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ADM Technical Enablement

**UFT One - SAP**

**Hands-on Exercise Guide – v1**

Designed with NimbusServer-2021.R3 and NimbusClient-2022-R5

For container versions, see the [Appendix](#Appendix).



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Exercise 1: Creating UFT One Tests on SAP

SAP is one of the world’s leading producers of software for the management of business processes. SAP offers several different products and interfaces to its software lineup. When creating functional or performance tests, often the most difficult part is identifying the correct data to search for and use. In this exercise we’ll provide a connected set of data that we can use for a few specific business processes.

SAP can be a bit non-traditional in some of its SAP GUI behavior. Here’s a few items to keep in mind:

* When recording, avoid using calendar pop-ups and just type the dates to the input field instead.
* Some fields may come pre-populated with a value and UFT One will not record that unless you interacted with the widget. As a result, if a field that you need to record on already has a value in it, just change the value to something else and then change it back. You can always remove that change in the script later.
* SAP is case-insensitive so any input to the SAP interface (not counting customer data) can use lower, upper or mixed case.

Configuring UFT One and the SAP VPN

1. We need the following VM’s to run this exercise:

* NimbusClient

1. In the **ADM Solutions** folder (on the desktop), click on the **SoftEther VPN Client Manager**.

Double-click the **SAP-VPN** connection to connect to the SAP system.  
NOTE: If you don’t have this connection, you can import it from the FTP site in the SAP folder.

Graphical user interface, text, application

Description automatically generated

1. From ADM Solutions folder – launch **Micro Focus UFT One** and select all the **SAP** plus the **Web** add-ins.

We’ll use the Web add-in later when we record against Fiori, which has a web interface.

Graphical user interface, application

Description automatically generated



Understanding the VA01 Transaction on SAP Gui

SAP has a concept of “transaction codes” or T-Codes which are shorthand notations for specific business transactions. As users repeat the same process over and over, they become familiar with specific T-Codes and can skip the normal navigation and just type in their T-Code. This saves a lot of time during data entry.

In this exercise, we’ll use T-codes **VA01** (Create sales order) and **VA02** (Modify sales order).

1. Start the **SAP Gui** interface by double-clicking **SAP Login** from the **ADM Solutions** desktop folder.
2. We’ll start by getting familiar with our business process **VA01** before we start recording. That way we know what to do and how to fix any issues that might come up during recording.

Double-click the **S4/HANA 2020 FPS01** option in the SAP Login application.

This will bring you to the SAP Gui login page.

1. Enter the following credentials (Note: SAP Gui doesn’t have a paste option so use **CTRL-V**):

Username: s4h\_sd\_dem

Password1: Welcome1

1. Enter **VA01** into the SAP T-code input area in the **SAP Easy Access** screen.

Graphical user interface, application

Description automatically generated

1. Enter the following data into the **Create Sales Documents** screen and hit **ENTER** or click **Continue**.

Order Type: OR

Sales Organization: 1710 NOTE: If this came pre-populated, change to 1711 then back to 1710

Distribution Channel: 10

Division: 00

Sales Office: <leave blank>

Sales Group: <leave blank>

1. Enter the following into the **Create Standard Order: Overview** screen.

Sold-To Party EWM17-CU02

Ship-To Party: EWM17-CU02

Cust. Reference: 450000019998

Cust. Ref. Date: 07/28/2022 NOTE: This date must be within one month prior to today.

1. **Scroll down** to see the table at the bottom and enter the following (use TAB to move between fields):

Item: 10

Material: EWMS4-01

Req Segment: <leave blank>

Order Quantity: 1

UN: PC

Graphical user interface, text, application, email

Description automatically generated

1. Click **Save** (or hit F11) and on the next page click **Continue**.

Graphical user interface, application

Description automatically generated

You should see an **Order Number** at the bottom of that screen (in the status bar).

Graphical user interface, text, application

Description automatically generated

1. On the upper right corner, click **Exit** and then **Exit** again to close this session.

Click **Yes** in the Logoff window.

You should now be back at the **SAP Login** screen.

1. **Close** the **SAP Login** screen.

Now that you have a feel for the business process and where the fields and buttons are, we can repeat this as a recording in UFT One.

Recording the VA01 Transaction with UFT One

In this section we’ll repeat the process above while recording your steps in UFT.

1. Make sure all your SAP login and SAP Gui interfaces are exited and your SAP-VPN connection is still connected.
2. From UFT One, select to add a new GUI test and call it **VA01-create-sales-order** in the folder: **C:\Users\demo\Documents\UFT One.**
3. Click the **Record** button and set the following SAP-specific fields in the **Record and Run Settings** dialog as shown below:

Server Description: S/4HANA 2020 FPS01

* Enable auto-logon

User: s4h\_sd\_dem

Password: Welcome1

Client: 100

Language: en

* Remember password
* Do not record and run on sessions that are already open
* Wait for web pages to load before running steps

Graphical user interface, text, application, email

Description automatically generated

1. Click **OK** to start recording.
2. The **SAP Login** page may briefly appear and then it will transition to the **SAP Easy Access** screen.
3. Enter **va01** into the SAP T-code input area in the **SAP Easy Access** screen.

Graphical user interface, text, application

Description automatically generated

1. Resize the SAP window to be a reasonable size.  
   Enter the following data into the **Create Sales Documents** screen and hit **ENTER** or click **Continue**.

Order Type: OR

Sales Organization: 1710 NOTE: If this came pre-populated, change to 1711 then back to 1710  
Distribution Channel: 10

Division: 00  
Sales Office: <leave blank>  
Sales Group: <leave blank>

1. Enter the following into the **Create Standard Order: Overview** screen.

Sold-To Party EWM17-CU02

Ship-To Party: EWM17-CU02

Cust. Reference: 450000019998

Cust. Ref. Date: 07/28/2022 NOTE: This date must be within one month prior to today

1. **Scroll down** to see the table at the bottom and select the Item Overview tab.

Enter the following (use TAB to move between fields):

Item: 10

Material: EWMS4-01

Req. Segment: <leave blank>

Order Quantity: 1

UN: PC

Graphical user interface, text, application, email

Description automatically generated

1. Click **Save** (or hit F11) and on the next page click **Continue**.

You should see an **Order Number** at the bottom of that screen (in the status bar).

Graphical user interface, text, application

Description automatically generated

1. From the UFT Recording toolbar, select to add a **Standard Output Value** and click on the Status bar at the bottom of the screen. This will allow us to capture the dynamic order number.

Graphical user interface, application

Description automatically generated

Graphical user interface, text, application, chat or text message

Description automatically generated

1. Click **OK** on the pop-up window confirming the object you clicked on.
2. Select the **item2** checkbox and rename the output name to be **OrderNum** and click **Modify**.

UFT is able to break apart SAP Status messages into different parts that can each be identified.

Graphical user interface

Description automatically generated

1. In the **Output Options** dialog, set the parameter name to be **OrderNumber** and click **OK** and **OK** to close the **Output Value Properties** window.

Graphical user interface, application

Description automatically generated

1. From the UFT Recording toolbar, select to add a **Standard Checkpoint** and rename the checkpoint to **OrderNumCheckpoint.**

Graphical user interface, application

Description automatically generated

1. Choose to edit the **Constant** value and change it to be a regular expression = **\d+**

When asked if you want to “Add the backslash…” select **No**.

NOTE: The regular expression \d+ means to match digits (\d) and the + means 1 or more of them.

1. Click **OK** to close the **Checkpoint Properties** window.
2. Type **/n** in the **SAP Easy Access** T-code field to end the business process and go to the SAP home screen.
3. On the upper right corner, click **Exit** to close this session.

Click **Yes** in the **Log Off** window.

You should now be back at the **SAP Login** screen.

1. **Close** the **SAP Login** screen and **stop** recording.
2. **Examine** your test script and remove any errors, extra or duplicate statements.
3. **Run** your test and verify that it passes. If it doesn’t, go back and fix any errors – if needed, you can always re-record your steps.
4. In the results report, select to view the **Test Data** and open the **Default.xls** file and the **Global** data tab.  
   **Verify** that your order number is displayed there and that it’s **different** from what you recorded in your script.

Graphical user interface, application, Teams

Description automatically generated

A picture containing graphical user interface

Description automatically generated

Graphical user interface, application, table, Excel

Description automatically generated

Graphical user interface

Description automatically generated with low confidence

Adding the VA02 Transaction to UFT One

In this advanced exercise we’ll utilize the VA02 transaction to change our order quantity and reorganize our script with the following (exacts steps provided later):

* 1. Rename Action1 to VA01.
  2. Add two more actions (VA02 and z-exit-SAP).
  3. Save the test as VA01-VA02.
  4. Start a new recording in VA02.
  5. Replace the OrderNumber from VA02 with the value saved in VA01.
  6. Start a new recording in z-exit-SAP.
  7. Run the test to make sure it passes.

1. Organize your test to have two new actions (VA02 and z-exit-SAP) as shown below.

Each action should have its own object repository. We named the “exit” action to start with “z” so it shows last in the Solution Explorer list.

Graphical user interface, text

Description automatically generated

1. Save the test with a new name: **VA01-VA02**. Note the Order Number \_\_\_\_ that was saved with the test.
2. From the VA01 action, **remove** the following lines  
   We’ll re-record those steps in the z-exit-SAP action later.

SAPGuiSession("Session").SAPGuiWindow("SAP Easy Access").SAPGuiButton("Exit").Click

SAPGuiSession("Session").SAPGuiWindow("Log Off").SAPGuiButton("Yes").Click

1. In UFT One, open the **VA02** tab and place your cursor on the first (empty) code line.
2. In UFT One, **start** Recording.

Graphical user interface, application

Description automatically generated

1. Enter **va02** into the SAP T-code input area in the SAP Easy Access screen.
2. Enter your previous order number (e.g. 4490) into the search field and hit **ENTER** or click **Continue**.
3. Select the **Item Detail** tab.

Graphical user interface, text, application, email

Description automatically generated

1. Change the Order Quantity to **2** and hit **ENTER** or click **Save**.

Graphical user interface, text, application

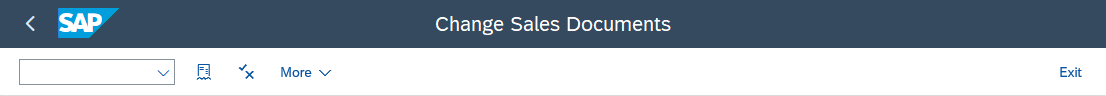
Description automatically generated

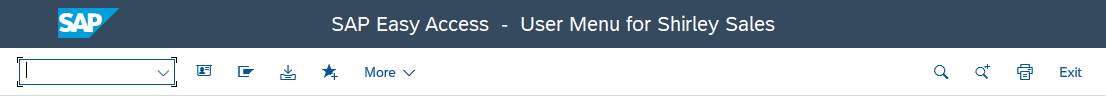
1. If you don’t see the **Change Sales Documents** search page again, click **Continue** to go to the next page.  
   This additional page can appear if we have exhausted the inventory for this item.
2. In UFT One, **stop** recording.
3. Edit the line where you entered the Order Number and replace the hard-coded value with:  
     
   DataTable("OrderNumber", dtGlobalSheet)

NOTE: This substitutes the value from the global data table into the searched field so we can change the most recently created order. You can also do this easily from UFT One’s **Keyword View**.

Also, understand that while the value contained in the data table for **OrderNumber** remains constant, there is a separate runtime data table (see the Default.xlsx in the results) that contains the value that was capture during playback. For clarity you could change the value in the data table to something like **<Captured Order Number>**.

1. In UFT One, open the **z-exit-SAP** tab and place your cursor on the first (empty) code line.
2. In UFT One, **start** recording.
3. From SAP, click **Exit** and then **Exit** on the next two screens and **Yes** in the **Log Off** dialog.





1. In UFT One, **stop** recording and **save** your test as **VA01-VA02**.
2. Edit the **z-exit-SAP** script and add the following final line to close the main SAP window:

SystemUtil.CloseProcessByName "saplogon.exe"

1. **Run** the test and make sure it completes without error.

Understanding the VA01 Transaction on Fiori

SAP Fiori is a web-based SAP implementation that doesn’t rely on the SAP Gui. In this section we’ll use UFT’s  
AI capabilities to record on the Fiori website in a Chrome browser.

In this exercise, we’ll also use the T-code **VA01** (Create sales order).

1. From **NimbusClient**, open Chrome and the SAP Fiori website (listed as **SAP S/4HANA Fiori LaunchPad**) :

<https://sap-hana.mfdemoportal.com:44300/sap/bc/ui2/flp#Shell-home>

If you see any certificate security issues, just choose to click past those – you’ll only see them once.

We’ll again start by getting familiar with our business process **VA01** in Fiori before we start recording. That way we know what to do and how to fix any issues that might come up during recording.

1. Enter the following credentials and click **Log On**:

Username: s4h\_sd\_dem

Password1: Welcome1

Graphical user interface, application

Description automatically generated

1. Wait for and then click on the magnifying glass (search) icon in the upper right corner and type **VA01** and hit **ENTER**.
2. In the resulting page, click on the box **Create Sales Order** VA01.
3. In SAP Fiori, we’ll need to enter data from the bottom up. This is due to a quirk in the Fiori interface which displays a help window when typing in a field. This help window can obscure fields on replay so just remember to **enter the bottom-most fields first**.

Enter the following fields (in this order). Use CTRL-V to paste values:  
  
Division: 00

Distribution Channel: 10

Sales Organization: 1710

Order Type: OR

1. Click **Continue** in the lower right corner or hit ENTER.
2. Enter the following data (in this order):

Cust. Ref. Date: 07/28/2022 NOTE: This date must be within one month prior to today.

Cust. Reference: 450000019998

Ship-To Party: EWM17-CU02

Sold-To Party EWM17-CU02

1. Click **Save** to save your order. You should see an order confirmation at the bottom of the page.



NOTE: SAP can actually save the order without any item information. Current our AI solution doesn’t support the item entry fields in the table.

1. Click **Exit** in the upper right corner and then click on the **SAP Logo**   to go to the home screen.

Recording the VA01 Transaction with UFT AI

In this section we’ll repeat the process above while recording your steps in UFT AI.

1. **Log out** of SAP Fiori and make sure all your SAP interfaces are exited and your SAP-VPN connection is still connected.
2. **Close** UFT One, if it is still running.
3. **Start** UFT One and add a new GUI test and call it **VA01-Fiori-AI** in the folder: **C:\Users\demo\Documents\UFT One.**
4. Select **Record > Record and Run Settings** from the top menu bar.
5. On the **SAP** tab, select **Record and run test on any open SAP Gui for Windows application**
6. On the **Web** tab and set the **Record and Run** settings to be as shown below and click **OK**.

Use: Local Browser

URL: <https://sap-hana.mfdemoportal.com:44300/sap/bc/ui2/flp#Shell-home>

Browser: Google Chrome

Graphical user interface, text, application

Description automatically generated

1. **Open** a Chrome browser, **maximize it** (AI works best that way) and navigate to:  
     
   <https://sap-hana.mfdemoportal.com:44300/sap/bc/ui2/flp#Shell-home>
2. In UFT One, start recording with **AI Record** .

When UFT AI starts you’ll see the recording bar that prompts you to click on a web page window.

Remember that your browser window should be **maximized** – that make AI recordings more reliable.

Graphical user interface

Description automatically generated

1. **Click** somewhere on the **Fiori Log On** web page (but not on an edit field).

After selecting the web page, UFT AI will inspect the page and identify objects and text.

In the screenshot below it has identified text boxes, text blocks, buttons, and a down triangle.

Graphical user interface

Description automatically generated

You can **move** the **recording bar** at any time, so it doesn’t obscure parts of the application.

1. Click on the **User** box (not the text) and then enter the username (s4h\_sd\_dem) into the box as shown:

Shape, rectangle

Description automatically generated

1. Click the **blue arrow box** or hit **ENTER** to record this step.

For every text entry you should always be clicking the blue arrow box or hit ENTER to record your steps.

1. Enter the following credentials and then click **Log On**:

Username: s4h\_sd\_dem

Password1: Welcome1

1. Graphical user interface, application

   Description automatically generatedClick on the magnifying glass (search) icon in the upper right corner and type **VA01** and hit **ENTER**.

If it’s not recognized with a magenta box, click the Reinspect button.

1. Graphical user interface, application

   Description automatically generatedIn the resulting page, click on the Text block labeled **Create Sales Order** VA01 and select **Click**.

If it’s not recognized, click the Reinspect button.

Graphical user interface, application, Word

Description automatically generated

1. In SAP Fiori, we’ll need to enter data from the bottom up. This is due to a quirk in the Fiori interface which displays a help window when typing in a field. This help window can obscure fields on replay so just remember to enter the bottom-most fields first.

Enter the following fields (in this order). Use CTRL-V to paste values:

Division: 00

Distribution Channel: 10

Sales Organization: 1710

Order Type: OR

1. Click **Continue** in the lower right corner.
2. Enter the following data (in this order):

Cust. Ref. Date: 07/28/2022 NOTE: This date must be within one month prior to today.

Cust. Reference: 450000019998

Ship-To Party: EWM17-CU02

Sold-To Party EWM17-CU02

1. Click **Save** (bottom right corner) to save your order.  
   You should see an order confirmation at the bottom of the page.



NOTE: SAP can actually save the order without any item information. Current our AI solution doesn’t support the item entry fields in the table.

1. Click **Exit** (upper right corner) and then click on the **left triangle** (upper left corner).
2. Click on the **Home** text (upper left corner) to go to the home screen.
3. Click on the **Profile** icon and then click on **Sign Out**.
4. Click on **OK** in the Sign Out dialog.
5. **Pause** the recording and then exit the recording bar by selecting **X**.
6. **Save** your test and close the Chrome browser.
7. **Run** your test and check for any timing issues with replay. If necessary, add **wait** statements to slow the replay and make the script work. It’s also possible to add code to wait for the objects to be ready.

Using AI with SAP Fiori can be a bit of a challenge because of how SAP ghosts or gray’s-out pages during transitions. Since UFT One’s AI periodically scans the pages, it may find expired or incorrect objects on the grayed-out page and try and interact with them. In addition, some SAP Fiori objects may appear and exist but aren’t quite ready to be interacted with, so UFT overruns the interface.

You can combat these sorts of SAP Fiori behavior with a variety of techniques and functions.  
Here’s an example of waiting for an image that doesn’t appear initially:

**'Wait for an image to exist in a loop up to 15 times**

**Function** WaitUntilImage(inputText)

counter = 0

**Do**

counter = counter + 1

**Wait** 1

**If** counter >= 15 Then

Reporter.ReportEvent micFail, "Item not found", "The item >" & inputText & "< didn't appear within " & counter & " tries, please check the application."

ExitTest

**End If**

**Loop** Until AIUtil(inputText).Exist

**End Function**

WaitUntilImage("search")

For objects that exist but aren’t quite ready to be clicked on, you can check for the existence of the next object you want to interact with and keep clicking on the first object until that second object appears.

Here’s an example of waiting for the next object while continuing to click on the first:

**'Keep trying to click on Create Sales Orders until Division: exists**

**While NOT**(AIUtil("text\_box", "Division:").Exist)

**Wait** 1

AIUtil.FindTextBlock("Create Sales Orders").Click

**Wend**

AIUtil("text\_box", "Division:").**Type** "00"

Appendix

|  |  |
| --- | --- |
| Latest Container / Application Versions | |
| Octane | 16.0.400.79 |
| ValueEdge | 16.1.18.60 |
| DevOps | 3.2.4 |
| IntelliJ | 3.2.1 |
| AOS | 3.2 |
| MFConnect | 4.4.2 |
| SonarQube | 7.7 |
| SCA | 21.2.1 |
| SSC | 21.2.1 |
| Audit Workbench | 21.2.1 |
| ALM | 16.0.1 |
| WebInspect | 21.2.1 |
| PulseUno | 22.1-3.2 |
| Autopass | 12.3.0\_d |

Select entire document contents and then type CTRL+A + F9 to update all versions.

Then save this document, close it and open it and all the versions *should* be fixed and updated.