Excel best practices

Project name: Excel Best practices - Cloud Studio

Package version: 1.3.15

THE BEST RUN SAP

Version	Date	Description
1	January 12, 2021	Document created
1.1	March 08, 2021	Change template Add information about SDK dependencies
1.2	May 03, 2021	Add automation to manage the copy of very large table Add paragraph for automation **Split large tables into multiple files** Package version: 1.1.4
1.3	June 14, 2021	Add automation to format and export a table. Add paragraph for automation **Format and Export** Package version: 1.2.0
1.4	August 12, 2021	Changing version of the package
1.5	December 17, 2021	Add automation to present how to sort data Package version 1.2.7
1.6	January 17, 2022	Add automation to present how to filter data
1.7	April 29, 2022	Add automation to present how to split large files into a fixed number of files
1.8	May 24, 2022	Add automation to present how to use formulas in Excel spreadsheet
1.9	October 11, 2022	Add automation to present how to retrieve an already opened Excel file

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INTRODUCTION

This document describes the SAP Build Process Automation sample **Excel Best practices - Cloud Studio** and provides the following information:

- Description (functional and technical)
- Version used to generate this sample

It also contains information on prerequisites, such as the steps to follow before launching the agent.

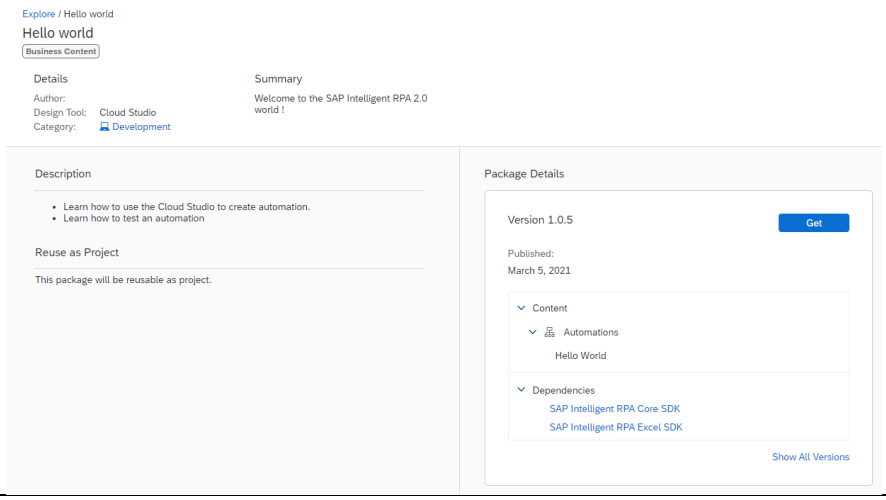
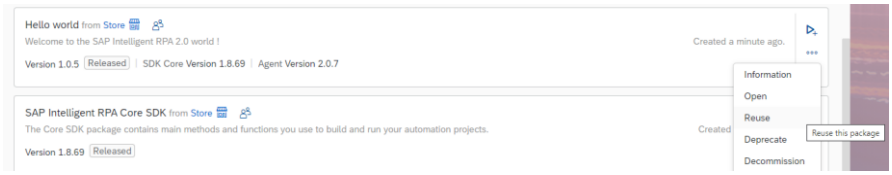
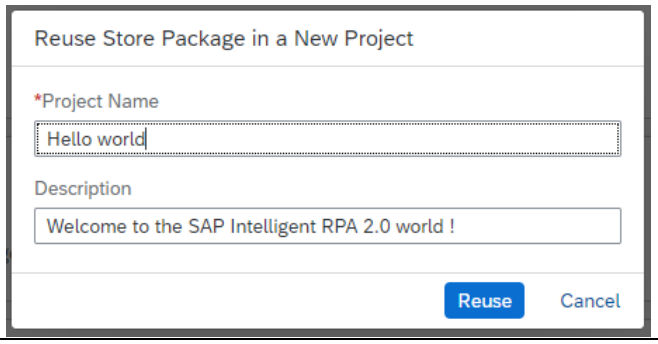
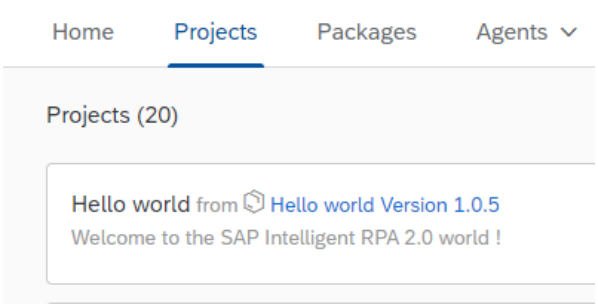
IMPORTANT RECOMMANDATION

General

To use this sample, you need to have a basic knowledge and understanding of SAP Build Process Automation tool. At the very least you need to know how to build an automation, add and modify activities and generate a package.

Reuse the sample as a new project

Note: screenshot might display a different name than the one of this sample.

From the Cloud Factory, open the Store tab and select the sample you want to retrieve. Click on the **Get** button.	
Once the package is retrieved, open the Packages tab of the Cloud Factory. Click on the Options button of the package you just retrieved and select the option **Reuse**.	
Set a name for the project to be created.	
Open the project that has just been created.	
If needed, update the content of this project, and generate a new package from it.	

You need to execute this procedure to be able to open the project and see all its content (the captured applications, the declared items, the automations, etc.).

DESCRIPTION

This package contains captures, datatype and automations that are described below. See chapter Version for more details about the version of the Desktop Agent and the SDK dependencies.

Settings

This section describes the settings of the project such as environment variables or dependent packages that are used in the automation.

Environment variables

Name	Description	Type
SheetName	Default name of the worksheet created in Excel file	String
NumberOfRowsToCopy	Number of rows to copy when the large file is split into smaller ones	Number
NumberOfBlocks	Number of files to be created with splitting one large excel table	Number

Dependent packages

N/A

Captures

This section describes the captures which were made to pilot the application in this sample. It will also describe the different methods which were used to capture the pages and declare the items.

N/A

Datatypes

This section describes the datatype used in this sample. It describes the structure of the datatype and where it is used in the automations.

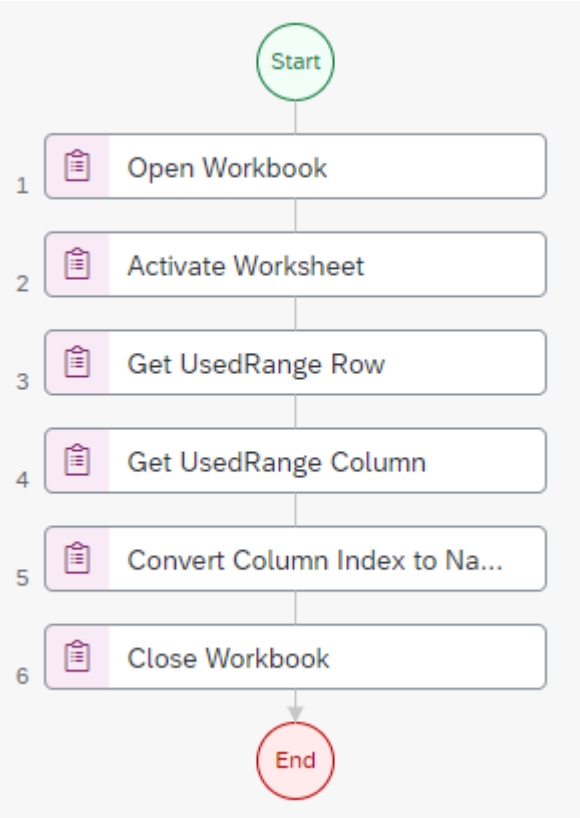
Excel data

Name of attribute	Type	Description
Attribute1	String	
Attribute2	String	
Attribute3	String	
Attribute4	String	
Attribute5	String	

Automations

Get range definition

Triggerable: No
Input: Path of the input file
Output: Range definition of the table in Excel file (type = String)



The agent will use the variable **ExcelFilePath** to open the Excel file. Then, as we know we are working with a table, we get the number of columns first.

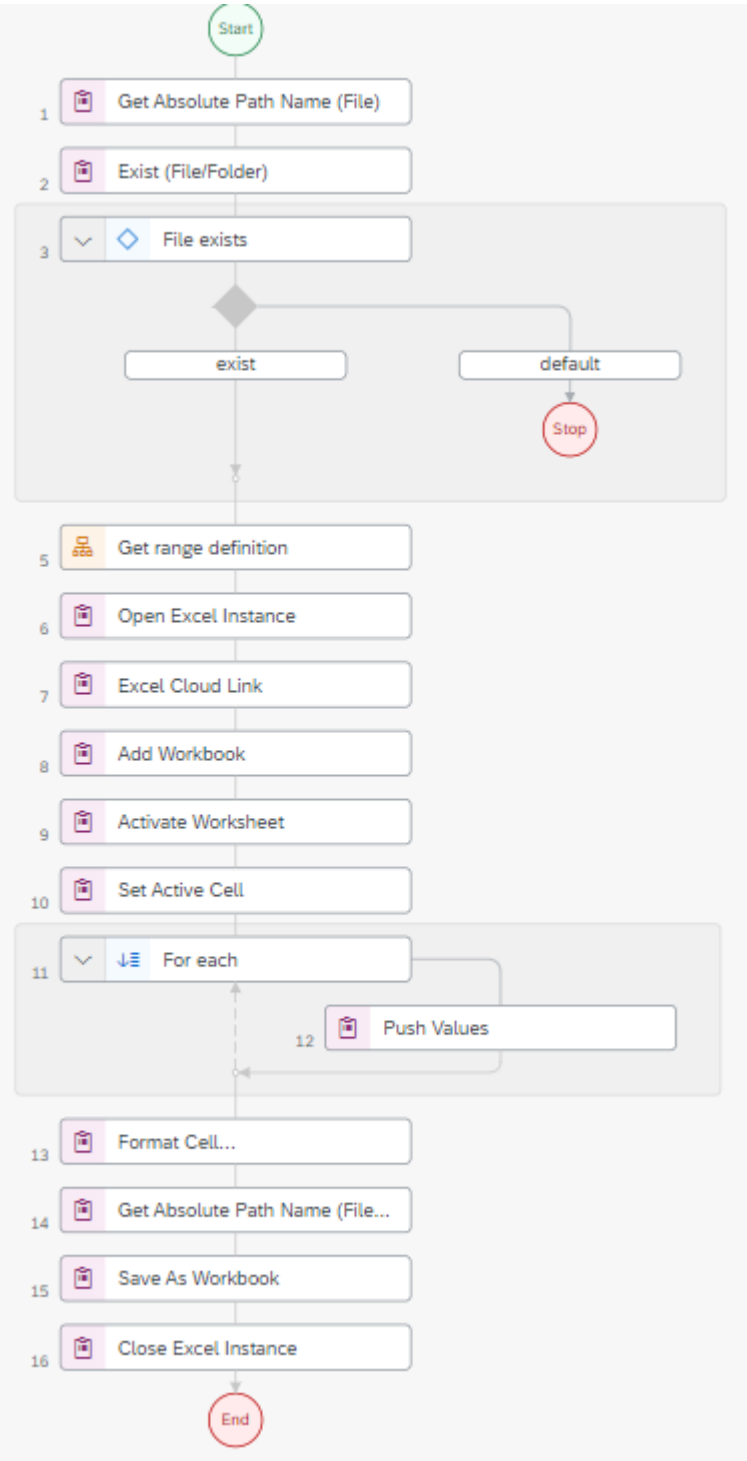
It will return the index of the column and row for the last cell in the range. Then it converts the column index into the column name, and return the complete range.

Important note: Let's assume we have the following data:

Column1	Column2	Column3	Column4	Column5		
Data 11	Data 21	Data 31	Data 41	Data 51		
Data 21	Data 22	Data 32		Data 52		
	Data 23	Data 33	Data 43	Data 53		
Data 41						

When the agent executes the activity **Get Row From Data** in Column 1, with the reference cell begin A1 (first cell of the column), the result will be 3, as the last cell before the first empty cell is on row 3 (it's equivalent of the combination CTRL-KeyDown when Excel is opened).
Using the same pattern, the activity **Get Column From Data** in row 3 will return the value 4.
In this example, after the execution of the first loop, we would have a range definition **A1:E4**, as the cell A5 is never read. That's why we are using another loop to read data below the empty cell.

Copy dynamic table
Type: Attended
Input: None
Output: None



The agent executes the nested automation *Get range definition* to get the range to read in the Excel file and creates a collection of **Excel Data** objects using the Excel Cloud Link activity.

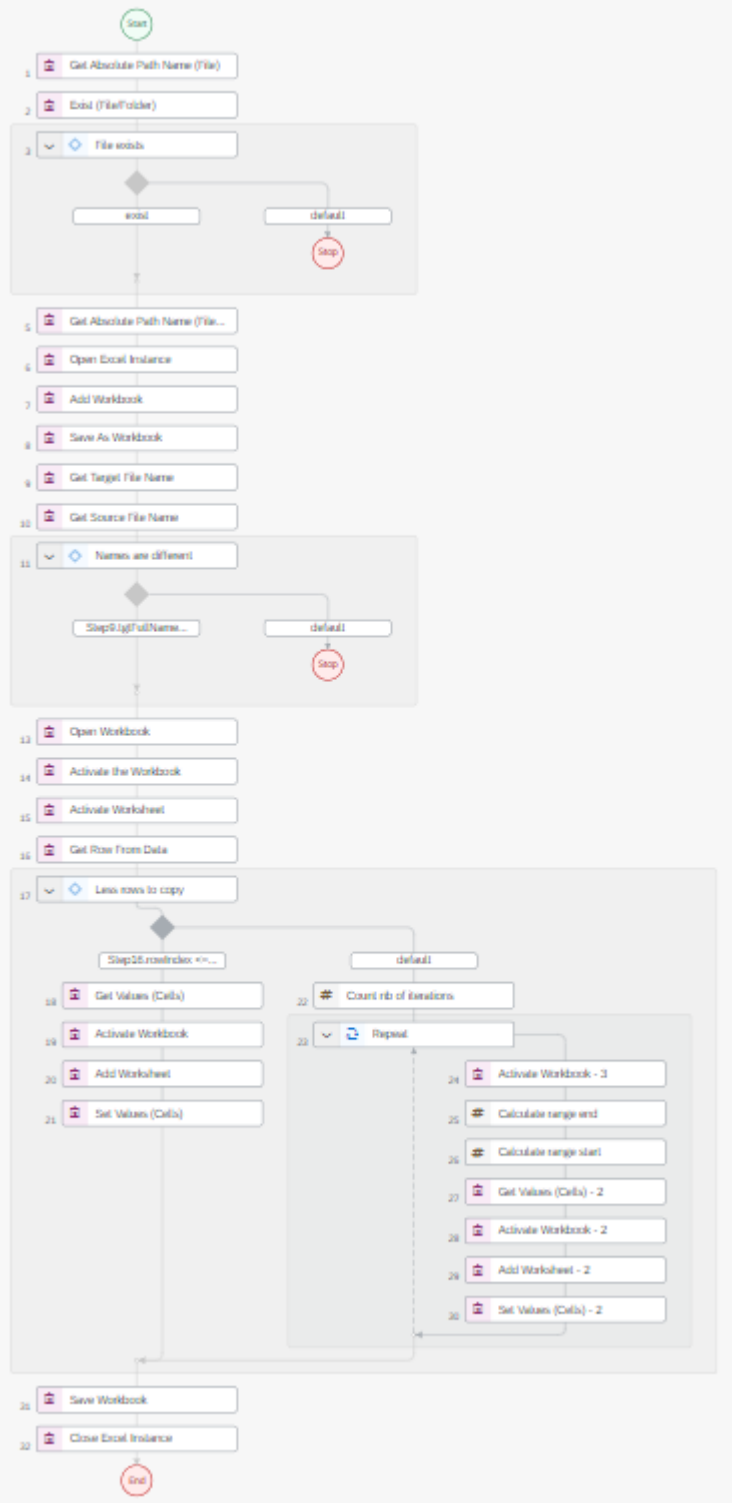
Then a new workflow is created where we insert the data we extracted from the previous file, using the **Push Values** activities. This activity takes an array as input parameter. So we need to specify all the data we want to write for each line (in that case, all the attributes of each **Excel Data** object).

At the end of the automation, all the cells in the new table are formatted and the Workbook is saved.

Important note: due to the way the Excel library is implemented, it is mandatory to use the *Save As Workbook* activity with a variable which the value contains \. Ex:

C:\Temp\test.xlsx

Split large tables into multiple files
Type: Attended
Input: inputPath is the location of the file to be split
Output: outputPath is the location of the file to be created



In this automation, we split a table with a large number of rows into multiple smaller tables. Data are copied and pasted from one source file to another file with multiple spreadsheets.

The number of rows to be copied at once is given as a parameter using Environment variables.

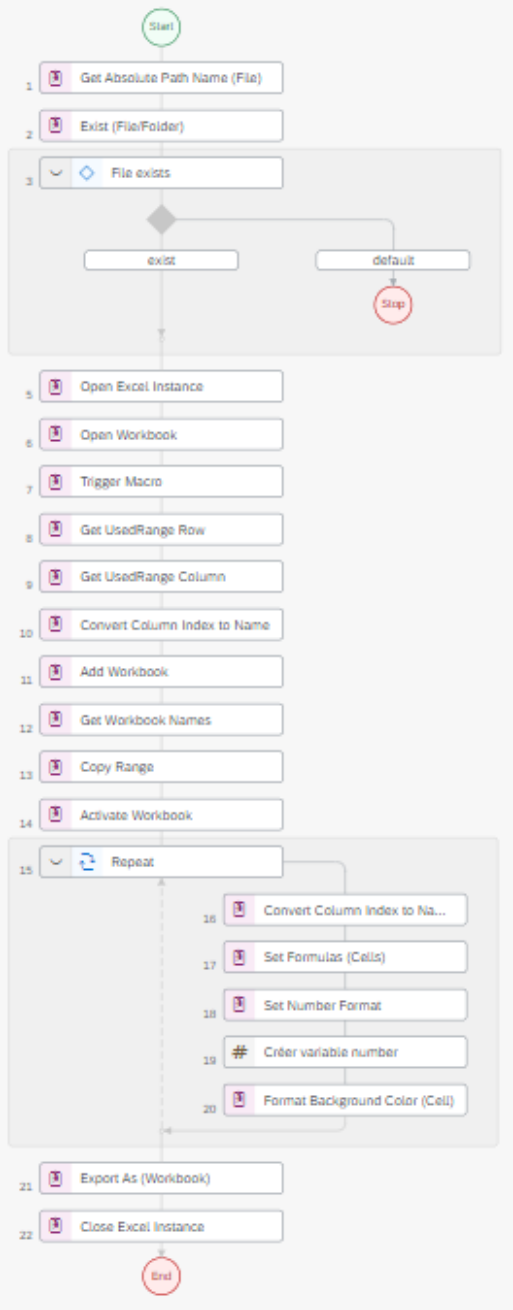
There is some logic to determine the number of blocks we need to split the data into. Then the agent copies each block and paste it in a new spreadsheet into the target file.

(see documentation)

Important note: due to the way the Excel library is implemented, it is mandatory to use the *Save As Workbook* activity with a variable which the value contains \. Ex:

C:\Temp\test.xlsx

Format and Export
Type: Attended
Input: inputFilePath
Output: exportPdfFilePath



The agent will use the input variable **inputFilePath** to open the Excel file.

We trigger the macro called "**class_data**" to sort the data decreasing in each column.

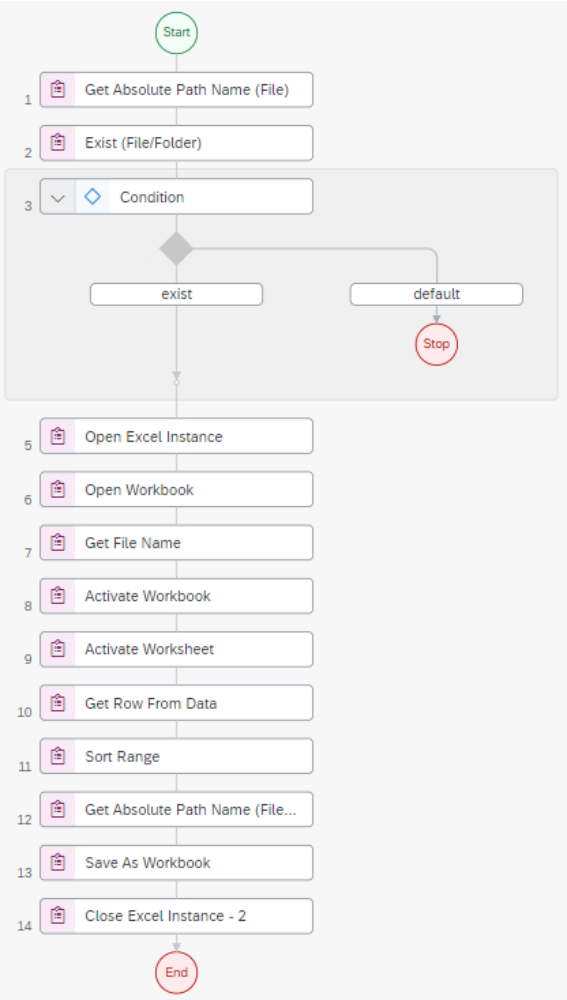
We get the number of rows as well as the number of columns, then convert the number of columns into its name to simplify the use of the excel range for the next steps.

Then we open a new workbook and get the names of the open workbooks to work with them. Next, we copy the data from the first excel to the second excel.

We activate the second workbook because we are going to work on this one form now on. We do a repeat loop of the number of columns. For each column we set the formula for the sum of the column to the row below the last row of data, then add some background colour.

Lastly, we export the file as a pdf the path given and close excel.

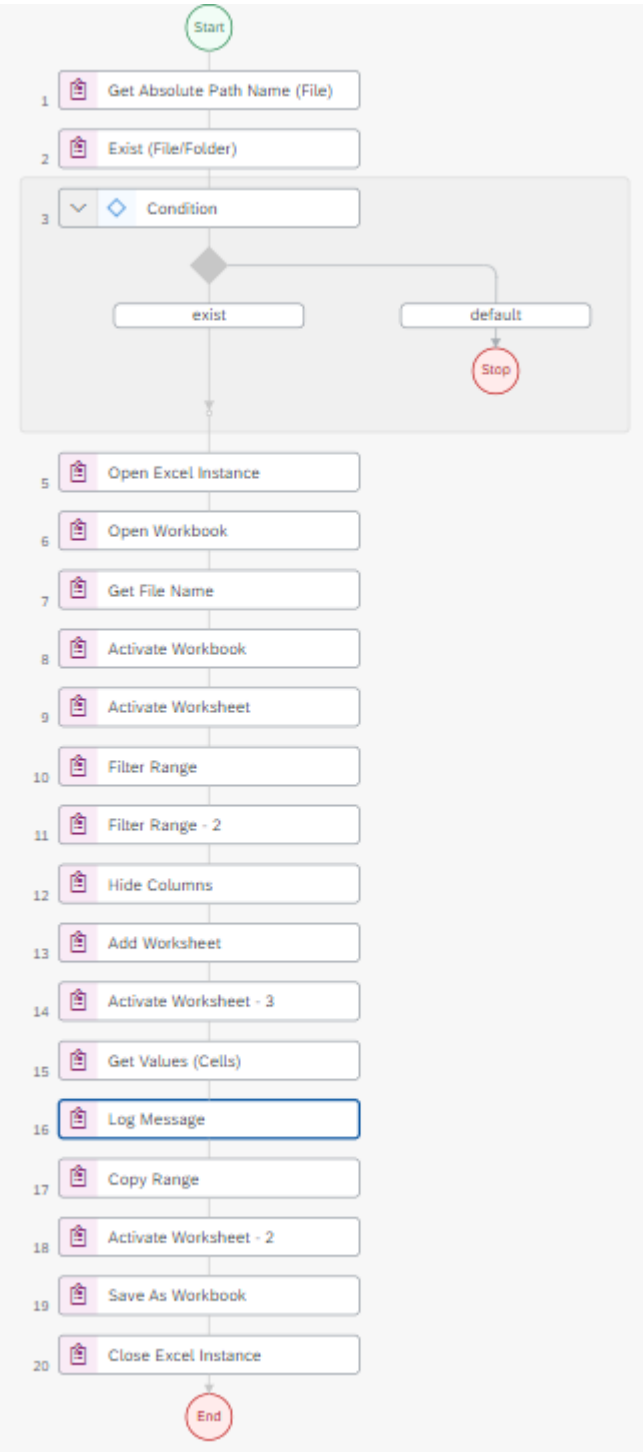
Sort data and export to CSV
Type: Attended
Input: excelFilePath, outputCsvFile, columnName
Output: None



Agent opens the excel file provided as input parameter, and it will sort the data according to column name (which is also provided as parameter)

Once the data are sorted, the content of the worksheet is saved as CSV file.

Filter data and export to CSV
Type: Attended
Input: excelFilePath, outputCsvFile
Output: None



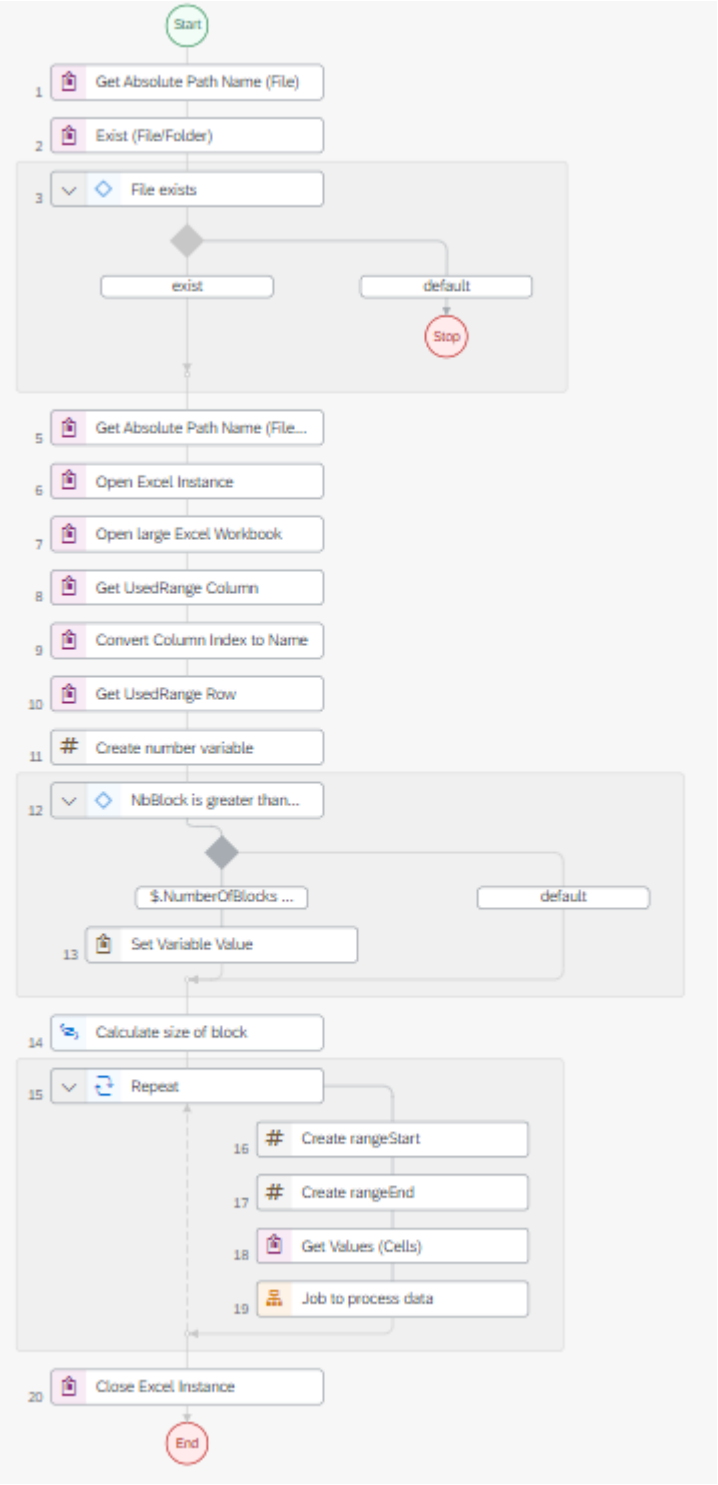
Agent opens the excel file provided as input parameter, and it will filter the data to display only rows where content in column A is greater than 100. It will apply another filter to display only rows where content in column B is lesser than 100 (first filter is still enabled)

Then the agent will copy the filtered ranged to another worksheet.

Once the data are filtered and copied/pasted, the content of the result worksheet is saved as CSV file.

Note: The Get Values (Cells) activity is only used to demonstrate that we can also automatically retrieve data from filtered range, by setting the parameter *visibleOnly* to *true*

Split large tables into fixed number of files
Type: Attended
Input: inputPath is the location of the file to be split
Output: outputPath is the location of the folder where the files will be created



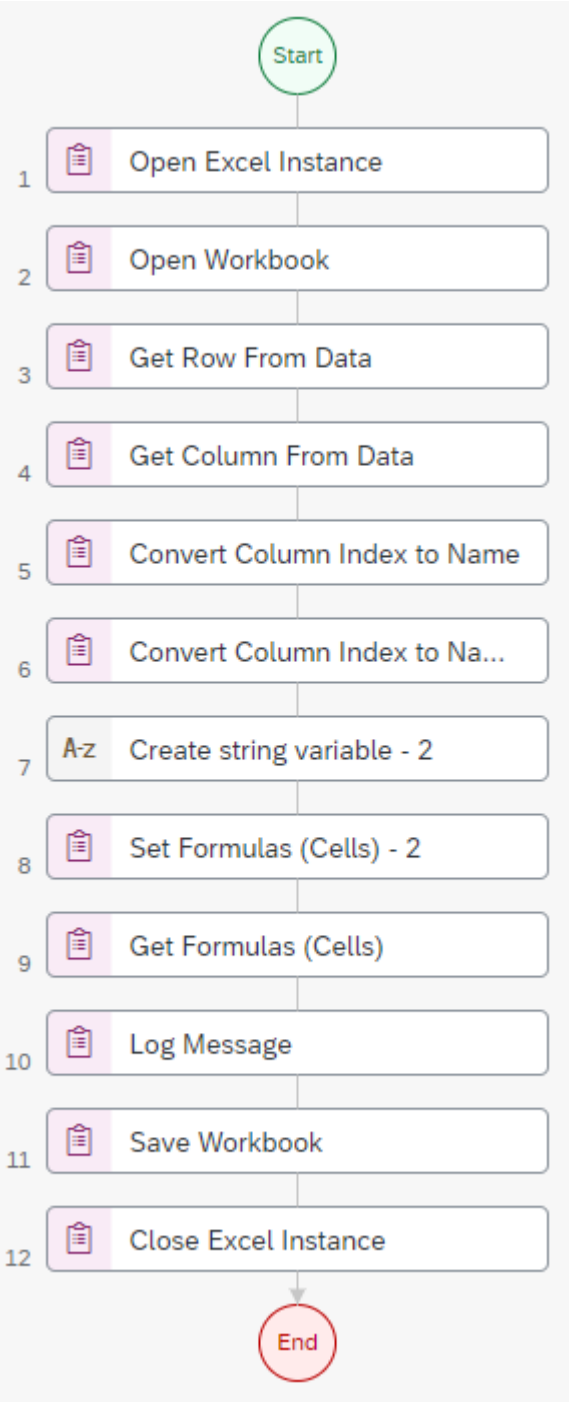
In this automation, we split a table with a large number of rows into multiple smaller tables. Data are copied and pasted from one source file to another file with multiple spreadsheets.

The number of blocks is given as a parameter using Environment variable. (one block is a part of the table)

There is some logic to determine the size of the blocks we need to split the data into. Then the agent copies each block and send these data to a sub-automation.

(see documentation)

Use formulas
Type: Attended
Input: inputPath is the location of the file
Output:

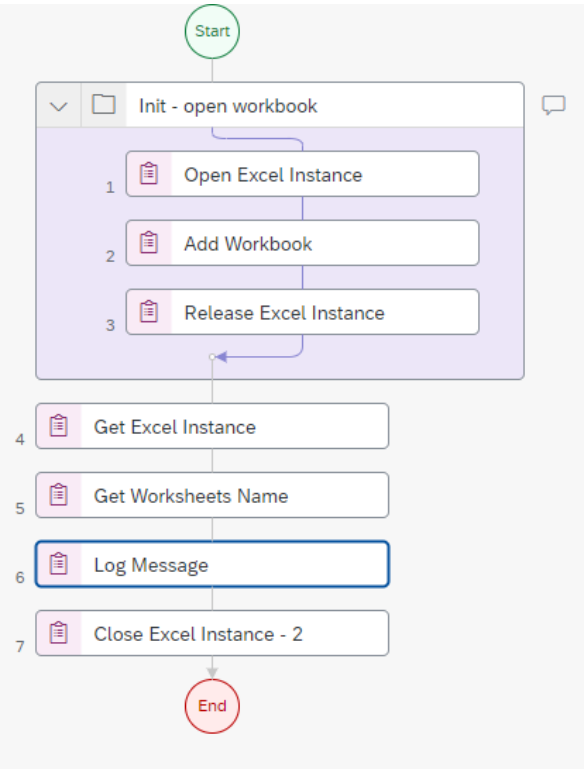


In this automation, the bot will perform some calculations in an Excel spreadsheet using formulas.

For each line of the file, it will sum the values and insert the result in the last column.

It also displays the formulas in the log console

Use already opened Excel workbook
Type: Attended
Input: N/A
Output: N/A



This automation is composed of 2 parts. The first one is the initialization and does not contain any learning content. It only opens a new Excel workbook and close the Excel instance.

The second part of the automation it the one where the bot will be able to connect to the Workbook which has been opened previously (note: this workbook can be opened manually, or by another application, such as SAP GUI).

It will then retrieve the list of worksheets and display them in the log console.

VERSION

The product versions used to generate this sample are detailed below. This sample is provided “as is”, with no warranty that it will work correctly with other versions. If some versions of your software are different (such as the tool version or the target application version), you may need to recapture the application and/or update the workflow activities.

SAP Build Process Automation

This sample targets the Desktop Agent **2.0.8** or higher.

The following SDK dependencies were used to generate this sample: 1.30.37

See documentation for more details about the compatibility between SDK version and Desktop Agent.

Target application

N/A

PREREQUISITES

Global setup

SAP Build Process Automation must be installed in accordance with the installation guide available here.
An SAP Build Process Automation Factory must be available with a suitable environment (containing an agent). All information can be found in the “Getting Started” section accessible via the above link.

Specific steps to follow before launching the agent

- Download the **sample.zip** archive from the sample and extract its content
- When you deploy your automation, set the environment variable **SheetName** with the name usually used by Excel when you create a new worksheet. Ex: *Sheet1*
- When you deploy your automation, set the environment variable **NumberOfRowsToCopy** with the number of rows to be copied from one spreadsheet to another. Ex: *10000*
- When you deploy your automation, set the environment variable **NumberOfBlocks** with the number of block you want to split your table into. Ex: *100*
- When executing the automation **Filter Data and Export to CSV**, the input Excel file should be the **excel_data.xlsx** that you extracted from the **sample.zip** archive

EXPECTED OUTPUT
N/A

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