RPA Tutorial: Parse Excel Files

Create a robotic task that retrieves Excel file data

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Welcome to the RPA Tutorial: Parse Excel Files

This tutorial looks at a fictional company, Acme Office Supplies, and how they handle extracting data from an Excel file and using it in an Appian application.

Before you start this tutorial, you will need the following:

- Completion of the online course: **Create Robotic Tasks with Appian.**
- A computer to use as a resource – either your own computer or a remote desktop. The resource should meet or exceed the following requirements:
    - Java 8
    - 4GB of RAM
    - 64-bit Windows OS
- Access to your Appian Community Edition or **System Administrator** access to Appian RPA in a different development environment. You can request an Appian Community Edition with the following steps:
    1. Navigate to the Appian Community website, and log into your Appian Community Edition account.
    2. Click the **Learn** tab.
    3. Click the **My Learning Journey** icon.
    4. Click **Get my site** in the My Community Edition Site card.
    5. Choose your region, and generate your site.
- A download of the Excel file used in this tutorial

There are some steps in the tutorial that require a system administrator. If you are using your Appian Community Edition, you can perform these steps. If you are using a different environment, you must have a system administrator perform these steps for you. The system administrator steps are flagged in **blue**. Let’s get started!

Use Case

Every week, the Acme Sales team puts business opportunities into a file sharing system. For this tutorial, that system will be a folder on the desktop. They are transitioning some of their business processes to use Appian applications, and they want to get the business opportunity Excel data into Appian. In this tutorial, you will create an application and a robotic task to meet the requirements for this use case.

You will use the Excel (License Not Required) Actions available in the RPA Actions Palette to automate the process of reading and saving data from an Excel file. Although you are using RPA for this tutorial, there are other ways to automate Excel using Appian. For more guidance on these options, visit Appian Documentation.

After completing this tutorial, you will be able to:

- Add a robot
- Create a robotic task that uses low-code actions to open an Excel workbook from a desktop folder and retrieve the workbook data
- Add the robotic task to a process model

Robot Setup

Add a Robot

These steps require you to be a system administrator in your environment.

If you have previously added a robot, you can skip steps 1 - 7. If you have also downloaded the RPA agent to your host machine, you can skip this section and move on to adding the Excel file to your host machine.

1. Log into your environment and select **Operations Console** from the navigation menu, the same way you access Appian Designer.
2. Click **CREATE**.
3. Enter the name of your robot and permission tags. Remember, permission tags are used to set security between your user account and robots. The permission here should match permission tags for your user.
4. Click **CONTINUE**.
5. Select Windows for your operating system and the JRE Path if it is different from the listed default.
6. If you want to use the automatic sign in feature, select the checkbox.
7. Click **CREATE**.
8. Download the installer.
    a. If you're using your computer as the host machine, you can download the installer now.
    b. If you are using a remote desktop as the host machine, make sure to download the installer on the remote desktop. To access and download the installer, navigate to your Appian Environment > Operations Console > Your Robot > Manage Connection and download the installer. You may have to select **More Info** to run the installer.
9. Create a new folder, **Appian**, on your host machine (your computer or remote desktop).
10. Add the **rpa-installer.exe** file to the Appian folder.
11. Run the **rpa-installer.exe** file.
    a. You may have to click **More Info** to run the file.

Add the Excel File to the Host Machine

Next, you need to set up the "file sharing system" for Acme Sales. For this exercise, the "file sharing system" will be a folder on your desktop.

1. Create a new folder, **Business Opportunities**, on the desktop of your host machine.
2. In the folder, add the Excel file you downloaded earlier.
3. Close the folder.

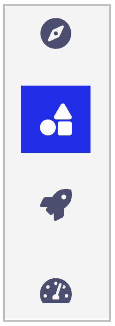
You have your host machine and your “file sharing system” set up. Let’s continue with the tutorial.

Create an Appian Application

If you're not a system administrator in your development environment, you must be added to the **Process Model Creators** and **Designers** system groups. If you are using your Appian Community Edition, you are automatically added to these groups.

In this part of the exercise, you will create an application, a robot pool, connected system, CDT, and data store. If you created an application and robot pool in a different tutorial, you can skip this section and move on to getting your API key.

1. Log into your environment, and select **Appian Designer** from the navigation menu.
2. Click **New Application**.
3. Complete the following details for your application:
   - Name: **RPA Tutorials**.
   - Description: **Container for design objects used to execute the RPA tutorial robotic tasks**.
   - Keep the checkbox selected to generate groups and folders.
4. Click **CREATE**.
5. Review the application security, and click **SAVE**.
6. Close the pop-up.
7. Navigate to the **Build** view.



8. Click **New > Robot Pool**.
9. Complete the following details:
   - Name: **RT_TrainingPool**
   - Description: **Robot pool for training**
10. Click **CREATE**.
11. Review the object security and click **SAVE**.
12. Click **ADD MEMBERS**.
13. In the **Robots to Add** field, search and select the robot you created in the previous section.

14. Click **ADD**.
15. Close this design object, and return to Appian Designer.

You created your application and a robot pool. You also added your previously created robot to a pool. Let's keep going!

Get Your API Key

Next, you will need an API key for the RPA connected system. If you are using your Appian Community Edition, you can follow the steps below to generate the API key. If you are on a different site, you will need access to the Admin Console before completing the steps.

1. Use the navigation menu in the header to access **Admin Console.**
2. In the left pane, select **Web API Authentication**.
3. Click **CREATE**.
4. Complete the following details for the new API key.
    - Description: **Used for RPA in the Parse Excel Files Tutorial application.**
    - Service Account:
        i. If you are using your Appian Community Edition, you can use the service account: **AppianRPA.sa Service Account.**
        ii. If you are using a different site, you may need to create a new service account.
    - Click **CREATE**.
5. Copy the API key and paste it somewhere safe. You will need to access it later. Click **OK**.
6. Navigate back to your application to create a connected system. Click **NEW > Connected System**.
7. Select **Appian RPA**.
8. Complete the following details for the connected system:
    - Name: **RT Appian RPA CS**
    - Description: **The connected system used with Appian RPA in the Parse Excel Files tutorial.**
    - API Key: Paste the API key you saved from a previous step.
    - Click **TEST CONNECTION**.
    - If the connection is successful, click **CREATE**.

9. Review security, and click **SAVE**.

Next, let's create a CDT for the business opportunity data.

1. Click **NEW > Data Type**.
2. Complete the following details for the CDT:
    - Namespace: Leave the default value.
    - Name: **RT_BusinessOpportunities**
    - Description: **Structure of data for business opportunities.**
    - Click **CREATE**.

    In Excel, the business opportunity data looks like this:

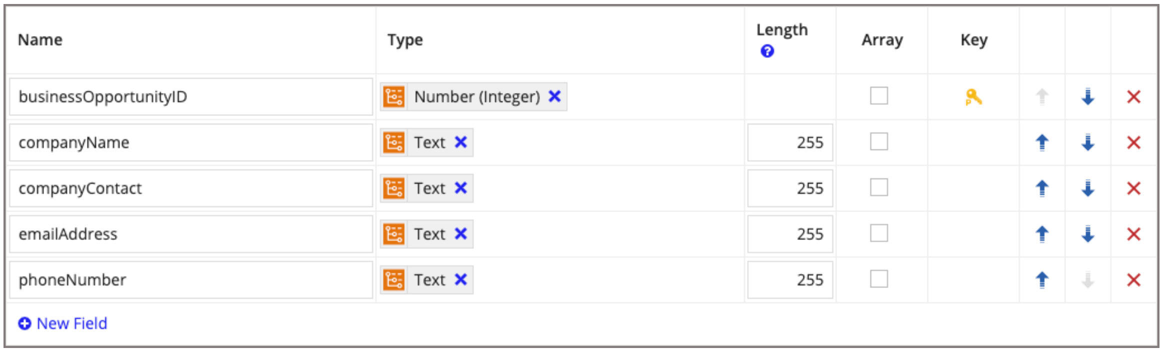
companyname	**companycontact**	**emailaddress**	**phonenumber**
Mike's Bike Shop	Mike Smith	Mike@Bikes.com	202-491-9999

    Let's add fields to the CDT to align with the business opportunity data.

3. Click **New Field** five times to add five fields.
4. Complete the following details for the first field:
    - Name: **businessOpportunityID**
    - Type: **Number (Integer)**
    - Key: **Selected**
        i. Key Constraint: **Primary Key**
        ii. Auto-generate: **Selected**
    - Click **OK**.
5. Use the following table to configure the remaining fields:

Name	**Type**	**Length**
companyName	Text	255
companyContact	Text	255
emailAddress	Text	255
phoneNumber	Text	255

6. Your CDT should look like this:



Name	Type	Length	Array	Key			
businessOpportunityID	Number (Integer) ✕		□	🔑	↑	↓	✕
companyName	Text ✕	255	□		↑	↓	✕
companyContact	Text ✕	255	□		↑	↓	✕
emailAddress	Text ✕	255	□		↑	↓	✕
phoneNumber	Text ✕	255	□		↑	↓	✕

7. Click **SAVE CHANGES**.

Navigate back to your application to create a data store.

1. Click **NEW > Data Store.**
2. Complete the following details for the data store:
    - Name: **RT Excel Data Tutorial DS**
    - Description: **The data store used to communicate with the database in the Parse Excel Files Tutorial.**
    - Data Source: Leave the default value.
    - Click **CREATE**.
3. Review security, and click **SAVE**.
4. In the **Data Entities** section, click **Add Entity**.
5. For **Name**, type **businessOpportunities**.
6. Click in the **Type** field, and select the **RT_BusinessOpportunities** data type.
7. Click **OK**, then **SAVE**.
8. Scroll down to the **Schema Management** section, and click **VERIFY**. No matching tables should be found. You want to create tables automatically, so leave the default selection.
9. Click **SAVE & PUBLISH**.

You are now ready to set up a host machine to create and test your robotic task. Later, you will finish configuring your application by adding your robotic task to a process workflow.

Create a Robotic Task

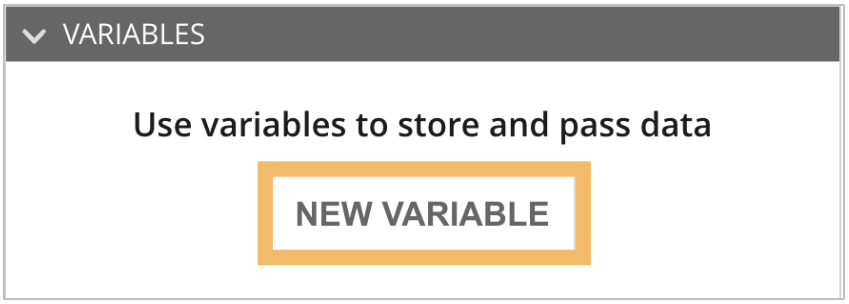
Next, create a robotic task.

1. Click **NEW** > **Robotic Tas**k.
2. Complete the following details:
    a. Name: **RT_ParseExcelFile**
    b. Description: **Robotic task for the Parse Excel File tutorial**
    c. Robot Pools to Add: **RT_TrainingPool**
3. Click **CREATE**.
4. Review the security, and click **SAVE**.

Add Robotic Task Variables

For this tutorial, you need two robotic task variables: endingCell and dataValues.

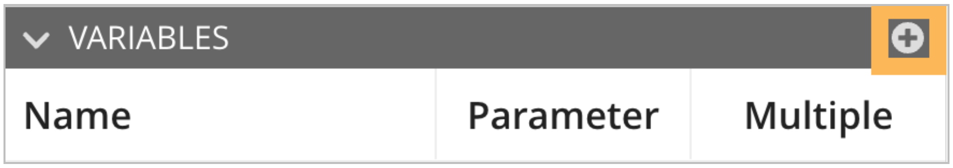
1. In the right pane, click **New Variable**.



VARIABLES

Use variables to store and pass data

2. The first variable is for storing the ending cell. You will use this variable when you add an Excel action to find the last cell in the spreadsheet. Complete the following details for the first variable:
    - Name: **endingCell**
    - Type: **Text**
    - Leave the rest of the fields blank.
    - Click **CREATE**.
3. Click the **Create Variable** icon to create the second variable. This variable is for storing all of the values in the spreadsheet up until the ending cell.



VARIABLES

Name	Parameter	Multiple

4. Complete the following details for the second variable:

    - Name: **dataValues**
    - Type: **RT_BusinessOpportunities**
    - Array: **Selected**
    - Parameter: **Selected**
    - Leave the remaining fields at their default value.
    - Click **OK**.

5. Click **SAVE CHANGES**.

Now, let’s use these robotic task variables in the actions!

Add Actions to Get Excel Data

Now, let's build out our robotic task using low-code actions. You will add and configure three actions: Open or Create Workbook, Find Range End, and Get Value. All of these actions can be found in the palette under Excel: License Not Required.

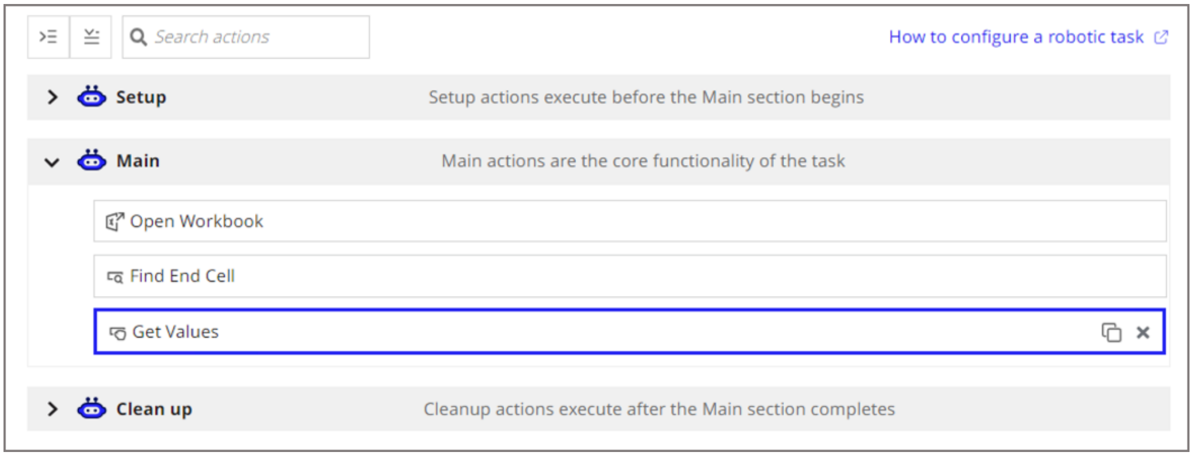
1. Drag and drop the **Open or Create Workbook** (License Not Required) action into the **Main** section.
2. This action will open the Excel file using a designated file path. Complete the following details for the action:
   - Display Name: **Open Workbook**
   - Workbook Action: **Open existing workbook**
   - File Path: Click the **Expression Editor icon**, and enter the **file path** for your saved Excel file. For example:
     `"C:\Users\Administrator\Desktop\Business Opportunities\BusinessOpportunitiesData_ExcelTutorial.xlsx"`

     Note: Right-click your file, and select **Properties** to find the file path.
   - Click **SAVE**.
3. Next, drag and drop the **Find Range End** (License Not Required) action into the **Main** section under Open Workbook.
4. Since the data can change in volume depending on the number of entries, you will first need to find the last row of data. This action will find the last cell in the Excel workbook so that you can retrieve all of the data in the next step. The data always starts from the first row, so the starting cell is static. Complete the following details for this action:
   - Display Name: **Find End Cell**
   - Starting Cell: **D1**
   - Search By: Select **Column**
   - Attribute to Return: Select **Ending cell in range**
   - Operator: Select **is stored as**
   - Target: Select **endingCell**
5. Lastly, drag and drop the **Get Value (License Not Required)** action into the **Main** section under Find End Cell.
6. This action will get the values between the starting cell and the ending cell configured above. Complete the following details for this action:
   - Display Name: **Get Values**
   - Component Type: Select **Range**

- Starting Cell: **A1**
- Ending Cell: Select **Variable**, then **endingCell**
- Specify Header Row: **Selected**
- Header Row Starting Cell: **A1**
- Header Row Ending Cell: **D1**
- Operator: Select **is stored as**
- Target: Select **dataValues**

When the Specify Header Row checkbox is selected, the robotic task uses the column header names from A1 to D1 as the key in the returned value instead of the default keys, A, B, C, and D.

7. Click **SAVE CHANGES**.

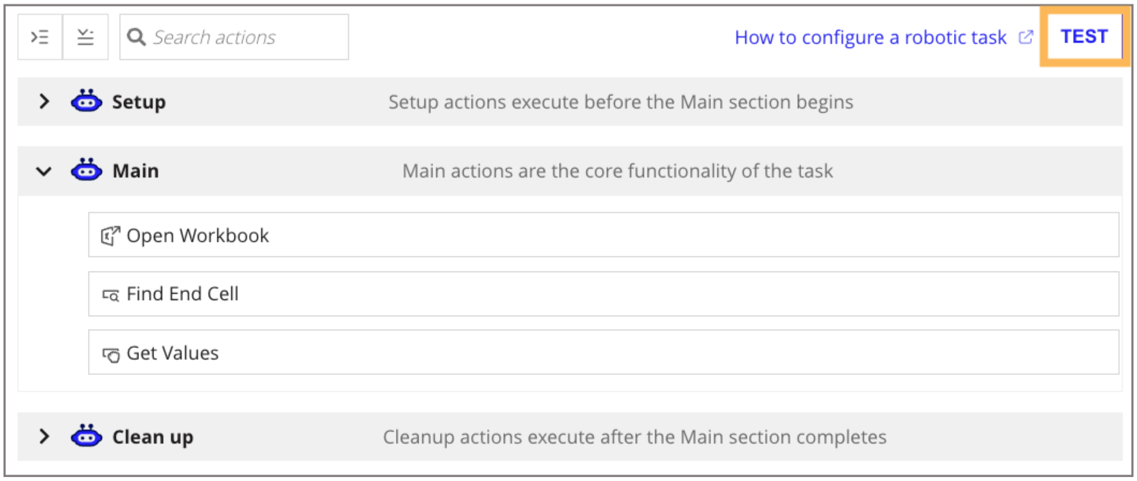


Search actions
How to configure a robotic task
Setup
Setup actions execute before the Main section begins
Main
Main actions are the core functionality of the task
Open Workbook
Find End Cell
Get Values
Clean up
Cleanup actions execute after the Main section completes

Test the Robotic Task

Your robotic task is fully configured. Before you add it to a process model in your application, test the robotic task to make sure it works as expected.

1. Click **TEST**.



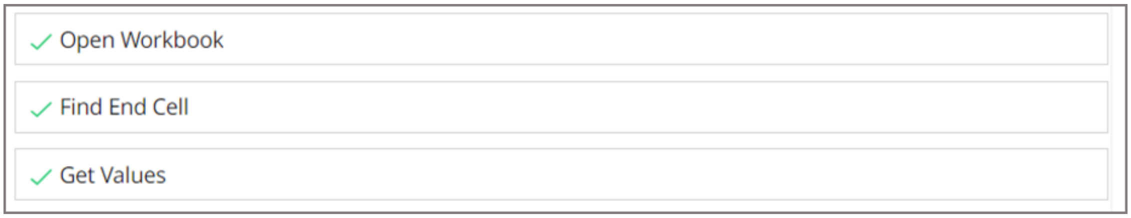
Setup — Setup actions execute before the Main section begins

Main — Main actions are the core functionality of the task

- Open Workbook
- Find End Cell
- Get Values

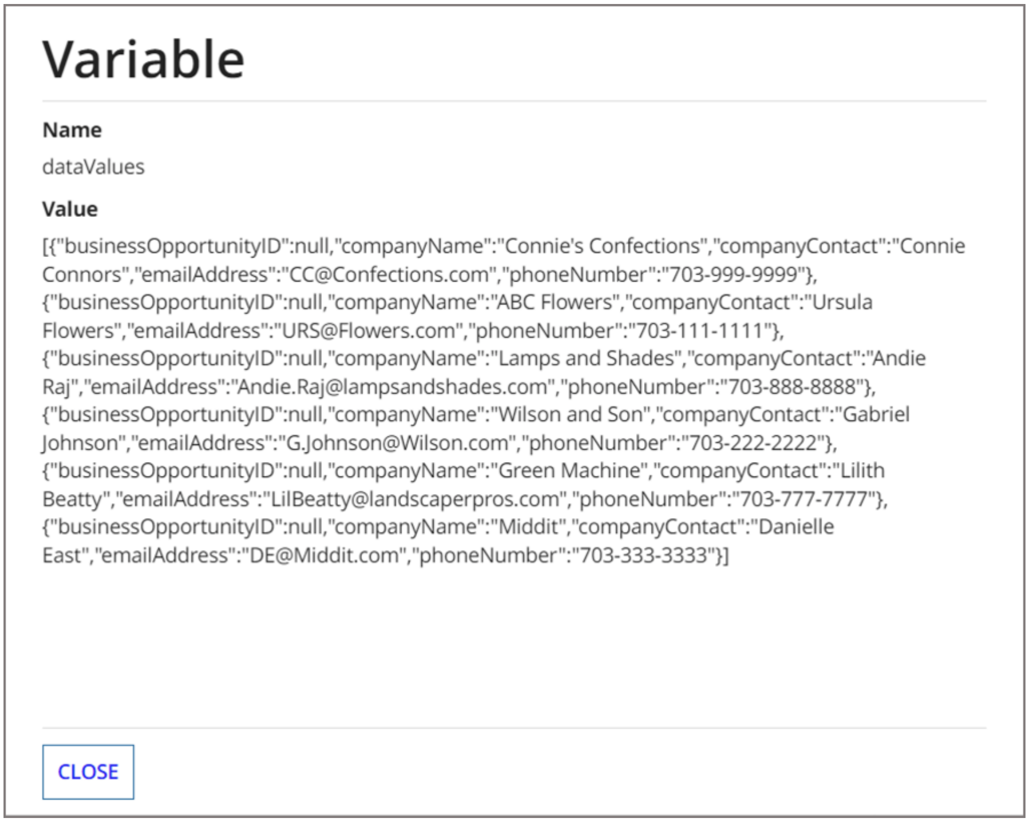
Clean up — Cleanup actions execute after the Main section completes

2. Leave the default settings, and click **TEST.**
3. You will see green check marks next to the actions once they are complete.



- ✓ Open Workbook
- ✓ Find End Cell
- ✓ Get Values

4. Click **dataValues** in the right Variables pane to see the saved values from the Excel workbook.



Variable

Name

dataValues

Value

[{"businessOpportunityID":null,"companyName":"Connie's Confections","companyContact":"Connie Connors","emailAddress":"CC@Confections.com","phoneNumber":"703-999-9999"},
{"businessOpportunityID":null,"companyName":"ABC Flowers","companyContact":"Ursula Flowers","emailAddress":"URS@Flowers.com","phoneNumber":"703-111-1111"},
{"businessOpportunityID":null,"companyName":"Lamps and Shades","companyContact":"Andie Raj","emailAddress":"Andie.Raj@lampsandshades.com","phoneNumber":"703-888-8888"},
{"businessOpportunityID":null,"companyName":"Wilson and Son","companyContact":"Gabriel Johnson","emailAddress":"G.Johnson@Wilson.com","phoneNumber":"703-222-2222"},
{"businessOpportunityID":null,"companyName":"Green Machine","companyContact":"Lilith Beatty","emailAddress":"LilBeatty@landscaperpros.com","phoneNumber":"703-777-7777"},
{"businessOpportunityID":null,"companyName":"Middit","companyContact":"Danielle East","emailAddress":"DE@Middit.com","phoneNumber":"703-333-3333"}]

5. If you do not see the green check marks, open the Execution log to identify the error. To edit your robotic task, click the **Go to robotic task configuration** icon ⚙ in the top right corner.

   Note: A common error is an incorrect file path.

Configure the Appian Application

The robotic task opens the Excel workbook and retrieves the data. Now we need to create a process model to execute the robotic task and save the data values to a database.

In this section you'll create the following objects in your Appian application:

- Integration
- Process Model

First, create an integration so that you can execute the robotic task from your business process.

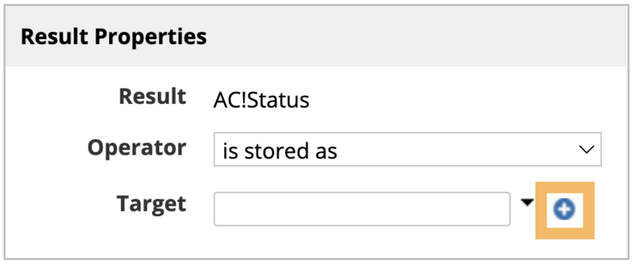
1. Navigate back to the **Parse Excel Files Tutorial** application.
2. Click **NEW > Integration**.
    - Connected System: **RT Appian RPA CS (Appian RPA)**
    - Operation: Select **Execute Robotic Task**
    - Name: **RT_ExecuteExcelFileRoboticTask**
    - Description: **Executes the robotic task for the Parse Excel Files tutorial to get an excel file and add it to a document folder**.
    - Click **CREATE.**
3. Use the following information to configure the integration:
    - Robotic Task: **RT_ParseExcelFile**
    - Robot: Leave the **First available robot** default value
    - Description: **Executes the Parse Excel Files robotic task**
    - Priority: **Normal**
    - Parameters: Leave the default values
    - Click **TEST REQUEST**, then **SAVE CHANGES**.

Next, create the process model.

1. Navigate back to the **Parse Excel Files Tutorial** application.
2. Click **NEW > Process Model**.
    - Name: **RT Get Excel Business Opportunities**
    - Description: **Executes the robotic task and saves the Business Opportunities data to a database.**
    - Click **CREATE**.
3. Review security, and click **SAVE**.

In this step, you'll configure the process model to execute the robotic task and save the values to a database.

1. Drag and drop an **Execute Robotic Task** node to the process model. Make sure the connecting line is highlighted before dropping the node.
2. Rename the node, **Execute Parse Excel Robotic Task**.
3. Double-click the node, and navigate to the **Setup** tab.
4. Type and select **RT_ExecuteExcelFileRoboticTask** in the RPA Integration field.
5. Navigate to the **Data** tab.
6. In the **Data** tab, click the **Outputs** tab.
7. Select **Status**.
8. Next to the **Target** field, click the **New process variable** icon**.**



Result Properties

Result: AC!Status

Operator: is stored as

Target:

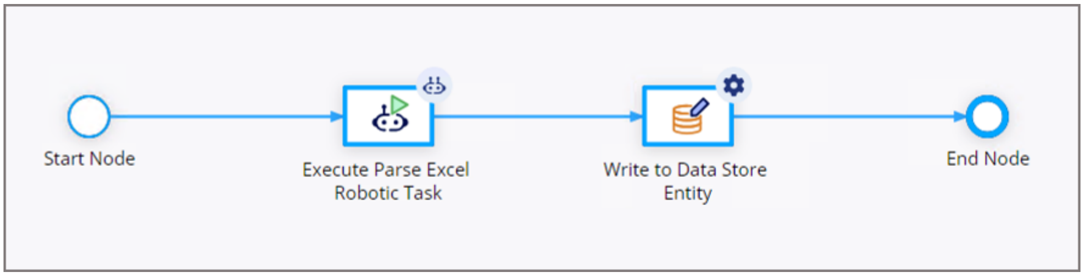
9. Rename the process variable to **roboticTaskStatus**, and click **OK**.
10. Select **Variables**.
11. Repeat step 9 to create another process variable. Complete the following fields:
    - Name: **roboticTaskVariables**
    - Type: **Map**
    - Multiple: **Selected**
12. Click **OK.**

Next, add a Write to Data Story Entity node to save the values to a database.

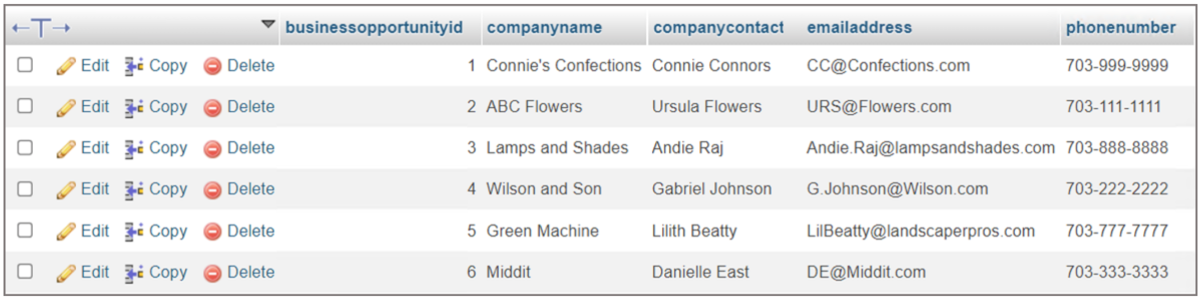
1. Drag and drop a **Write to Data Store Entity** smart service to the process model after Execute Robotic Task.
2. Double-click the node, and navigate to the **Data** tab.
3. In the **Inputs** tab, select **Data Store Entity**.
4. Next to the **Value** field, click the **Directory** icon and search for the data store you created earlier, **RT Excel Data Tutorial DS.**
5. Next to **businessOpportunities**, click **Select**, then **OK**.
6. In the **Inputs** tab, click **New Input**.
7. Complete the following details for the second input:
    - Name: **businessOpportunities**
    - Type: **RT_BusinessOpportunities**
    - Multiple: **Selected**

   - Value: Open the Expression Editor, and type **`=pv!roboticTaskVariables.dataValues`**
   - Click **SAVE AND CLOSE**.
   - Click **OK**.

8. Click **File > Save & Publish**.
9. Click **File > Start Process for Debugging.** You may have to wait and refresh the process model for it to complete.



10. Once each node turns blue, navigate to the **Cloud Database**. You should see the data from the Excel sheet in the table.



←T→		businessopportunityid	companyname	companycontact	emailaddress	phonenumber
□	Edit Copy Delete	1	Connie's Confections	Connie Connors	CC@Confections.com	703-999-9999
□	Edit Copy Delete	2	ABC Flowers	Ursula Flowers	URS@Flowers.com	703-111-1111
□	Edit Copy Delete	3	Lamps and Shades	Andie Raj	Andie.Raj@lampsandshades.com	703-888-8888
□	Edit Copy Delete	4	Wilson and Son	Gabriel Johnson	G.Johnson@Wilson.com	703-222-2222
□	Edit Copy Delete	5	Green Machine	Lilith Beatty	LilBeatty@landscaperpros.com	703-777-7777
□	Edit Copy Delete	6	Middit	Danielle East	DE@Middit.com	703-333-3333

Great work! You've completed the Parse Excel Files RPA Tutorial. Continue learning with the next tutorial in the series.