploy it to a Minikube cluster.

- Open Google Chrome, and access BAMOE Canvas via the URL: *http://localhost:9090*



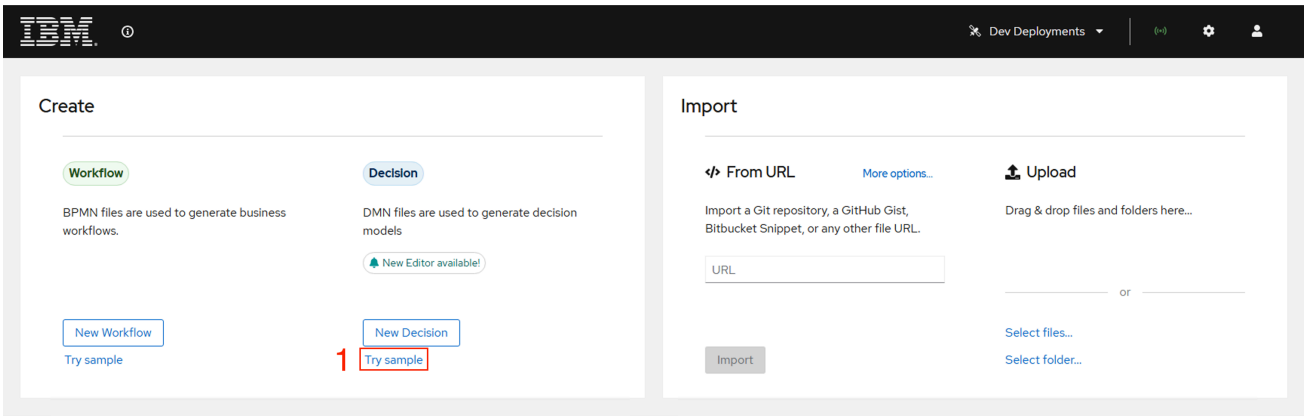
Item	Description
1	• Dev deployments – any deployment from this instance of Canvas to a connected Kubernetes or OpenShift cluster. • The radar logo is the connection to Extended Services which provides the DMN model runner for sample execution. • The gear logo provides settings for your Canvas instance, including the version of DMN modeling (DMN 1.5 is the default for 9.1 forward). The location of the CORS proxy so that your Canvas instance can interact with your Git provider. Lastly, the location of the Extended Services service. • Lastly, the human logo is for configuring your connected profiles for the Canvas environment. This will be for Git and Kubernetes/OpenShift. We will explore this later.
2	Create a new BPMN 2.0 workflow from scratch or open the sample
3	Create a new DMN 1.5 model from scratch or open the sample
4	Import projects from remote git repositories
5	Upload a file or folder directly to work within the browser
6	Templates you imported or created in the provided browser. Unlike anyone else, everything is stored locally in your browser storage.

3 Exercise 1: Exploring Decisions with BAMOE Canvas

In this section, we are going to touch on some of the features of the Canvas editor. First, we're going to look at the DMN sample.

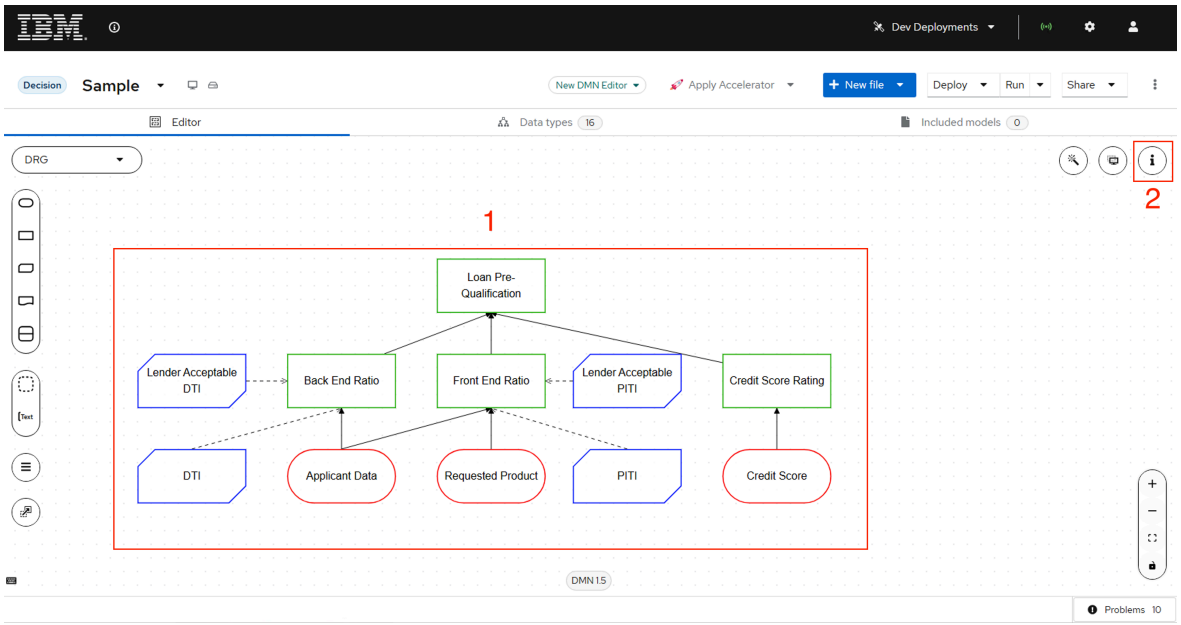
See some important links and learn more about DMN:

- DMN in 15 minutes
- Manual DMN FEEL



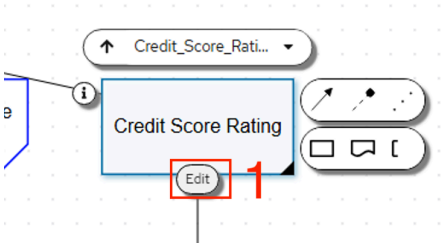
Item	Description
1	Let's use the example available in **"Try sample".**

When you open the Sample, you will see a DMN 1.5 model for Loan Pre-qualification:

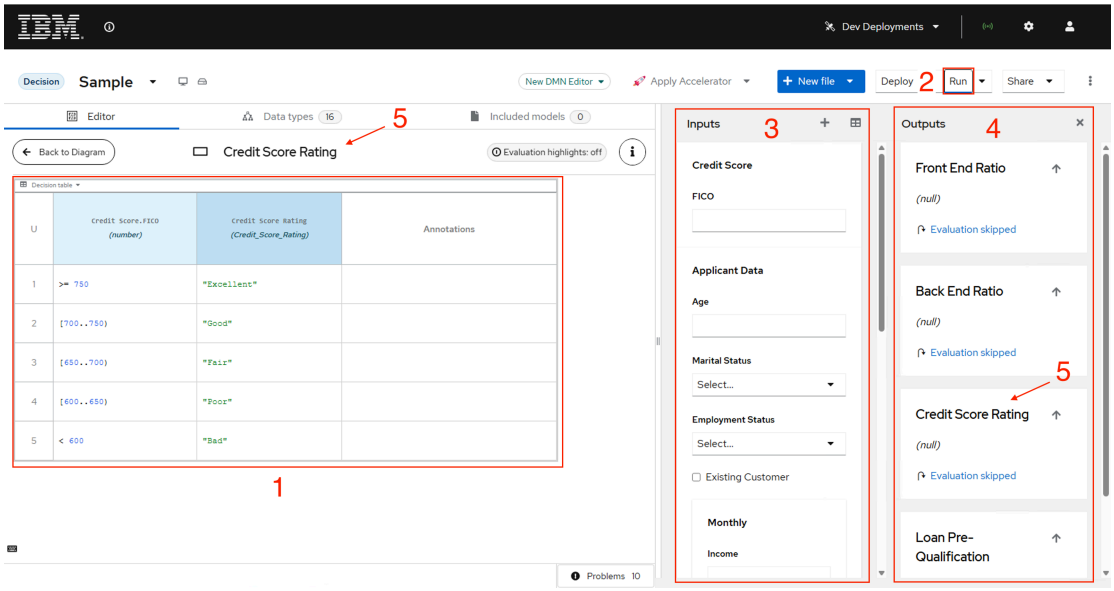


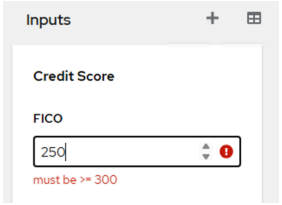
Item	Description
1	Explore the different elements of the DMN diagram: • Input Nodes: "Applicant Data" and "Credit Score" • Decision Nodes: "Loan Pre-Qualification" • Business Knowledge Model Nodes (BKM)

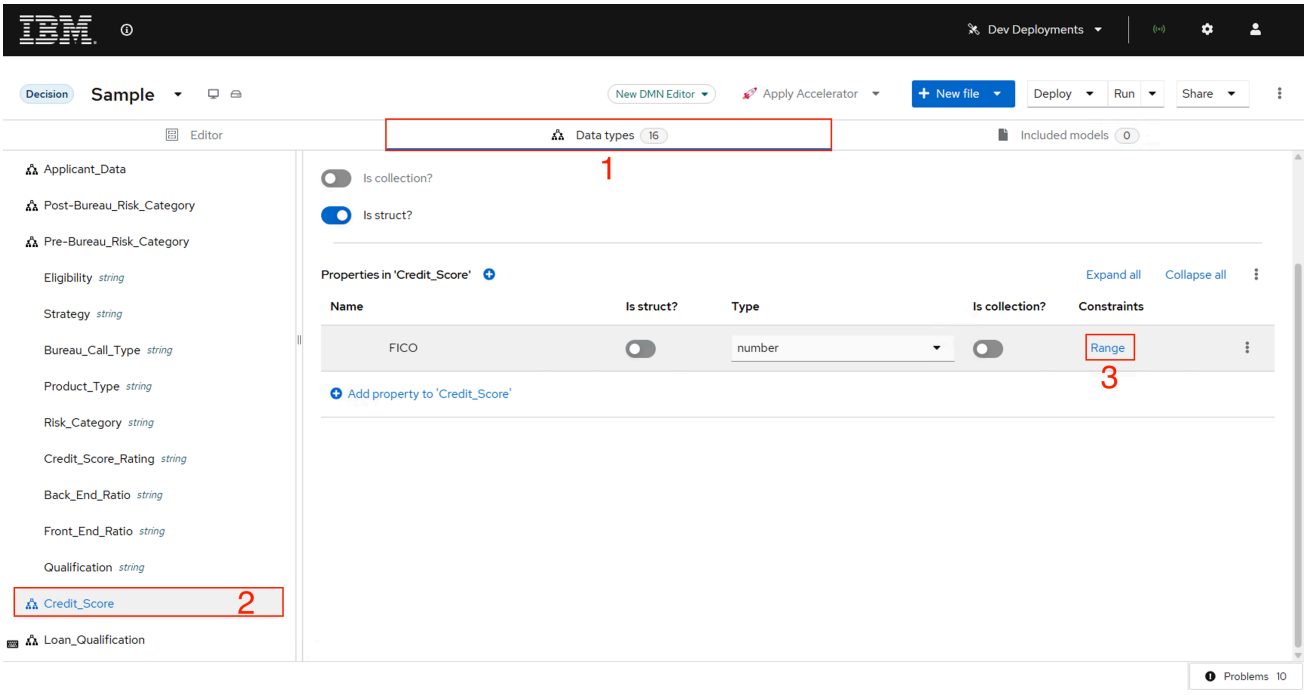
2	The properties of each element can be accessed by clicking this button 

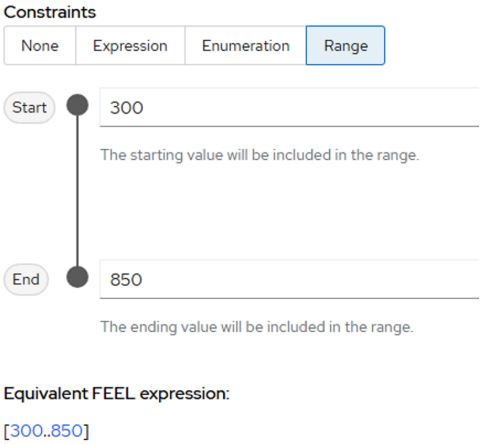


Item	Description
1	Click on the ***"Credit Score Rating"*** square and then click the "***Edit"*** button to visualize the logic in the Credit Score Rating decision.



Item	Description
1	This decision node was defined as a ***"Decision Table"***, where depending on the ***"FICO"*** value it will have its corresponding ***"Credit Score Rating"***.
2	Click the **"Run"** button to simulate the model.
3	Here you can simulate your rules by informing the model inputs.
4	Instantly, you can see the result (output) of each decision node.
5	Look at the **"Credit Score Rating"** output, test some values and compare with the decision table.
6	During your simulations, you may have come across some validation, for example. This happens because the data type has a treatment, see below: 

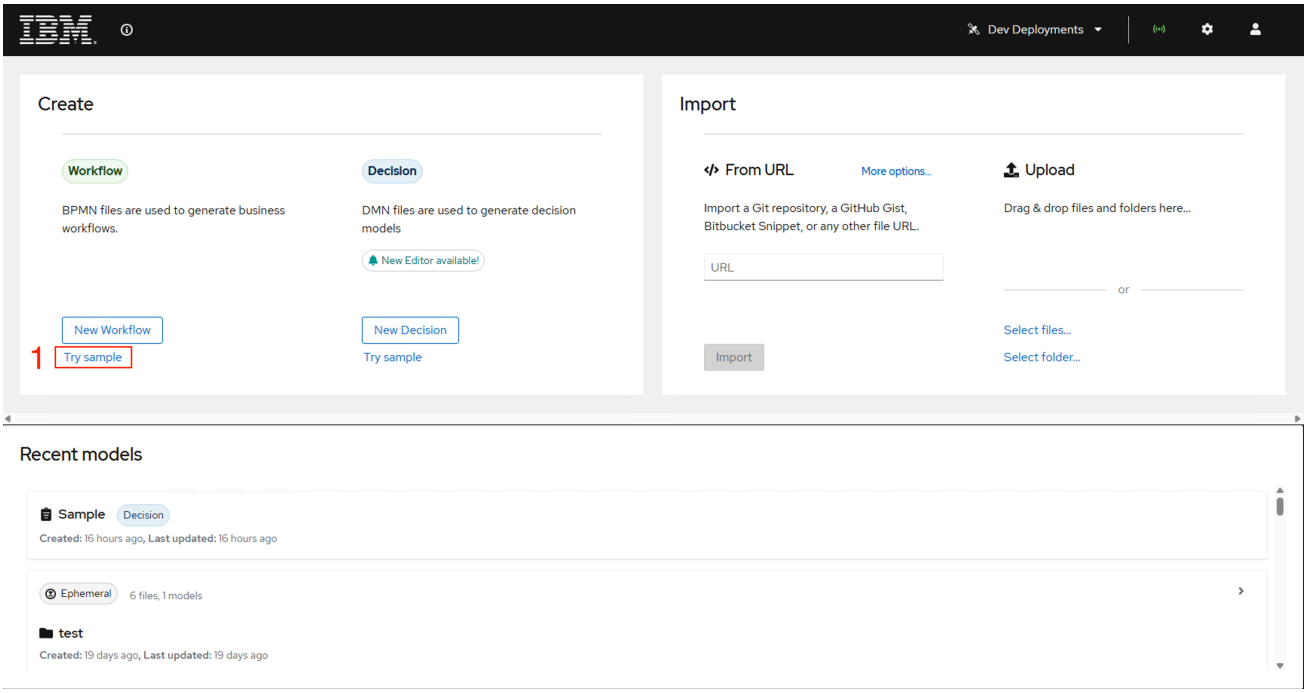


Item	Description
1	Navigate to the ***"Data types"*** tab, here all the data involved in the model are listed.
2	Select the ***"Credit Score"***
3	Note that here you can configure some things for that data. In this case, a ***"Range"*** was configured, click to see more...
4	Note how the range was configured, that is, this data accepts values from 300 to 850. 

Explore the model settings further and try to understand how the rules were created. To proceed to the next exercise, click on the IBM logo.

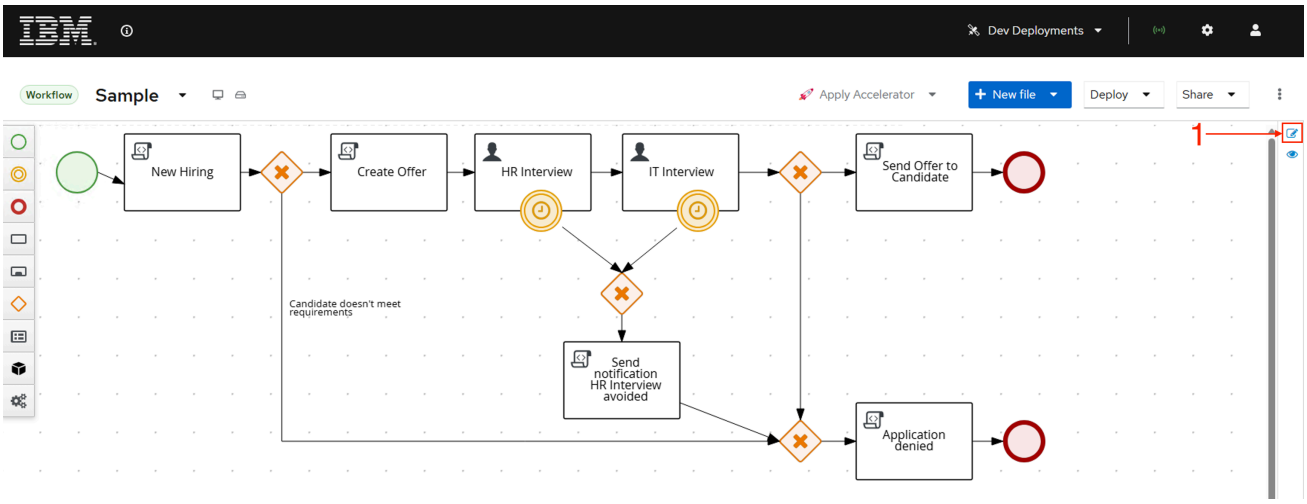
4 Exercise 2: Exploring Workflow with BAMOE Canvas

In this exercise, we will explore the BPMN example and then deploy the application to the Minikube cluster.



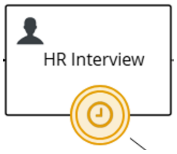
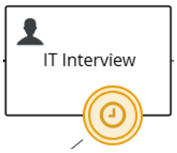
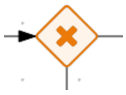
Item	Description
1	Click on "Try sample".

The sample BPMN process goes through a simplified hiring process.



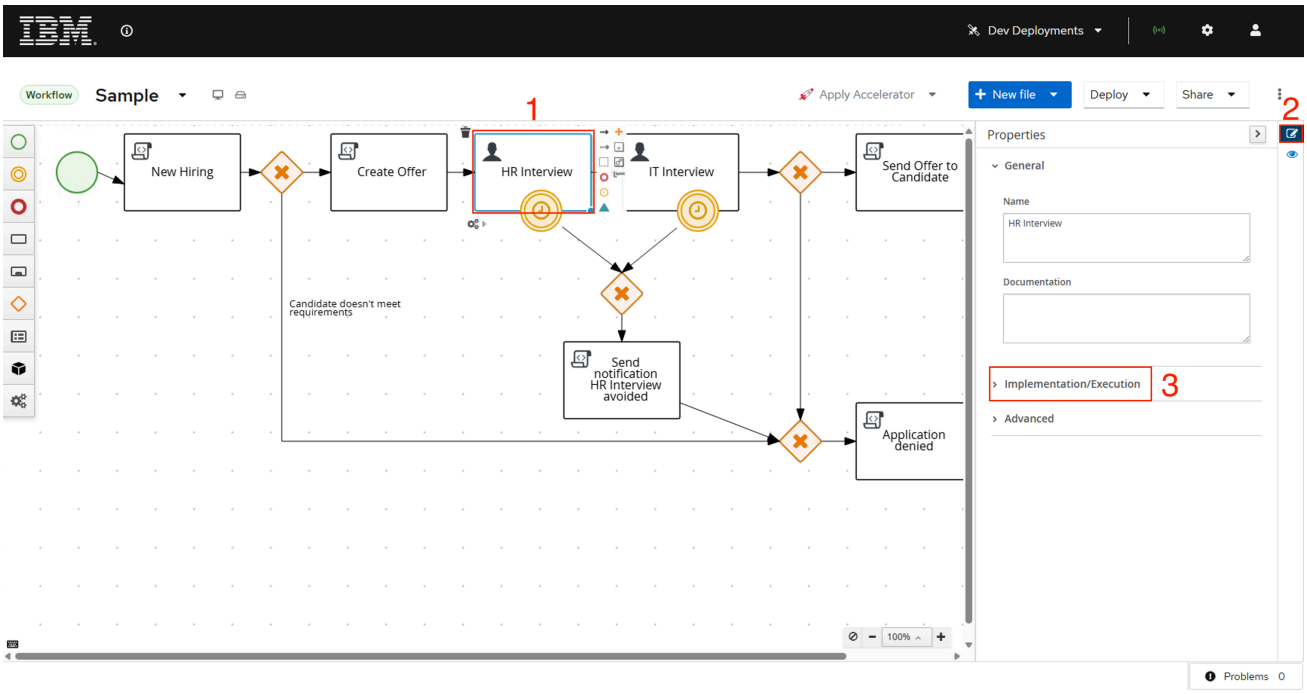
Item	Description
1	Click this button to see the properties of each element.

Explore the actions to understand more about the process:

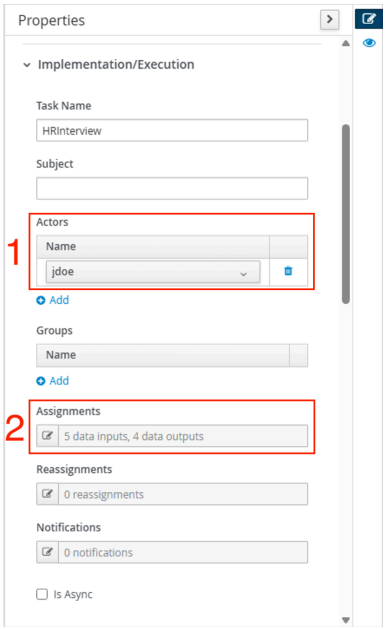
Item	Description
	At the beginning, an automated assessment of the candidate (in this case, via a scripted task) immediately determines whether they are eligible.
	Later, a base offer is created based on the information provided and the candidate's history. At this point, the offer is internal to the process and not visible to the candidate.
 	Next, there are two user tasks: an HR interview and an IT interview. Both have timeout events that add an SLA to automatically deny hiring due to avoided interviews.
	In addition to the Activities that represent the work to be carried out, Gateways act as decision and flow control points in the process.

The other activities not mentioned act based on the result of the previous flow.

Explore the various nodes and their settings by clicking on a node and using the properties panel. For example:

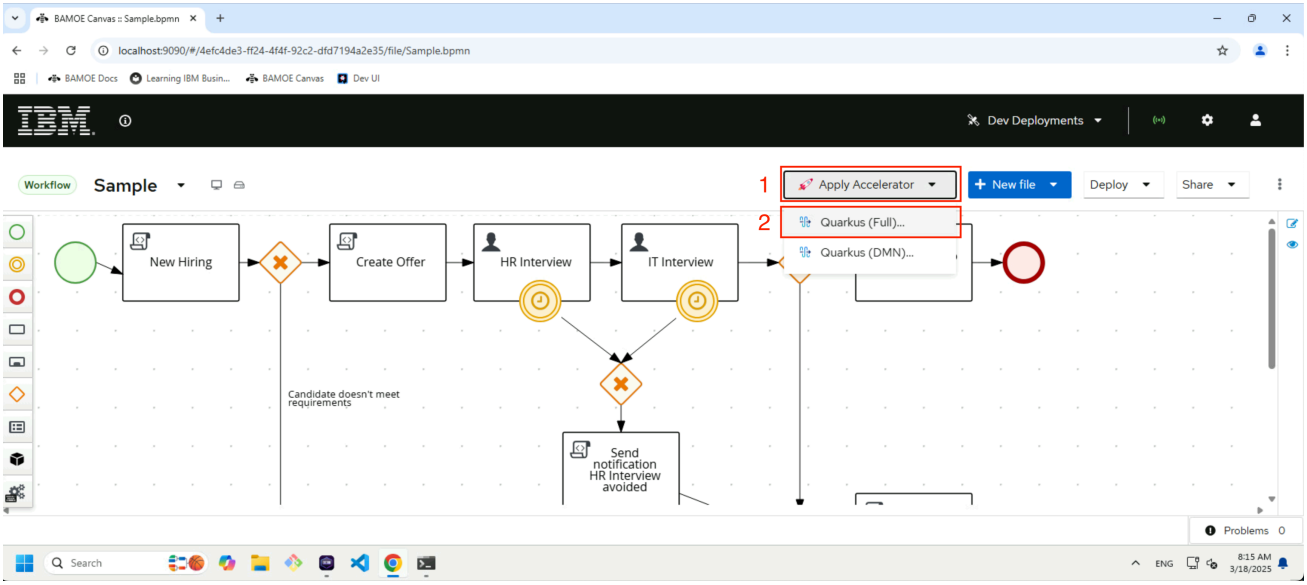


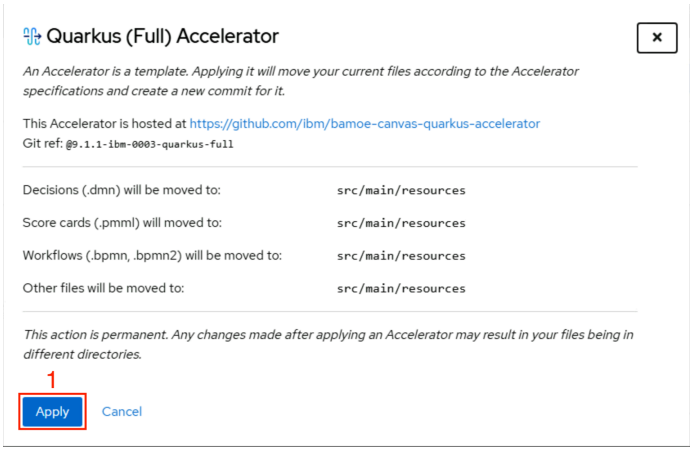
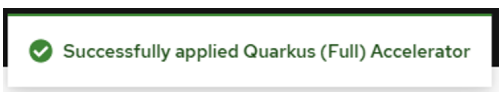
Item	Description
1	Select the "HR Interview" activity
2	Open the element properties
3	Open the "Implementation/Execution" tab



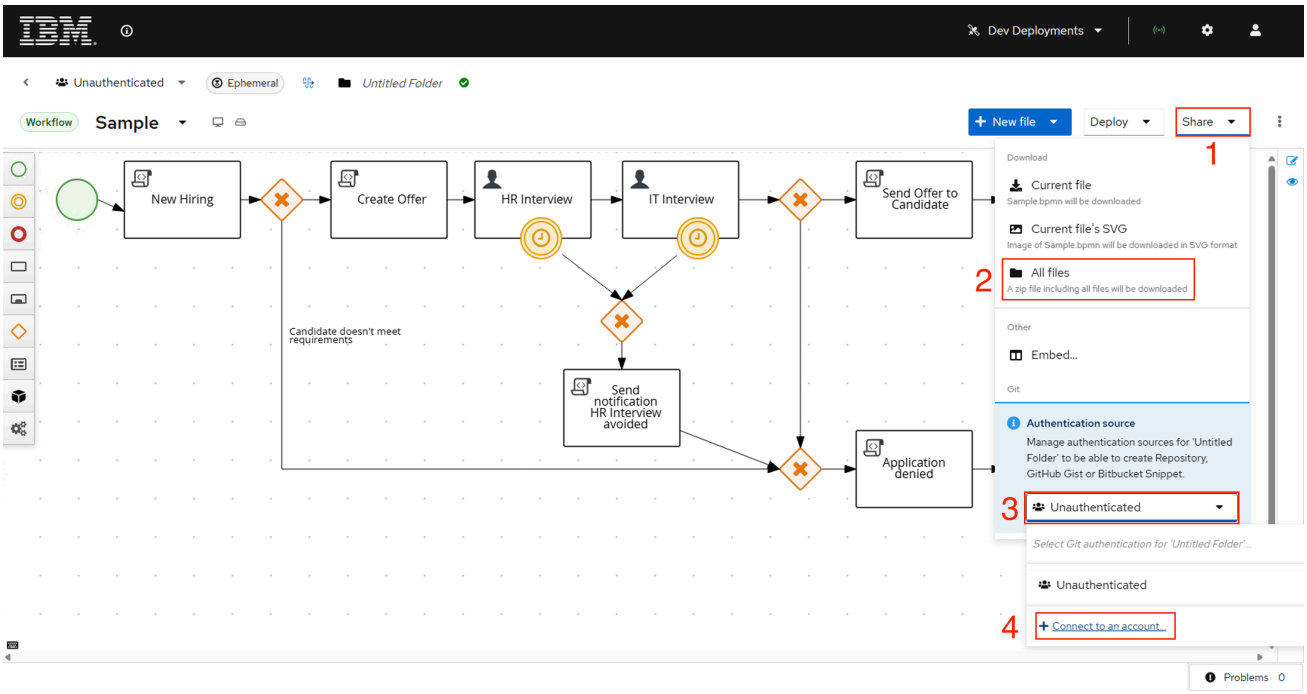
Item	Description
1	This task is assigned to the actor "jdoe"
2	In "Assignments" are the input and output data.

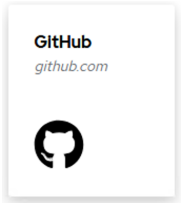
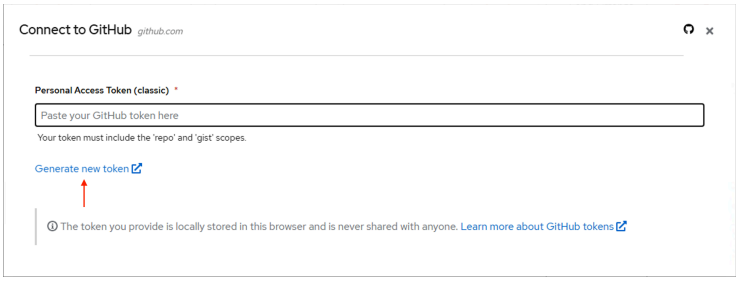
Before we move on to the next exercise, let's apply the Quarkus accelerator to create a browser storage project that can leverage the Kogito architecture.

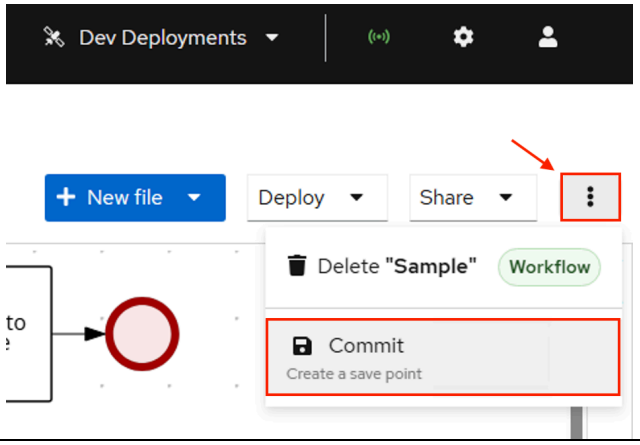


Item	Description
1	Access the "Apply Accelerator" menu
2	And select the option "Quarkus (Full)..."
3 - 1	In the next box, just click "Apply"  Wait for the success message: 

At this point, this Canvas project consists of just a BPMN file stored in the browser, which means that any changes will be lost if the browser's local storage is cleared. Therefore, it is important to work with projects and sync with GitHub.



Item	Description
1	You can click on "Share" and choose some options.
2	By clicking on "All files", you download the entire project. Then you can continue development in VS Code with the BAMOE Developer Tools extension.
3	To sync with GitHub, you must connect your account.
4	Click "Connect to an account..."
5	Select option “GitHub”  For this Lab, you will not need to connect to your account, but if you wish, simply follow the instructions presented in the application itself. 

6	Don't forget to create a save point after making changes to your model. This will also create an initial git commit within the filesystem, so it will prompt you for an initial commit message. Access it via the button and click "Commit". 

5 Exercise 3: Running on Minikube using Canvas Dev Deployment

Development Deployment is a Canvas feature that allows developers to share their decisions and processes with team members in OpenShift or Kubernetes. The benefits are:

- **Deploy with a click:** Easily deploy your business service to a local or remote Kubernetes or OpenShift environment directly from the Canvas web tool.
- **Real-time updates:** See changes to your project reflected immediately in the running application, for faster iteration and testing.
- **Simplified development:** Streamline your development process by eliminating the need for complex deployment procedures.

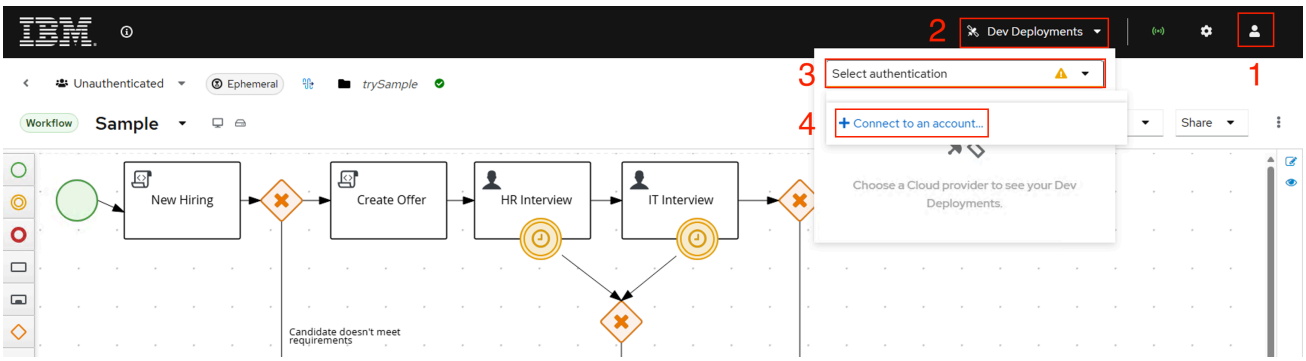
Have in mind that this capability is not intended for production. For production deployments, consider using proper deployment strategies for your Kubernetes / OpenShift environment.

By default, Canvas offers build templates. Templates allow you to create your own customized image and template projects.

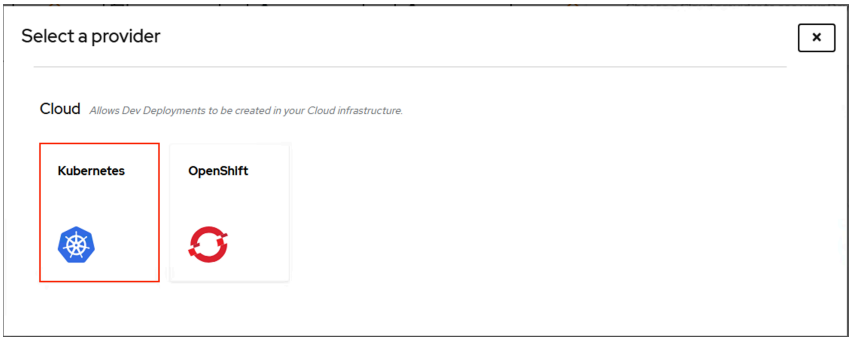
5.1 Connect to an Minikube Cluster

For this Lab, we will use a locally deployed Minikube cluster. In this chapter, you will see how to connect your Canvas to the cluster. Note that the configuration screens themselves provide instructions on how to perform the process.

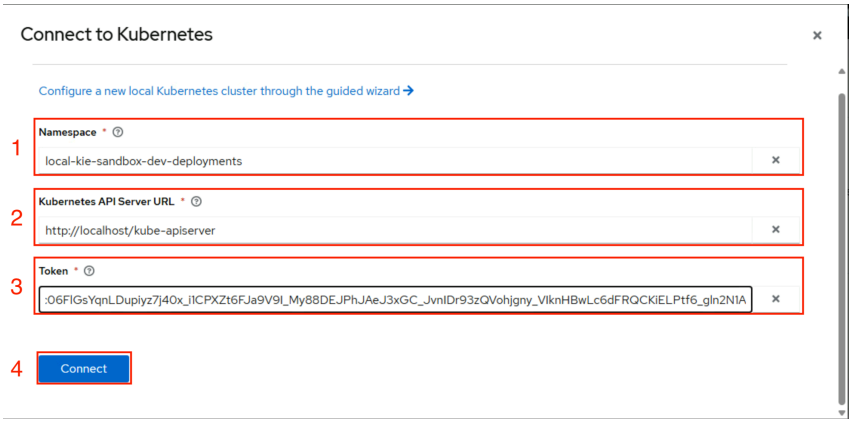
Let's continue with our Workflow example, worked on in Exercise 2.



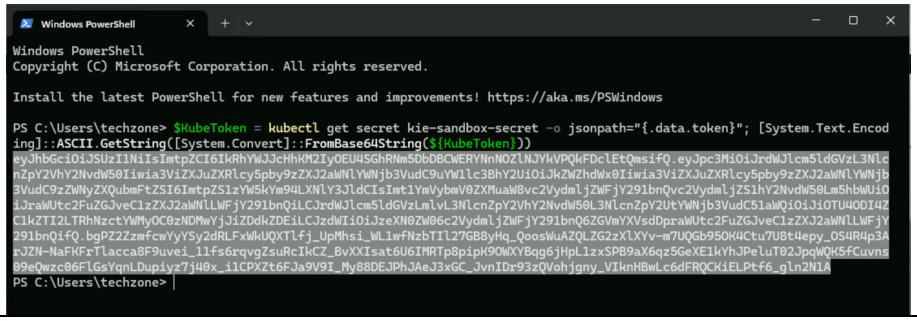
Item	Description
1	You can connect and see all connected accounts.
2	Or, you can click on ***"Dev Deployments"***
3	Click on "Select authentication"
4	And select ***"Connect to an account..."***



Item	Description
1	Select the ***"Kubernetes"*** *option*

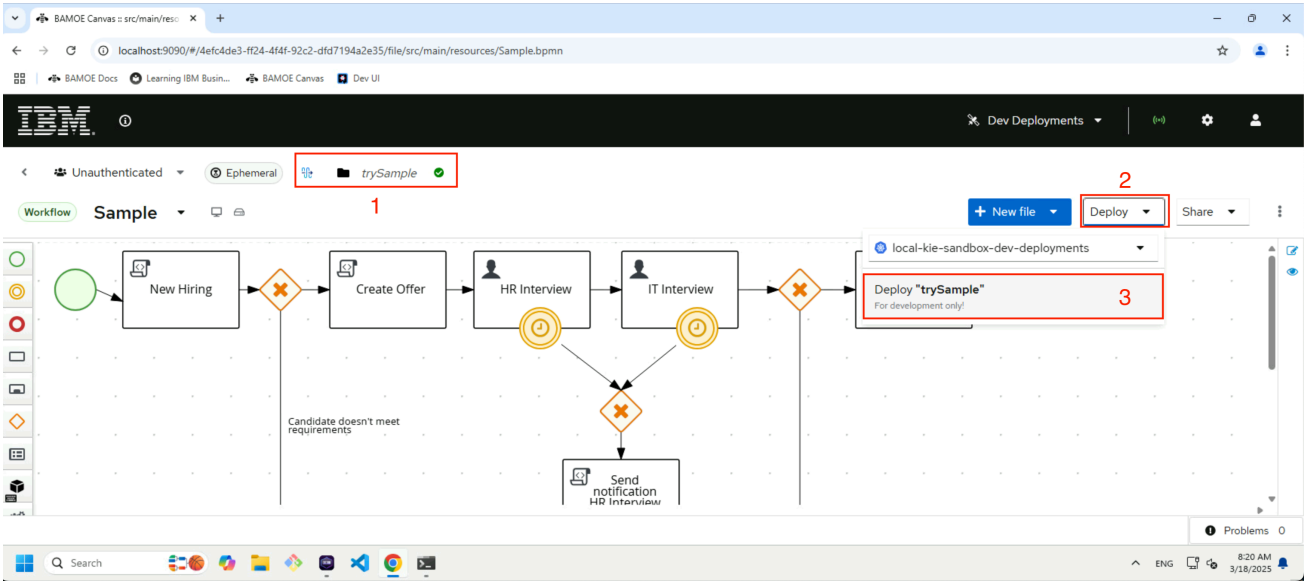


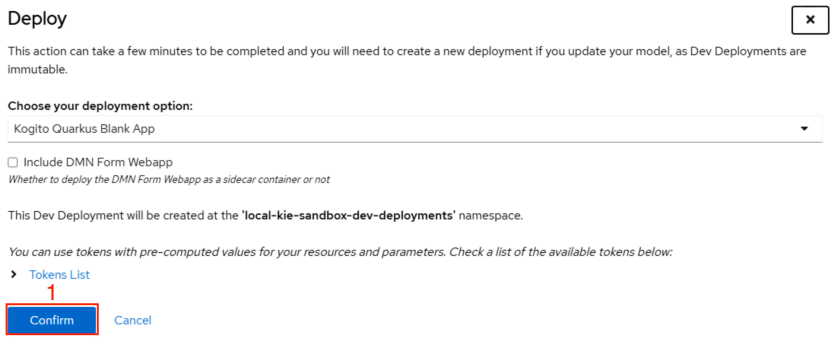
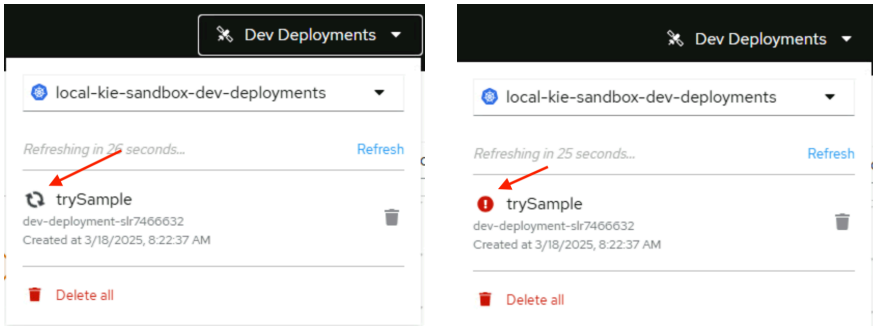
#	Description
1	In the ***"Namespace"*** field, enter: `local-kie-sandbox-dev-deployments`
2	In the ***"Kubernetes API Server URL"*** field, enter: `http://localhost/kube-apiserver`

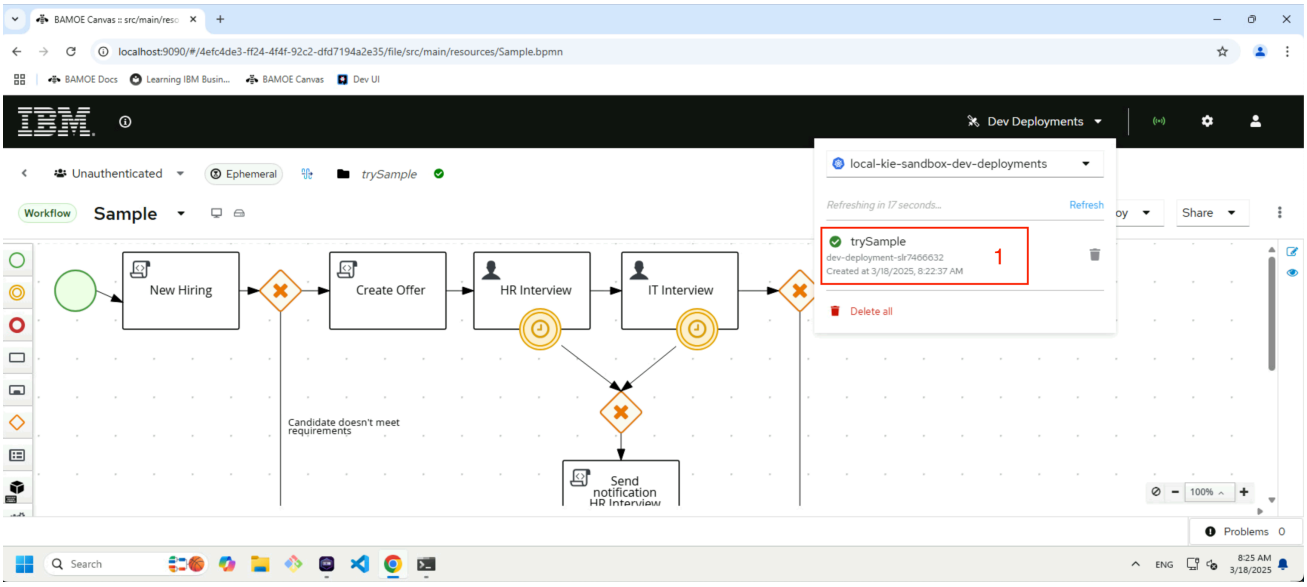
3	To get the ***"Token"***, open a terminal and run this command, then copy and paste the result.
	
	`$KubeToken = kubectl get secret kie-sandbox-secret -o jsonpath="{.data.token}";`
	`[System.Text.Encoding]::ASCII.GetString([System.Convert]::FromBase64String(${KubeToken}))`
	
	 

4	Click ***"Connect"*** and check the return successful message.

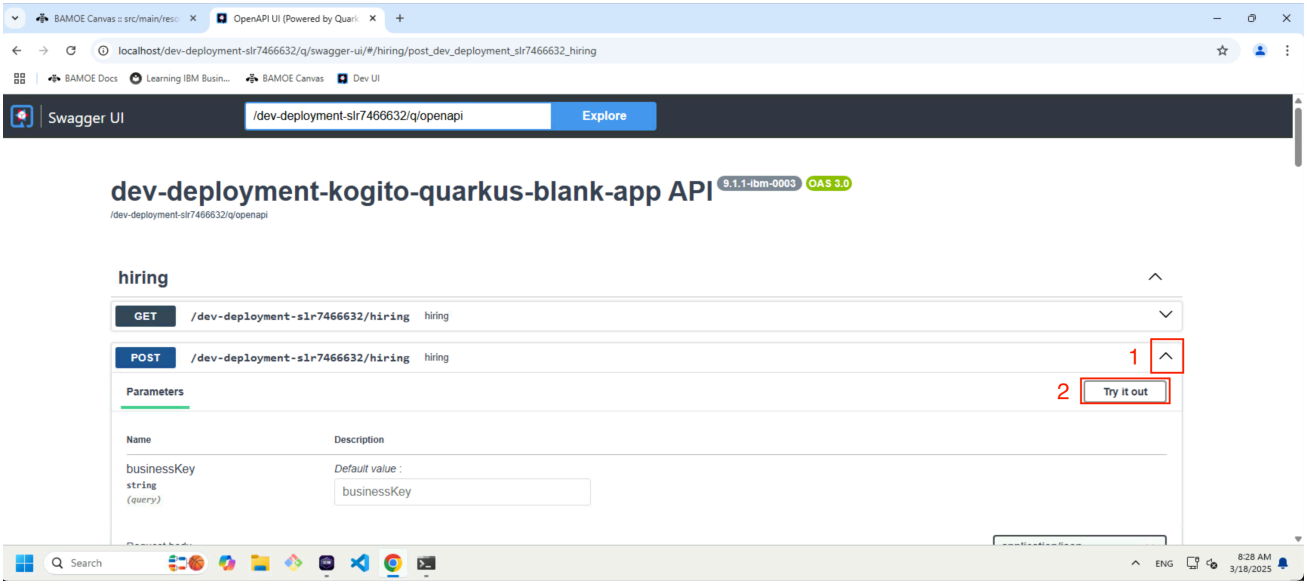
5.2 Deploying Workflow Sample



Item	Description
1	Enter a name for your project
2	Select the option "***Deploy***"
3	Then select the ***"Deploy [your project name]"*** button.
4 - 1	In the next box, just leave the remaining information and click ***"Confirm"***. 
5	Wait a few minutes until the deployment is complete. It is important to note that in some cases a red alert may be displayed. In this case, wait for a new "Refresh" to obtain the new status. 

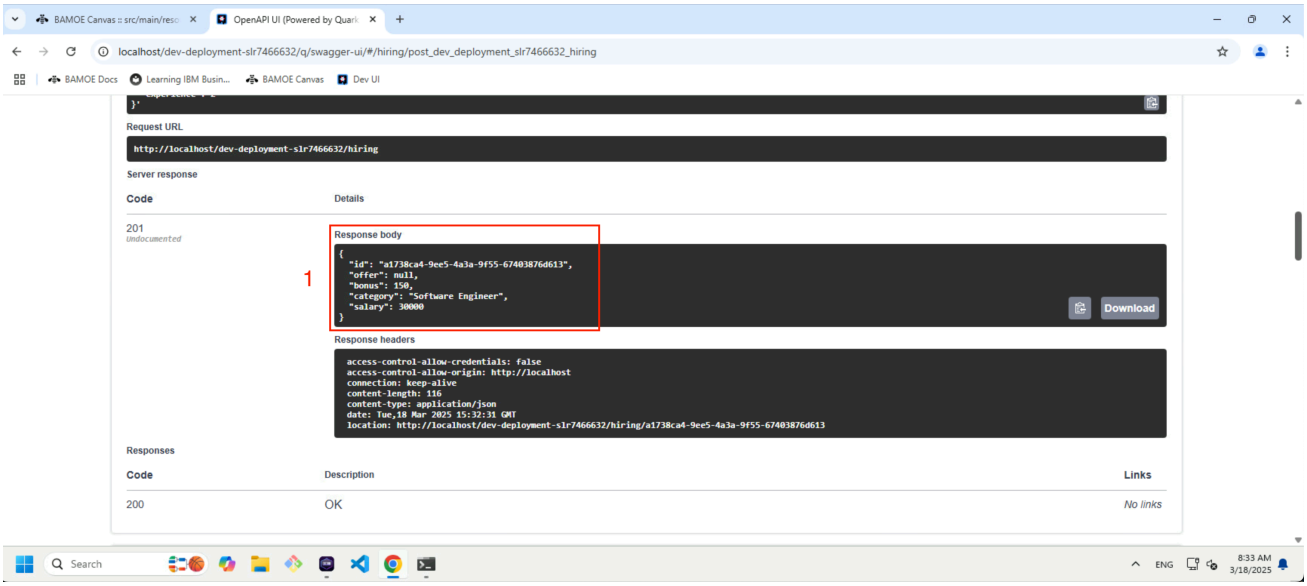


Item	Description
1	Once the deployment is complete, click on the project to access the Swagger UI.



Item	Description
1 and 2	In this interface you can test the methods by clicking on ***"Try it out"***

Request body	For this use case, enter the following data to get the DMN result "Hiring", then click "Execute":
	
	`{`
	`  "skills": "Java",`
	`  "candidate": "Raul",`
	`  "experience": 2`
	`}`



Item	Description
1	See if the response was successful (Code 200).

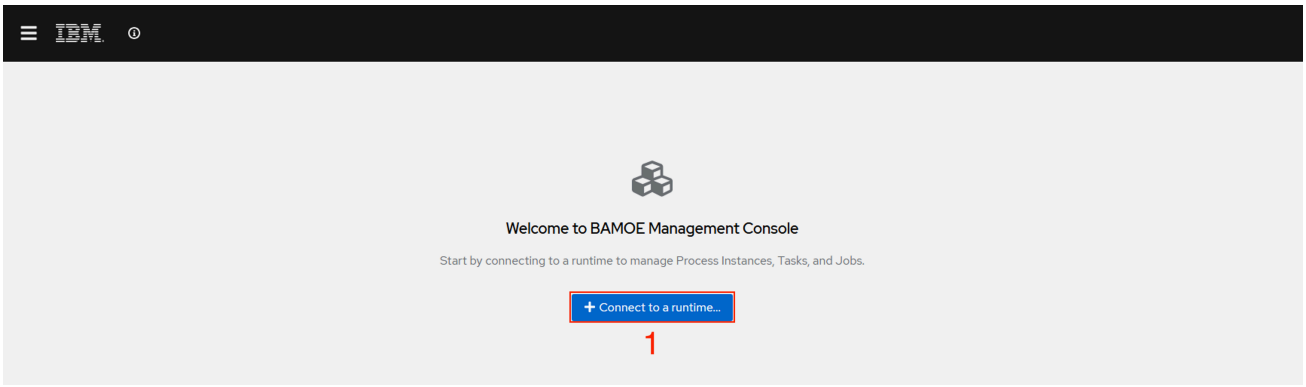
Since we have just implemented a Workflow example, in the next chapter we will use the BAMOE Management Console, which is an administration tool for managing Workflow applications.

6 Exercise 4: Example Workflow with the BAMOE Management Console

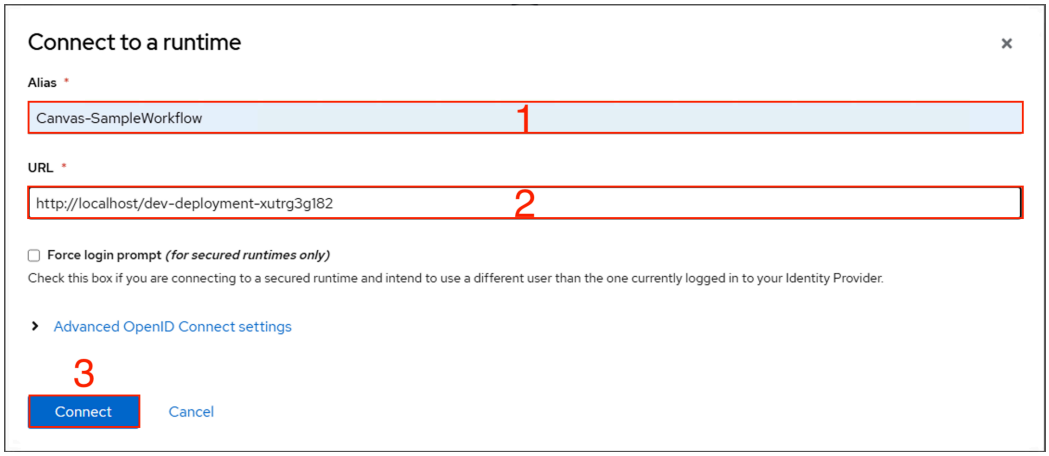
The BAMOE Management Console is a web application for viewing the status of all available business services and managing and interacting with process instances. We will now use it to manage and interact with process instances, complete user tasks.

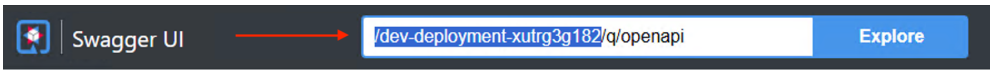
Like Canvas, it is a container application and is already deployed in Podman.

- Go to *http://localhost:7070*

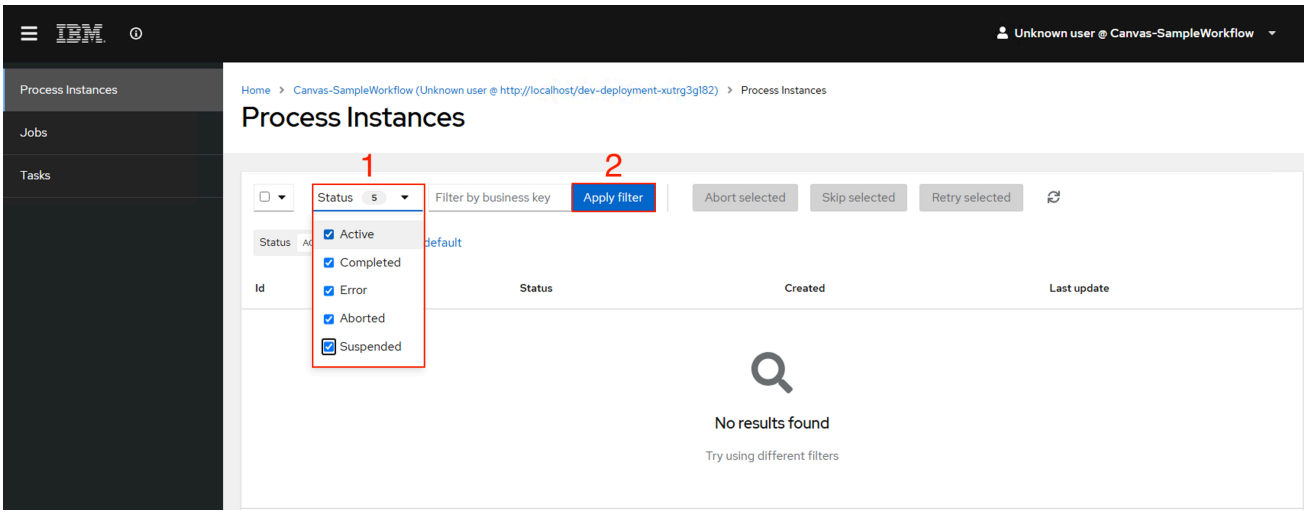


Item	Description
1	Click the button to connect to the runtime. To perform this exercise, you need to perform Exercise 3, where we deployed a sample workflow.

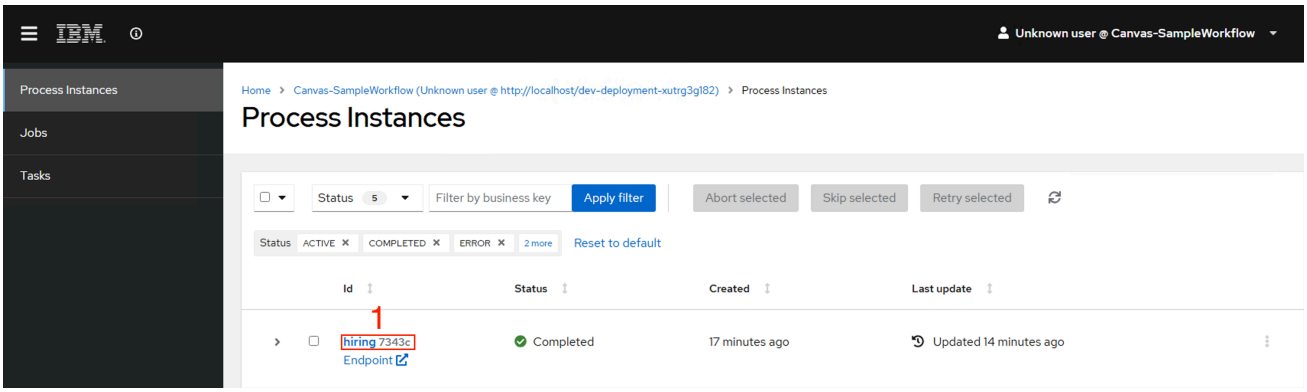


Item	Description
1	Enter an alias of your preference
2	To get the URL more easily, go back to the Swagger UI and get the root: 
3	Click ***"Connect"***

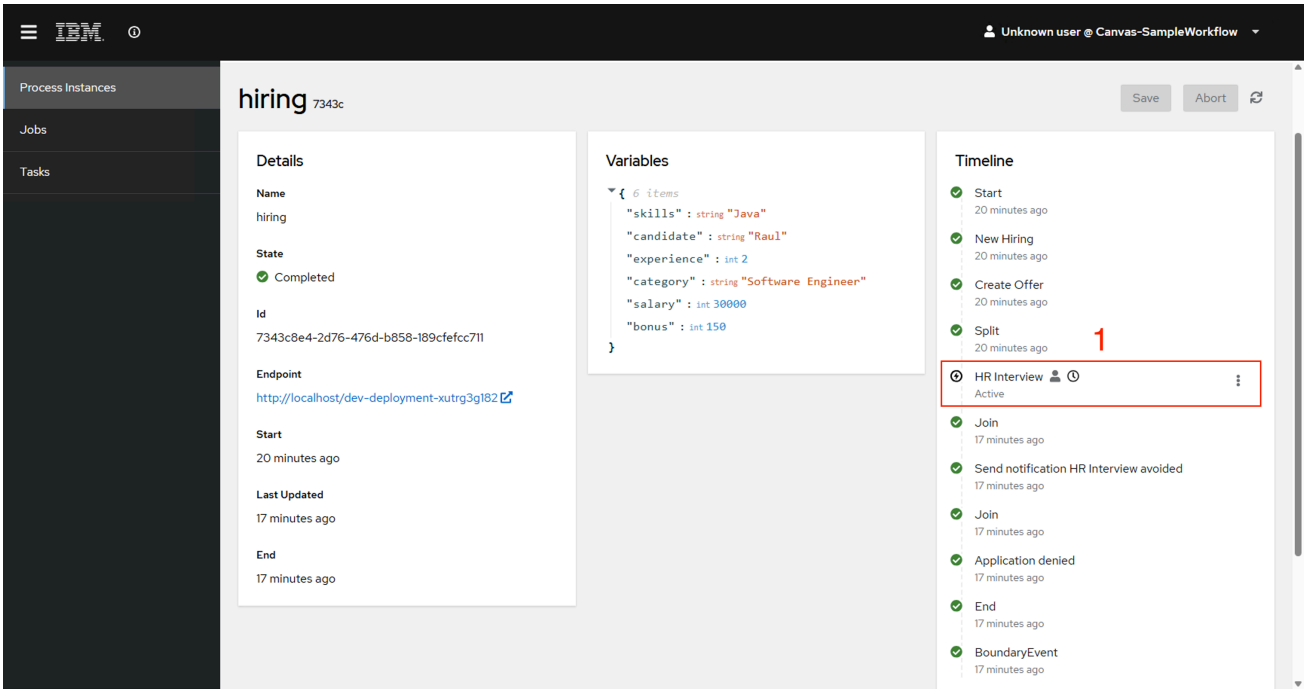
Now that you are connected to the runtime, let's view the entire instance history. Update the filter to include all status options.



Since you already made a request in Exercise 3, then an instance should be found.

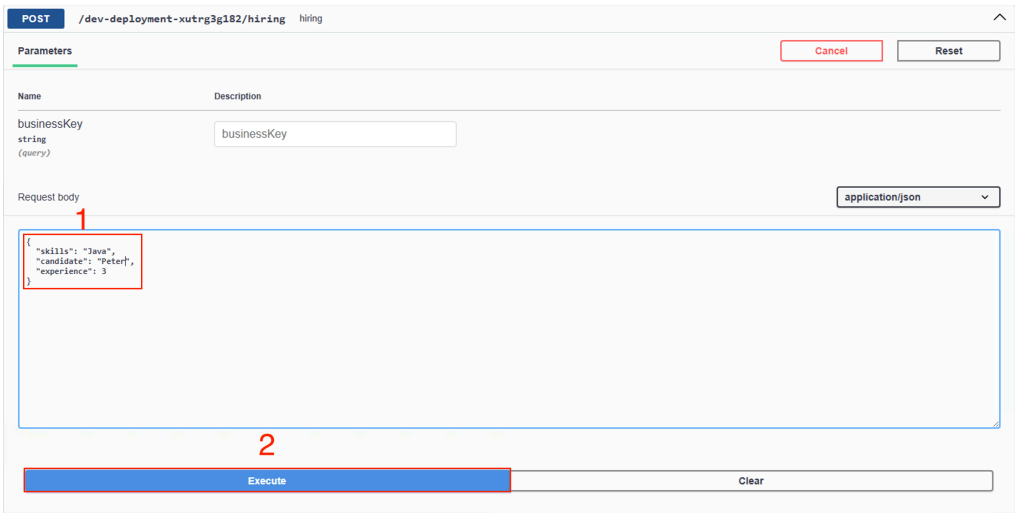


Item	Description
1	Click for more details of the instantiated process



Item	Description
1	Note that this instance was not attended to by the human in time, in the ***"HR Interview"*** task.

Now that we have the BAMOE Management Console configured, let's return to the Swagger UI to make another new POST call, then return to the Console to perform the user action.

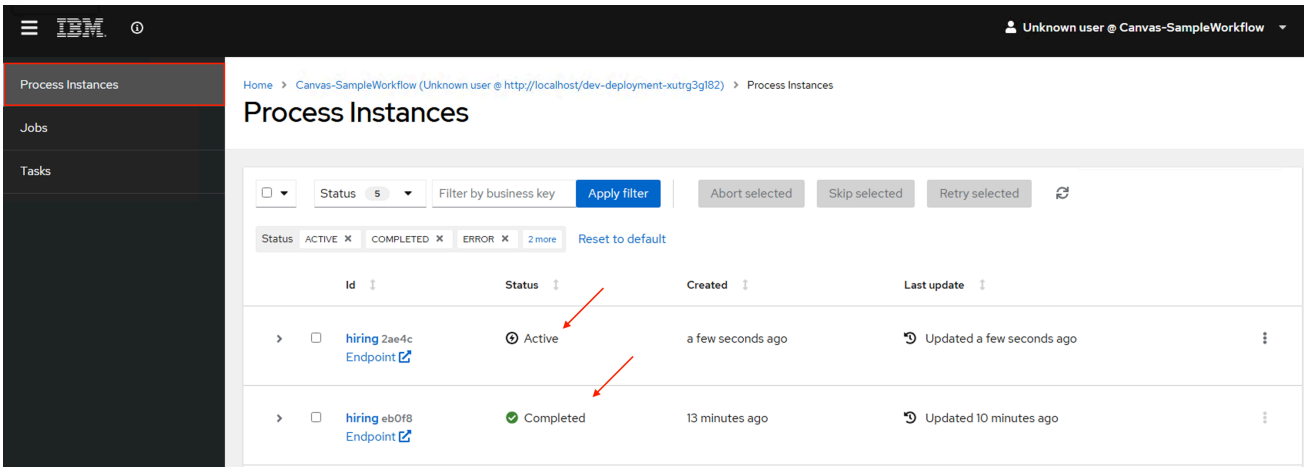


Item	Description

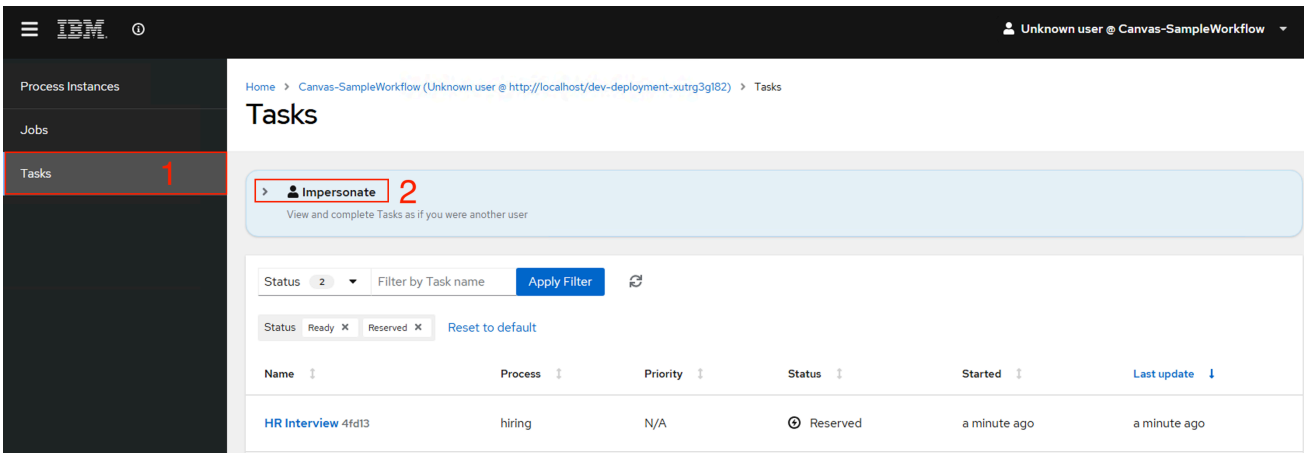
Request body	<pre>{
	  "skills": "Java",
	  "candidate": "Peter",
	  "experience": 3
	}</pre>

1 and 2	Enter the new Json data, and click ***"Execute"***

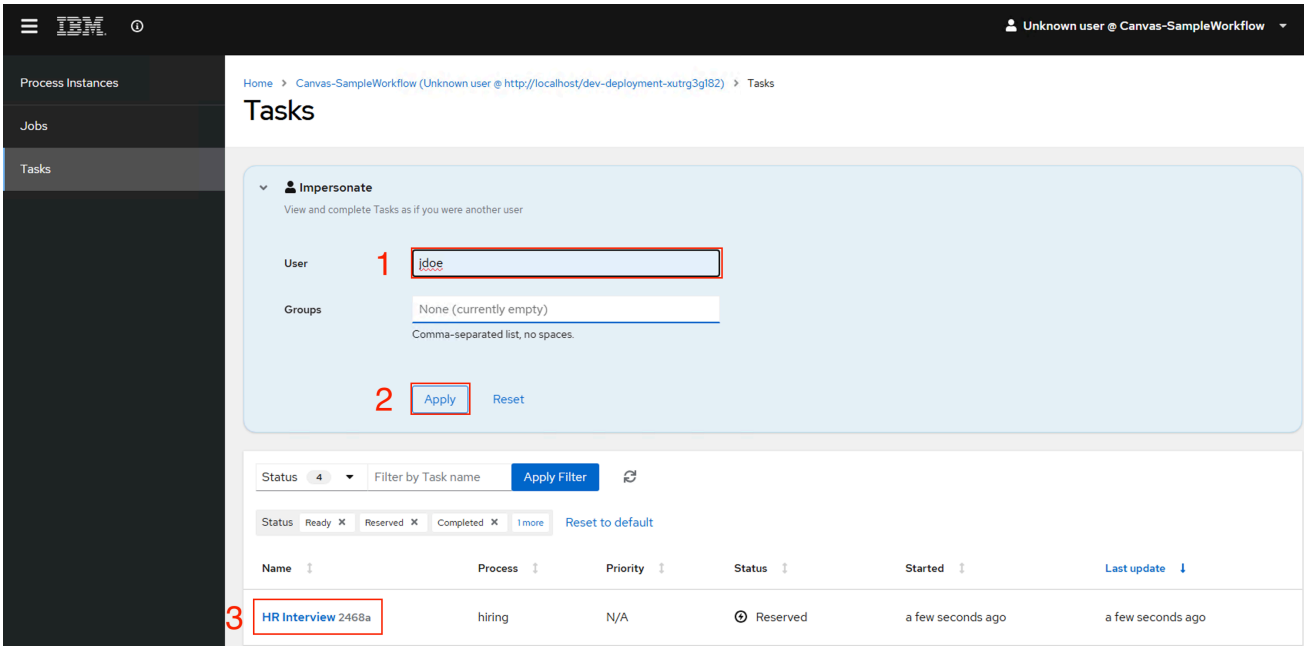
Returning to the BAMOE Management Console, we will see the new instance with the status ***"Active"***



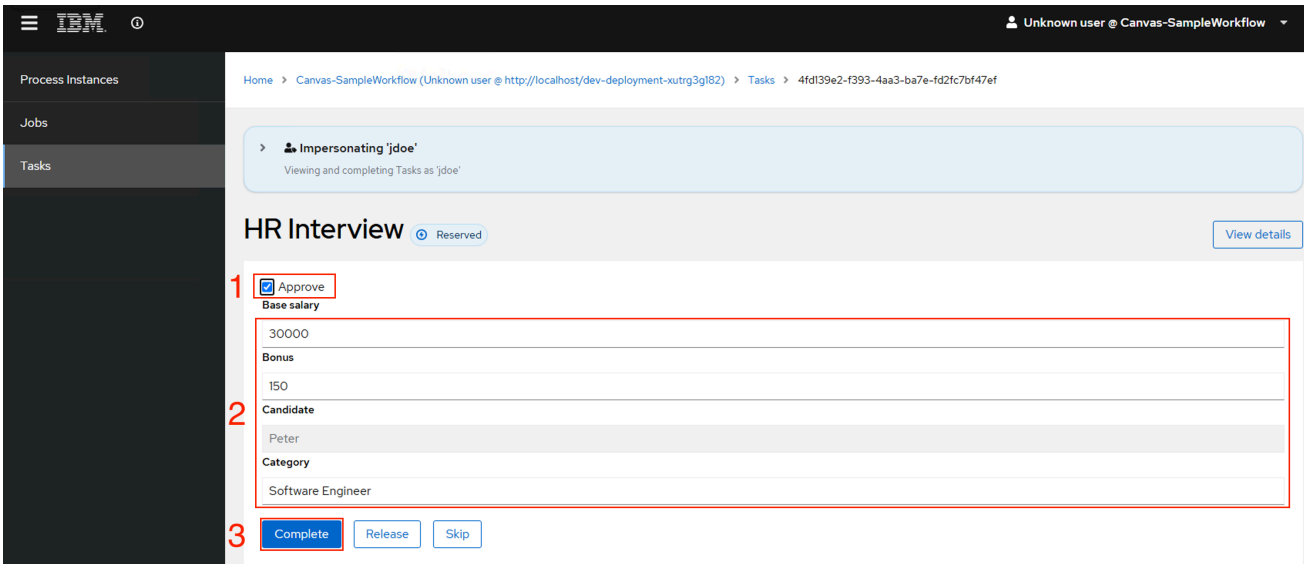
Now we will assume the role of "Jdoe", an actor configured in the human activities of the Workflow, to respond to your tasks.



Item	Description
1	From the Hamburger Menu, go to the ***"Tasks"*** screen
2	Click on the ***"Impersonate"***

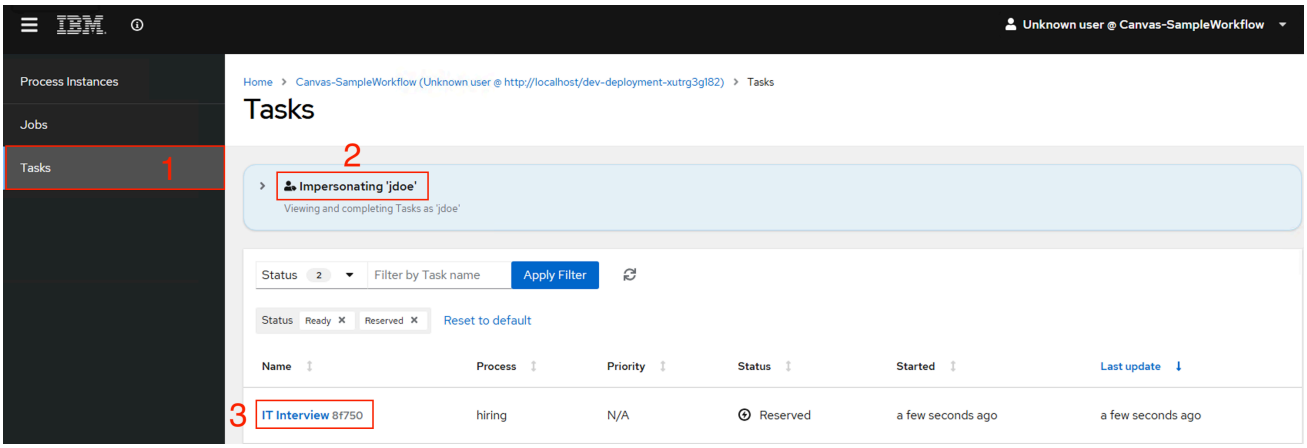


Item	Description
1	Enter the user ***"jdoe"***
2	Click ***"Apply"***
3	Click on the ***"HR Interview"*** task

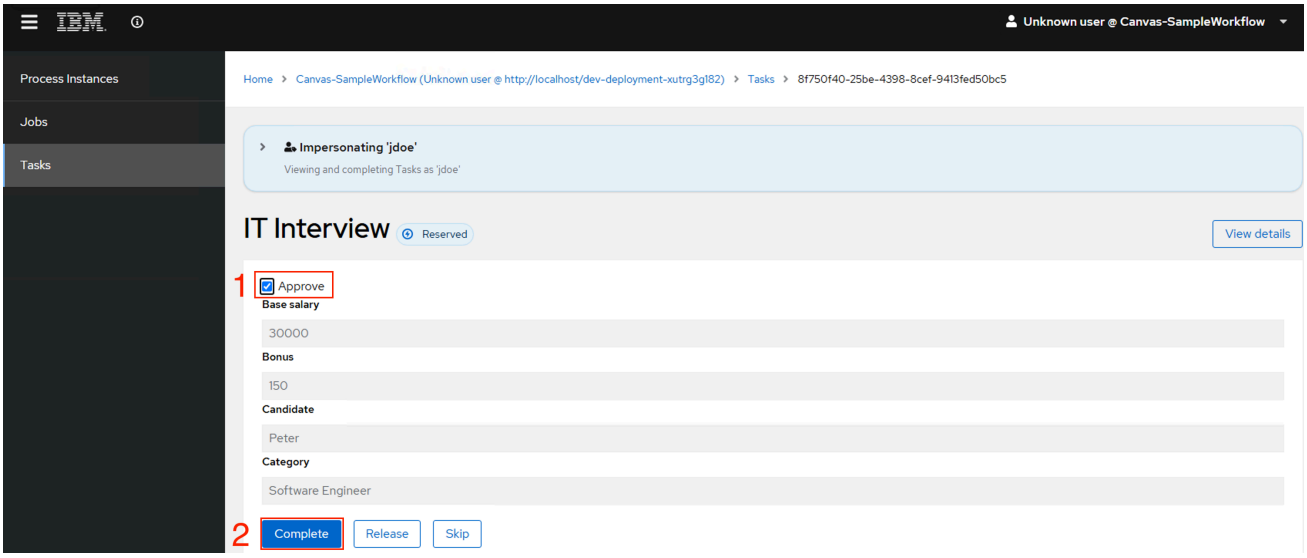


Item	Description
1	Now assuming the role of the HR user, click on ***"Approve"***
2	According to the rule registered in the Workflow, the values and position were suggested according to the input data. However, at this stage, HR can change them before sending them to the IT department.
3	Click ***"Complete"*** to finish analyzing this task.

Since the same user ***"jdoe"*** was assigned to both human activities in the workflow, then we will repeat the steps for the IT department's action.

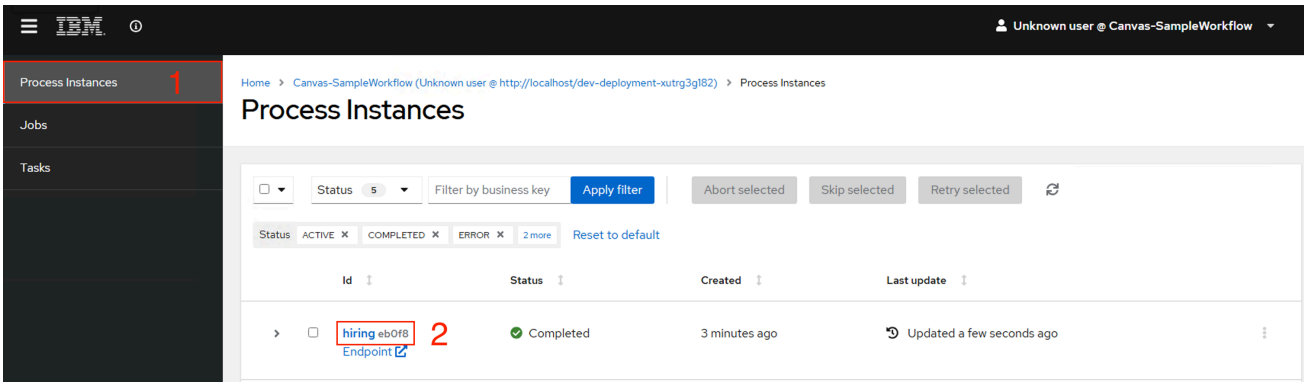


Item	Description
1	Return to the ***"Tasks"*** screen
2	Check if the user ***"jdoe"*** was selected
3	Click on the ***"IT Interview"*** task

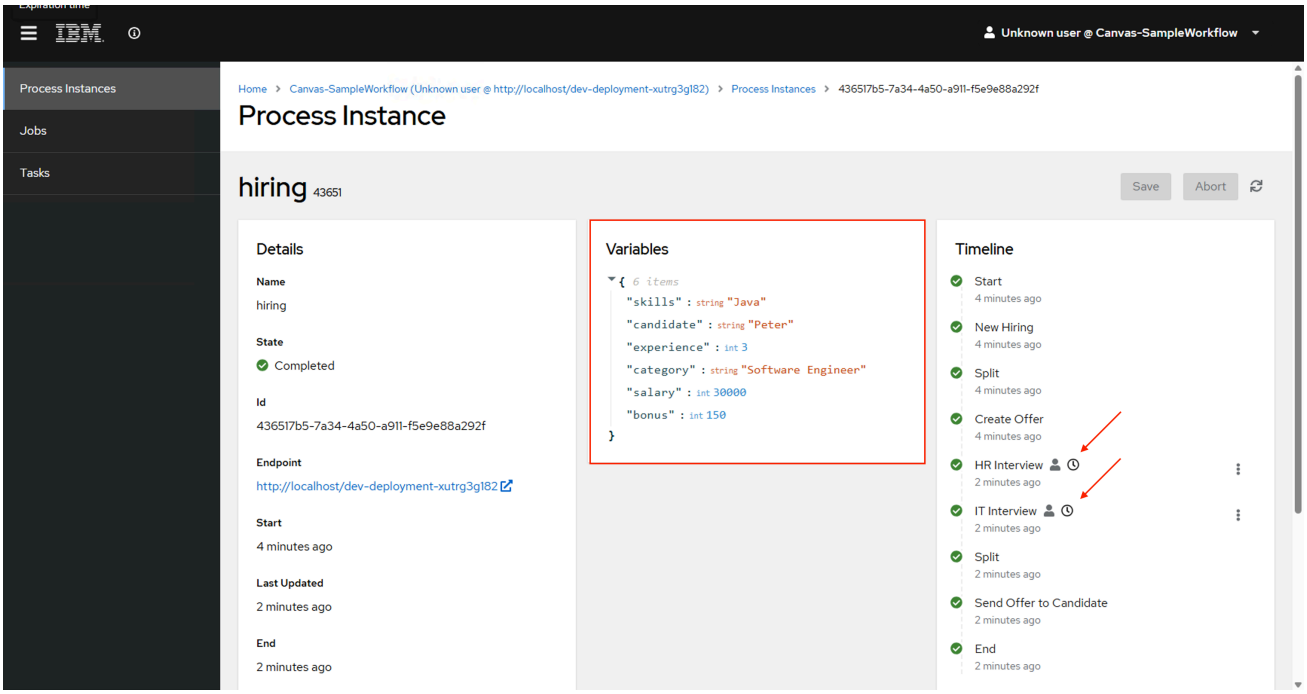


Item	Description
1	Let's approve this step as well so that we can have a happy path in this process.
2	Click ***"Complete"***

Now that all the human activities of the process have been answered, let's return to "Process Instances" to analyze the results.



Item	Description
1	Return to the ***"Process Instances"*** screen
2	Click on the instance



Now all the steps of the "happy path" have been executed, observe the result in the central "Variables" frame and the Timeline that this instance traveled.

Congratulations! You have completed this Lab, where we explored the practical features and functionality of BAMOE Canvas, Management Console, and Dev Deployment in Minikube.

I hope you had a good learning experience. Thank you for participating!

Find more information about the BAMOE Management Console in the official IBM documentation.

7 Consult Documentation and Communities

- IBM BAMOE Official Documentation
- IBM Business Automation Community: Open Editions