UiPath Accelerators for SAP S/4HANA & SAP ECC

For following lines of businesses:
Basis Administration, Finance, Manufacturing,
Sales, Sourcing and Procurement

For SAP WinGUI technology

February 2021

TABLE OF CONTENT

Description

This document describes how to use UiPath Accelerators for SAP ECC and SAP S/4 HANA

These packages are designed to be used in English (EN) and Japanese (JA) SAP environments.

Depending on the setting of customer SAP environment (Version, Component, Business AddIns, setting of parameters, etc), it might be necessary to adjust the workflows.

About

The packages include workflows, which can be also used as a test cases for most common SAP WinGUI transaction for SAP ECC and SAP S/4 HANA systems.

The packages contain the most required business application/transaction, which are fully automated and serves as automation master templates for SAP Robotic Process Automation and SAP Test Automation.

The customer must use/provide his own business data. The automations itself are ready to go without any significant changes or adoptions.

Each prebuilt automation asset (xaml-file) contains a set of activities, which allow customer to perform corresponding actions in the system e.g., Create Sales Order

Use cases

Create and perform repetitive task, use the accelerators for mass upload and mass changes of data.

Prerequisites

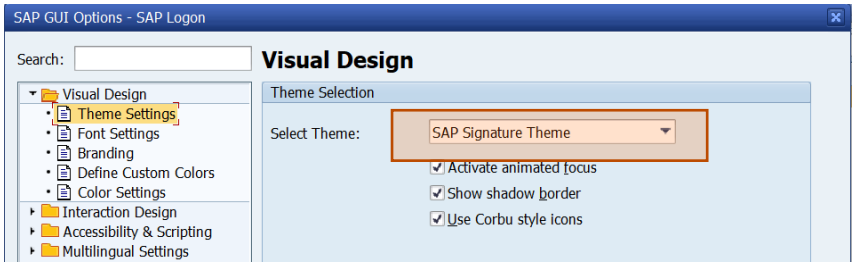
The packages were developed and tested on SAP ECC6.0, SAP S/4 HANA 1809 and SAP S/4 HANA 1909 versions. Follow the prerequisites requires to be performed on UiPath and on SAP side to ensure the proper functionality.

On UiPath side

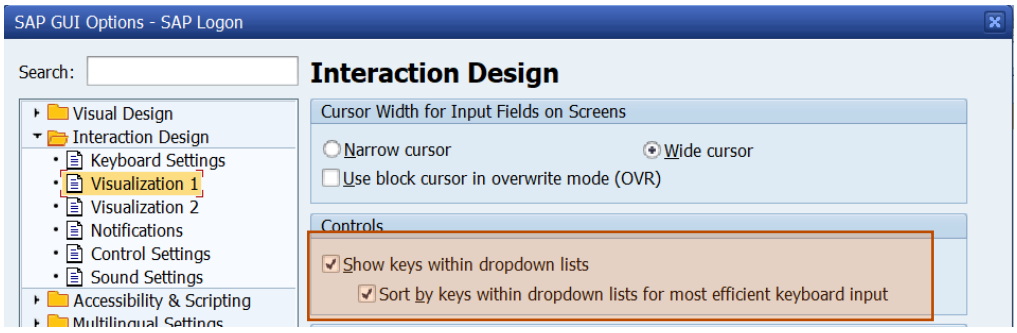
- UiPath Studio 20.10 and UIAutomation Package 20.10 are recommended versions
- UiPath.SAP.BAPI.Activities 2.2 and higher need be installed, follow the online documentation https://docs.uipath.com/activities/docs/about-the-sap-bapi-activities-pack
- An overview of supported SAP WinGUI versions can be found in online documentation https://docs.uipath.com/studio/docs/about-sap-wingui-automation
- **Do not start Excel when executing. Excel must be closed during the execution!**

On SAP side

- Required SAP WinGUI scripting settings are available in online documentation https://docs.uipath.com/studio/docs/sap-wingui-configuration-steps
- Only one active SAP session is recommended to avoid the conflicts of screen determination to process
- When using an SAP WinGUI base environment, please log on to SAP before executing
- The user should have an authorization rights to run BAPI, the BAPI Function modules should be allowed.
- When using an SAP WinGUI, please ensure that SAP Signature Theme is chosen



- Check “Show keys within dropdown list" in SAP Logon, in Interactive Design settings



Concept of the reusable components

The Foundation Pack is a prerequisite for all other packages, it contains a complementary set of workflows, which are necessary for the correct functionality of individual components.

Extract Foundation pack to the folder of your choice and add all required individual workflows to the same folder.

Note: If you would like to use Accelerators for both SAP ECC and SAP S/4HANA, do not store or mix the artefacts in the same folder. Please use complete separated folder structure for SAP ECC and for SAP S/4 HANA to avoid any version conflicts.

Naming convention

For easy identification, the following naming convention is used. Let us look at the example

SRC_PAYMENT_RUN

SRC	UiPath **R**eusable **C**omponent for **S**AP – is an abbreviation of individual workflow
PAYMENT_RUN	The name of workflow

The files and folders with the abbreviation **"E"** at the end, means that the component is suitable for SAP ECC

Example:

Folders

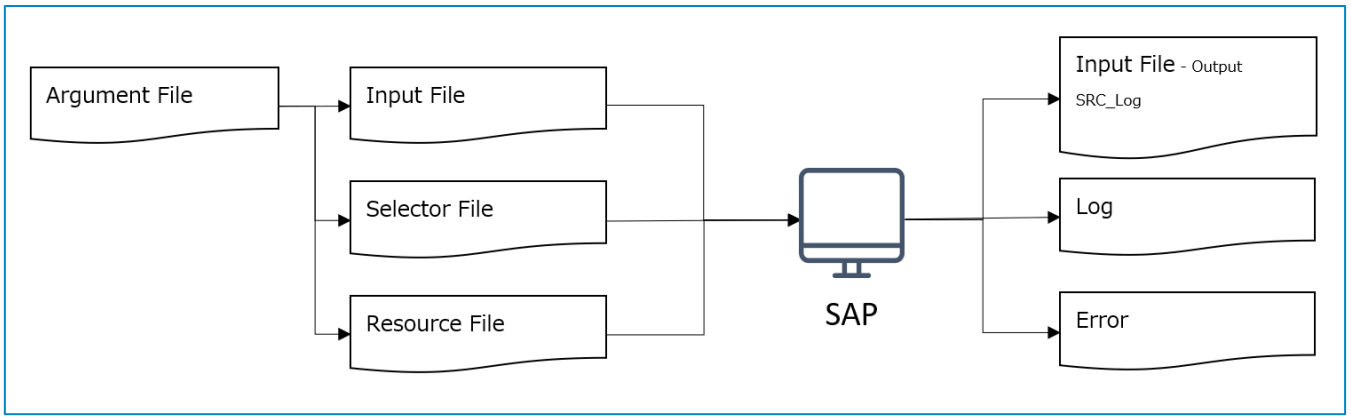
SRC_PAYMENT_RUN_**E**	– for SAP ECC
SRC_PAYMENT_RUN	– for SAP S/4 HANA

Files

SRC_PAYMENT_RUN_**E**.xaml	– for SAP ECC
SRC_PAYMENT_RUN.xaml	– for SAP S/4 HANA

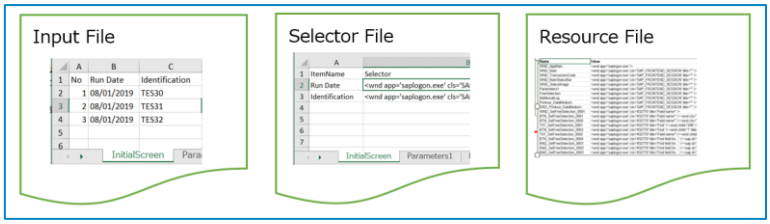
Workflows using SAP WinGUI functionality

The workflow within this component, enable the process automation through multiple screens.
It is necessary to have a logged SAP WinGUI instance before executing.



Step 1:
Move to the screen where data will be registered and execute "SRC_GUI_SelectorDataBuilder".
Click on the SAP fields where data will be registered.
After Click all necessary fields, finish the process and the
Input File and Selector File for data registration will be created.

Step 2:
According to each environment, get the correspondent Resource information as selectors used for screen transition and data registration, used together with the Input File and Selector File prepared in the STEP1 and create a workflow that can register data.



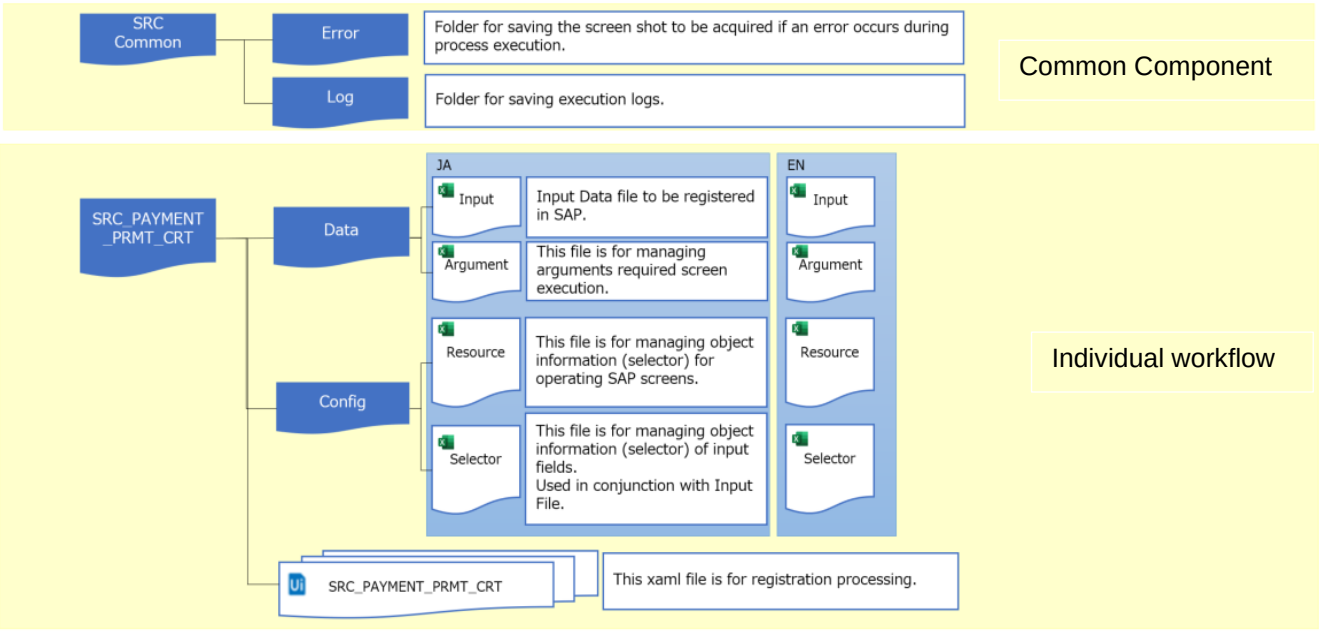
Error Message are not supported with all messages.

If the error / warning / information occurs in the UiPath SAP environment, the message is processed as follows:
- Warning / Information: Check if the message is displayed repeatedly. If it is displayed, exit the process.
- Error: Stop registration to the data and take screenshot of the error screen after get the message details

Explanation of the folder and file structure

Overall folder structure

Foundation pack and all individual workflows



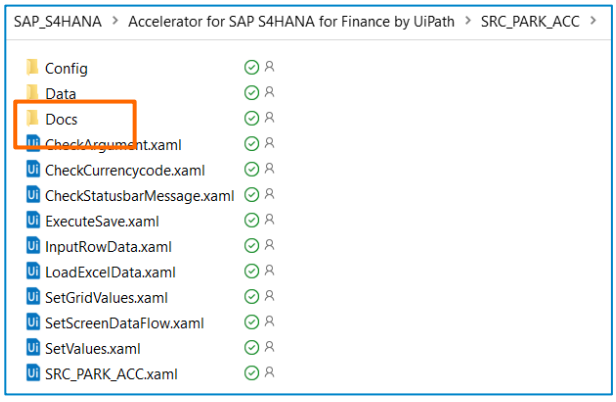
Data Folder
Contains files that may be changed by person responsible for data entry.

Input File: Data Input File for SAP data processing.
Argument File: This file is used to manage information such as SAP login information, Input File, and save destination of the execution xaml file

Config Folder
Contains files that manage object information. It manages the information that does not need to be changed every time data is entered.

Resource File: File used to manage button object (selector) information required for screen transition.
Selector File: File used to manage input item object (selector) information that is related to Input File.

Note: In some of the packages, we have added **Docs** folder, which provide more explanation or even give an example of usage



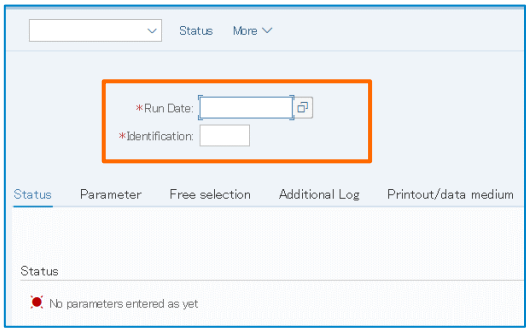
Explanation of individual files - Finance example

About Main File
The xaml file to which "SRC" is assigned, becomes Main.xaml for execution

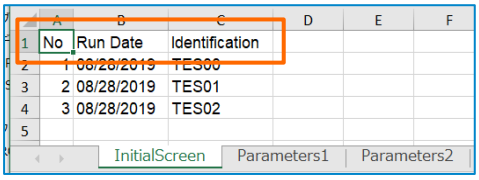
About Input File
Within this Components, the main functions that have been added based on the Input File created using "SRC_GUI_SelectorDataBuilder" as part of Foundation package

1. The leftmost worksheet of Input File (exclude SRC_Log) is the worksheet for inputting header information (Primary key information) of the data to be registered.

Eg. Transaction Code: F110
Automatic payments processing: Status Screen (SRC_PAYMENT_PRMT_CRT)

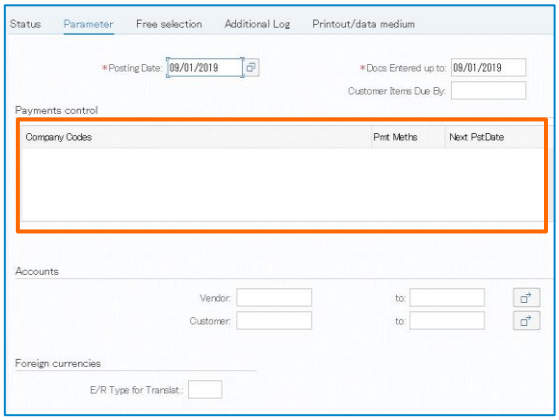


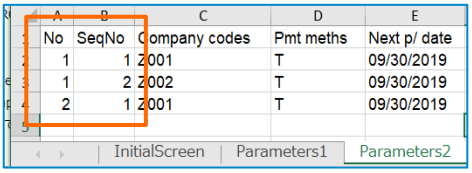
Enter in column A "No" (any character string such as sequential number)



2. About fields in Spread Sheet format (field that can register multiple item information for one header information)
When registration of "No" = 1 in row A is executed, registration will be done in the order of "SeqNo" = 1 -> 2 in row B.

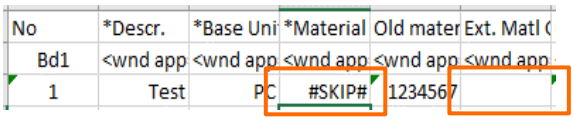
Eg. Transaction Code:
F110 Automatic payments: Parameter registration





3. Enter blank fields
If the display item is leave "blank", blank will be entered even if the item has an initial value.
If you want to keep the default value entered on the SAP side, enter "#SKIP#" keyword to skip the item without change it.
For items that are not necessary for the entire data, delete the Input File and Selector File columns.

Input File:



4. Worksheet transition

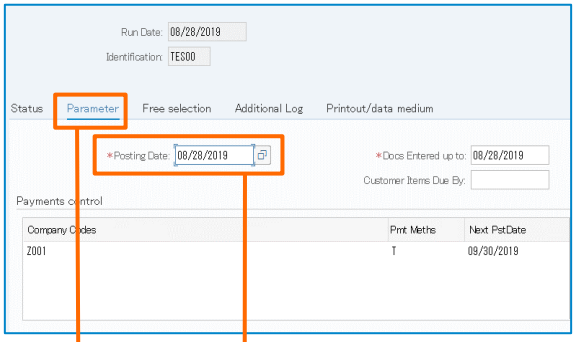
Workflow Template is set to load data from the leftmost worksheet of Input File.

For each master, after transaction code is entered, the leftmost worksheet (exclude SRC_Log) is created on the premise that it is the first screen displayed.

Depending on the screen, there are screens that require complex transitions, so check the Workflow Template of each master.

About Screen Transition
Screen transition and data input items are selected using "Resource File" and "Selector File" saved in the Config folder.

E.g.: SRC_PAYMENT_PRMT_CRT
Save object information such as buttons and tabs that require screen transitions to the Resource File.



Resource File: "BaseSelectors" Worksheet

Name	Value	Description
WND_AppMain	<wnd app='saplogon.exe' />	SAP GUI Application main selector
WND_Main	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' />	SAP GUI Session main window selector
WND_TransactionCode	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='tbar[0]/okcd' />	Transaction code input field selector
WND_MainStatusBar	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='sbar/pane[0]' />	Footer Status Bar selector
WND_StatusImage	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><wnd cls='Afx:*' title='Footer' /><wnd cls='Button' idx='1' />	Footer Status Image selector
Parameters1	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsF110_TABSTRIP/tabpPAR' />	Parameters Tab selector used in screen transition
FreeSelection	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsF110_TABSTRIP/tabpSEL' />	FreeSelection Tab selector used in screen transition
AdditionalLog	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsF110_TABSTRIP/tabpLOG' />	Additional Log Tab selector used in screen transition
Printout_DataMedium	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsF110_TABSTRIP/tabpPRI' />	Printout DataMedium Tab selector used in screen transition
GRD_Printout_DataMedium	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsF110_TABSTRIP/tabpPRI/ssubSUBSCREEN_BODY:SAP	Grid selector used in Printout DataMedium screen
WND_SetFreeSelection_0001	<wnd app='saplogon.exe' cls='#32770' title='Field name*' />	Field name list window selector
BTN_SetFreeSelection_0001	<wnd app='saplogon.exe' cls='#32770' title='Field name*' /><wnd cls='ToolbarWindow32' idx='1' /><ctrl idx='1' name=' ' role='push button' />	Copy button selector in Field name list window
BTN_SetFreeSelection_0002	<wnd app='saplogon.exe' cls='#32770' title='Field name*' /><wnd cls='ToolbarWindow32' idx='1' /><ctrl idx='3' name=' ' role='push button' />	Find button selector in Field name list window
TXT_SetFreeSelection_0001	<wnd app='saplogon.exe' cls='#32770' title='Find' /><wnd ctrlid='206' />	Find input field selector
BTN_SetFreeSelection_0003	<wnd app='saplogon.exe' cls='#32770' title='Find' /><wnd ctrlid='1' title='OK' />	OK button selector in Find window
TXT_SetFreeSelection_0002	<wnd app='saplogon.exe' cls='#32770' title='Field name*' /><wnd ctrlid='4711' />	Status Text selector in Field name list window
BTN_SetFreeSelection_0004	<wnd app='saplogon.exe' cls='#32770' title='Find field for...' /><sap id='tbar[0]/btn[0]' />	OK button selector in Find Field for window
RAD_SetFreeSelection_0001	<wnd app='saplogon.exe' cls='#32770' title='Find field for...' /><sap id='usr/radF110HELP-XFLSB' />	Radio button selector for Document Type in Find Field for window
RAD_SetFreeSelection_0002	<wnd app='saplogon.exe' cls='#32770' title='Find field for...' /><sap id='usr/radF110HELP-XFLSK' />	Radio button selector for Vendor Master Type in Find Field for window
RAD_SetFreeSelection_0003	<wnd app='saplogon.exe' cls='#32770' title='Find field for...' /><sap id='usr/radF110HELP-XFLSD' />	Radio button selector for Customer Master Type in Find Field for window

Selector File

ItemName	Selector
Posting Date	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsF110_TABSTRIP/tabpPAR/ssubSUBSCREEN_BODY:S
Docs entered up to	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsF110_TABSTRIP/tabpPAR/ssubSUBSCREEN_BODY:S
Customer items due by	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsF110_TABSTRIP/tabpPAR/ssubSUBSCREEN_BODY:S

Match ItemName and header name so that each item in Input File has the same name.

No	SeqNo	Posting Date	Docs entered up to	Customer items due by
1	1	09/05/2019	09/05/2019	#SKIP#
2	2	09/05/2019	09/05/2019	#SKIP#
3	3	09/05/2019	09/05/2019	#SKIP#

About Processing Results

"SRC_Log" worksheet is added to Input File, with the output processing results log.

DateTime	SheetName	Status	No	SAP Message	Exception	Screenshot
2019-09-05 10:25:21	SRC_PAYMENT_PRMT_CRT	S	1	Details have been saved for the run on 09/05/19 TES10		
2019-09-05 10:26:33	SRC_PAYMENT_PRMT_CRT	S	2	Details have been saved for the run on 09/05/19 TES11		
2019-09-05 10:28:12	SRC_PAYMENT_PRMT_CRT	S	3	Details have been saved for the run on 09/05/19 TES12		

Date Time: Process execution date and time
Sheet Name: Executed Registration worksheet name
Status: Processing status
No: Column A of Input File, considered the header number value
SAP Message: Output message from SAP
Exception: Output message during UiPath execution
Screenshot: Saved screenshot destination, such as when an error occurs

About Argument File

It is necessary that the following Argument information is inputted in Argument File.

Property Name	Description
InputFilePath	Input File save destination and file name (Set the relative path or complete path.)
SelectorFilePath	Selector data file save destination and file name (Set a relative or complete path.)
ResourceFilePath	Resource data file save destination and file name (Set a relative or complete path.)
ScreenshotsFolderPath	Error screenshot file save location and file name (Set the relative path or complete path.)
LogFolderPath	Log data file save destination (Set a relative or complete path.)
LogFileName	Log data file name (The time stamp is added to the beginning of the file name. Example: 190722_114045_SRC_Result.log)

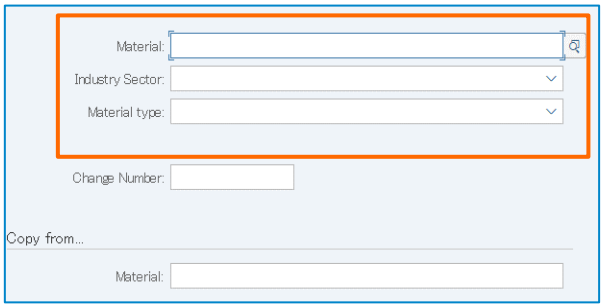
Explanation of individual files – Master Data example

About Main File
The xaml file to which "SRC" is assigned, becomes Main.xaml for execution

About Input File
Within this Components, the main functions that have been added based on the Input File created using "SRC_GUI_SelectorDataBuilder" as part of Foundation package

1. The leftmost worksheet of Input File (exclude SRC_Log) is the worksheet for inputting header information (Primary key information) of the data to be registered.

Eg. Transaction Code: MM01
Material master create (SRC_MAT_MSTR_CRT.xaml)

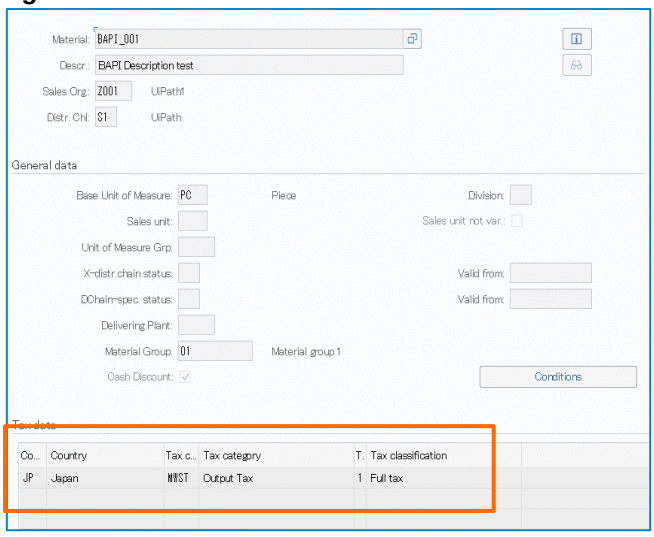


Enter in column A "No" (any character string such as sequential number)

No	Material	Industry Sector	Material type
1	TG217	1	ZFER
2	TG218	1	ZFER
3	TG219	1	ZFER

2. About fields in Spread Sheet format (field that can register multiple item information for one header information)
When registration of "No" = 1 in row A is executed, registration will be done in the order of "SeqNo" = 1 -> 2 in row B.

Eg. Transaction Code: MM01



Input file:

No	SeqNo	Country	Country Name	Tax category	Tax category Name	Tax classification	Tax classification Description
1	1	JP	#SKIP#	MWST	#SKIP#	1	#SKIP#

3. Enter blank fields
If the display item is leave "blank", blank will be entered even if the item has an initial value.
If you want to keep the default value entered on the SAP side, enter "#SKIP#" keyword to skip the item without change it.
For items that are not necessary for the entire data, delete the Input File and Selector File columns.

Input File:

No	*Descr.	*Base Uni	*Material	Old mater	Ext. Matl (
Bd1	<wnd app	<wnd app	<wnd app	<wnd app	<wnd app
1	Test	PC	#SKIP#	1234567	

4. Worksheet transition

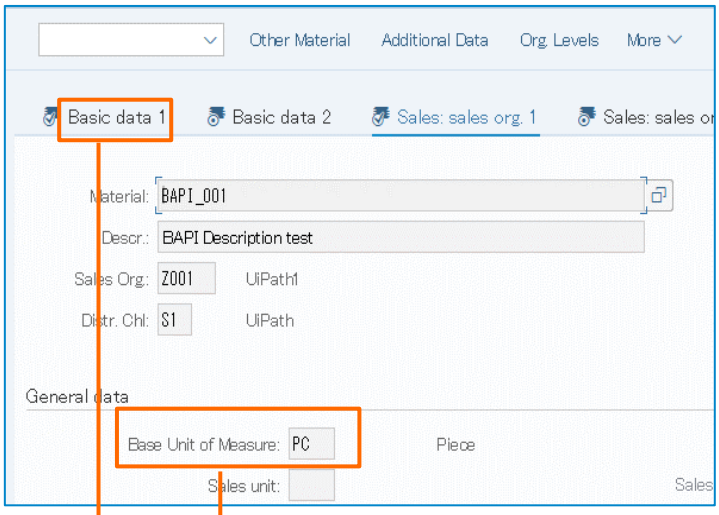
Workflow Template is set to load data from the leftmost worksheet of Input File.

For each master, after transaction code is entered, the leftmost worksheet (exclude SRC_Log) is created on the premise that it is the first screen displayed.

Depending on the screen, there are screens that require complex transitions, so check the Workflow Template of each master.

About Screen Transition
Screen transition and data input items are selected using "Resource File" and "Selector File" saved in the Config folder.

E.g.: SRC_MAT_MSTR_CRT.xaml
Save object information such as buttons and tabs that require screen transitions to the Resource File.



Resource File: "BaseSelectors" Worksheet

Name	Value	Description
WND_AppMain	<wnd app='saplogon.exe' />	SAP GUI Application main selector
WND_Main	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' />	SAP GUI Session main window selector
WND_TransactionCode	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='tbar[0]/okcd' />	Transaction code input field selector
WND_MainStatusBar	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='sbar/pane[0]' />	Footer Status Bar selector
WND_StatusImage	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><wnd cls='Afx:*' title='Footer' /><wnd cls='Buttor	Footer Status Image selector
BTN_Back	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><ctrl name='Back' role='push button' />	Back button selector
BasicData1	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsTABSPR1/tabpSP01' />	BasicData1 view item menu selector
BasicData2	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsTABSPR1/tabpSP02' />	BasicData2 view item menu selector
AdditionalData_Descriptions	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='wnd[0]/tbar[1]/btn[30]' />	AdditionalData_Descriptions menu selector
AdditionalData_UnitOfMeasure	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsTABSPR1/tabpZU02' />	AdditionalData_UnitOfMeasure menu selector
SalesOrg1_GeneralData	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsTABSPR1/tabpSP04' />	SalesOrg1_GeneralData view item menu selector

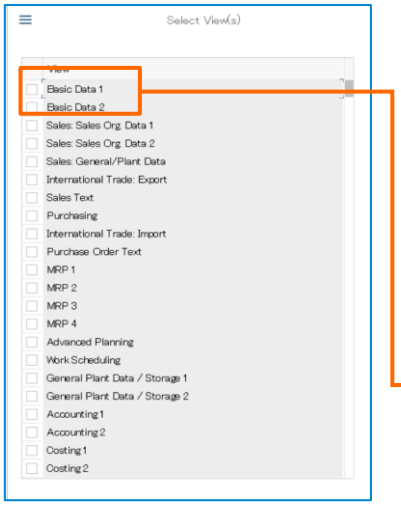
Selector File

ItemName	Selector
Descr.	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsTABSPR1/tabpSP01/ssubTABFRA1:SAPLMGMM:2004/subSUB1:SAPLMGD1:1002/txtMAKT-MAKTX' />
Base Unit of Measure	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsTABSPR1/tabpSP01/ssubTABFRA1:SAPLMGMM:2004/subSUB2:SAPLMGD1:2001/ctxtMARA-MEINS' />
Material Group	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsTABSPR1/tabpSP01/ssubTABFRA1:SAPLMGMM:2004/subSUB2:SAPLMGD1:2001/ctxtMARA-MATKL' />
Old material number	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsTABSPR1/tabpSP01/ssubTABFRA1:SAPLMGMM:2004/subSUB2:SAPLMGD1:2001/txtMARA-BISMT' />
Ext. Matl Group	<wnd app='saplogon.exe' cls='SAP_FRONTEND_SESSION' title='*' /><sap id='usr/tabsTABSPR1/tabpSP01/ssubTABFRA1:SAPLMGMM:2004/subSUB2:SAPLMGD1:2001/ctxtMARA-EXTWG' />

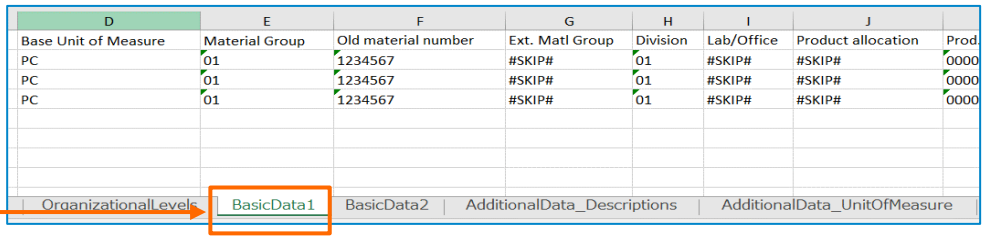
Match Item Name and header name so that each item in Input File has the same name.

No	SeqNo	Descr	Base Unit of Measure	Material Group	Old material number
1	1	GUI Input Test for TG201	PC	01	1234567
2	1	GUI Input Test for TG202	PC	01	1234567
3	1	GUI Input Test for TG203	PC	01	1234567

About selecting the view
Do not delete unused View sheets in Excel File!!



It have to match the view name and the input file sheet name.



Select options on the SAP screen only when there are input values in the input view.

About Processing Results
"SRC_Log" worksheet is added to Input File, with the output processing results log.

DateTime	SheetName	Status	No	SAP Message	Exception	Screenshot
2019-10-09 17:49:45	SRC_MAT_MSTR_CRT	S	1	Material TG217 created		
2019-10-09 17:52:16	SRC_MAT_MSTR_CRT	S	2	Material TG218 created		
2019-10-09 17:54:48	SRC_MAT_MSTR_CRT	S	3	Material TG219 created		

Date Time: Process execution date and time
Sheet Name: Executed Registration worksheet name
Status: Processing status
No: Column A of Input File, considered the header number value
SAP Message: Output message from SAP
Exception: Output message during UiPath execution
Screenshot: Saved screenshot destination, such as when an error occurs

About Argument File

It is necessary that the following Argument information is inputted in Argument File.
Eg. Arg-SRC_ACC_MSTR_CRT(EN).xlsx for English / Arg-SRC_ACC_MSTR_CRT(JA).xlsx for Japanese

Property Name	Description
InputFilePath	Input File save destination and file name (Set the relative path or complete path.)
SelectorFilePath	Selector data file save destination and file name (Set a relative or complete path.)
ResourceFilePath	Resource data file save destination and file name (Set a relative or complete path.)
ScreenshotsFolderPath	Error screenshot file save location and file name (Set the relative path or complete path.)
LogFolderPath	Log data file save destination (Set a relative or complete path.)
LogFileName	Log data file name (The time stamp is added to the beginning of the file name. Example: 190722_114045_SRC_Result.log)