

This presentation will provide an overview of scripting with Rational Functional Tester version 6.1 and describe the steps necessary to work with data-driven tests.



The objective of this module is to introduce data-driven tests. Topics covered include data-driven testing, creating, editing, running, exporting, and importing datapools and data-driven test scripts.



There are limitations to testing when using hard-coded scripts. This module will explore the benefits of data driven tests.

When recording a test script using literal values, that data is hard-coded into the script. A script with hard-coded data runs only one test case, or one set of valid test inputs, and is difficult to maintain and reuse.



When hard-coding data into the script, the script is coded to accept variable data from an external source. Because data is separated from the test script, you can modify test data without affecting the test script, and add new test cases by modifying the data, not the test script.



A datapool is a collection of related data records. A datapool supplies data values to the variables in a test script during script playback. Datapools automatically pump a different set of test data to a test script each time you play back a test. Rational Functional Tester makes it easy for you to create datapools while you are recording a script. Alternatively, you can import existing datapools. Rational Functional Tester also allows you to edit datapools you create within Functional Tester, export and edit datapools you create, and share a datapool with multiple test scripts.



There are different scenarios for implementing data-driven testing in Functional Tester, including:

- Creating a datapool when recording a data-driven script within Functional Tester.
- Modifying the datapool within Functional Tester
- Importing an externally created datapool into Functional Tester and associating it with a data-driven test script
- Creating a datapool when recording a data-driven script within Functional Tester.
- Exporting the datapool and editing it externally
- And, Importing the edited datapool to drive a test script.



Scenario 1: Creating a data-driven test script and datapool.

This scenario takes you through the process of creating a datapool while you are recording a test script. You can then edit and add records to the datapool within Rational Functional Tester.

IBM Software Group Rational software	IIX
Recording a data-driven test scrip	ot
Begin recording a test script by clicking the Record To on the Functional Test toolbar.	Test Script button
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Elle Edit View Project Build Debug Script Configure Tools Window Help	
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Start Page	Solution Explorer - TestClassics 🛛 🗛 🔀
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Projects Online Resources My Profile	Solution 'TestClassics' (1 project) □
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VBNetFeature Yesterday	Red Red Died
TestClassics Yesterday	
	TestClassics Functional Test Project Pro
	B Misc
New Project Open Project	(Name) TestClassics
	Location C:\TestClassics\TestClas
Coutput B Pending Checkins	Properties 2 Dynamic Help
Ready	1.
	© 2006 IBM Corporation

To begin recording a test script, click the Record Test Script button on the Functional Test toolbar.

			A Private Test
BM Rational Functional Tester		×	Datapool is associated
Select Script Assets L -select a Test Object Map, Helper script	base class and Test Datapool to use with new	50	with only one script.
			A Shared Test
Test Object Map:	Private Test Object Map	Browse	Datapool may be
Helper Superclass:	RationalTescocript	Browse	shared by many scripts
Test Datapool:	Private Test Datapool	Browse	When Convential is
Datapool Record Selection Order:	Sequential		when Sequential is
Set as test asset default for new so	cripts in this project:		selected, the script put
Test Object Map			records from the
Helper base class			datapool in order.
			vvnen random is
Set as test asset default for new so	ripts in this project:		records from the datapool in order. When random is
i neiper base class			When random is
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Helper base class			datapool in order. When random is
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Set as test asset default for new so	ripts in this project:		records from the
Set as test asset default for new so	cripts in this project:		selected, the script pul
Datapool Record Selection Order:	Sequential		selected, the script pul
Datapool Record Selection Order:	Sequential		When Sequential is
Test Datapool:	Private Test Datapool	Browse	When Conventiol in
Helper Superclass:	RationalTescocript	Browse	shared by many scripts
Test Object Map:	Private Test Object Map	Browse	Datapool may be
			A Shared Test
script			A Shared Test
L evelect a Test Object Map, Helper	base class and Test Datapool to use with new		with only one script.
BM Rational Functional Tester		×	Datapool is associated
			A Private Test

A **Private Test Datapool** is associated with only one script, while a **Shared Test Datapool** may be shared by many scripts. When the Sequential Order option is selected, the script pulls records from the datapool in order, whereas when the Random Order option is selected, the script randomly accesses every record in the datapool once. Make sure you choose the correct datapool you want to use in the Test Datapool field and the correct datapool selection order.



Once you have selected an application to record the script against, the Recording toolbar appears. You can perform a number of functions as indicated in the toolbar above such as starting and stopping, and inserting verification points.



When you are ready to data-drive your script, click the **Insert Data Driven Commands** button on the Recording toolbar (shown on the right).

BM	Software Group Rational software	e	I
Inserting An object sele selected the o	data-driven con cted by the Object select bjects, release the mous with data collected about	tor, is outlined in red. When you se. The Insert Driven Actions dia	ı have ılog
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Quantity:	jstring Guartets Nos: + 2 14 Heine beins: 3000 1 S&H: \$1.00 Total: \$19.99	Populate then Select Test Objects Press and drag hand to select test objects Use selection wizard to select test objects	
Card Number (include the Card Type:	spaces): Visa <u>v</u> piration Date:	Data Driven Commands Role Test Object Command Variable Initial Value	
Name. Street City, State, Zip. Phone:	Trent Culpito 75 Wail St 22nd Fi NY, NY 12212 212-552-1067	Iteminex setText leminex schudert Identext setText leminex schudert QuantityT setText leminext string Qu QuantityT setText QuantityT CardNum setText CardNum CardNum setText credtCombo Visa Expiration NameText setText At Expiration StreetText setText StreetText 75 Wall St	
Related Items	Place Order Cancel	OK Cancel Help	

An object selected by the Object selector, is outlined in red. When you have selected the objects, release the mouse. The Insert Driven Actions dialog box appears with data collected about the objects you selected.

IBM Software Group Rational software Editing data-driven comma	IEM Inds
Insert Data Driven Actions Data Drive Actions Choose test objects and actions to data drive. Populate then Select Test Objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and drag hand to select test objects Image: Press and transformed test objects Image: Press and transformed test objects Image: Press and test objects	You can add descriptive headings to the data in the datapool. Meaningful headings make it easier to later add data to the datapool.
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Once you create the command, you can add descriptive headings to the data in the datapool. Meaningful headings make it easier to later add data to the datapool.

IBM Software Group Rational softwa	are IEM
Inserting a verification point When you insert a verification point in a datapool reference instead of a literal va	that references the datapool data-driven script, you can create a alue.
Verification Point and Action Wizard	Click the Convert Value to Datapool Reference button.
Test Objects D New: Java: Frame: order Wew: Java: Label: to \$19,99	Type a name for the variable. Check the Add value to new record in datapool checkbox to add the variable to your datapool.
Administrative MetaData <u>Recognition</u> Property Value .dass javax.swing.JL .dassIndex 9 .testOpictState ENABLED/VISI accessibleCont \$19.99 name kotaPrice	Onvert to Datapool Reference Image: Convert to Datapool Reference Enter or select a variable name. Datapool Variable: Total Image: Add value to new record in datapool
<pre><back next=""> Finish Cancel Help</back></pre>	OK Cancel Help © 2006 IBM Corporation

When you insert a verification point in a data-driven script, you can create a datapool reference instead of a literal value. Remember, verification points are the components that can be used to check the differences in the actual values against expected values.



When you stop recording, the script and datapool information is shown here.

		BM Software Gro	oup I	Rational software	9			
Ec	diting	a datap	00					
(Once you data.	have created a	a dat	apool you can	edit the c	data you input	t or add add	ditional
C r	Double-click the datapool title bar to begin editing the datapool. From the shortcut menu you can:							
	– Edi	it, add, and remo	ove re	cords				
	– Edi	t, add, and remo	ve va	ariables				
	– Cu	t copy and past	e dat	а				
Priva	ate Test Data	pool*	e aat					×
	Composer	Item	Q	CardNum	CardType	ExpDate	Name	Street
0	Schubert	Add Record	E	123456890123456	Visa	07/07	Trent Culpito	75 Wall St 22nd
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	Private Test Da	tapool* 🗐 Output	I 📴 Pr	ending Checkins				
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Once you have created a datapool you can edit the data you input or add additional data. Remember, to add a new data record, you must first click Add Record. You will then be able to copy and paste data from other records into the new record row.

IBM Software Group Rational	software
Data-driving a test sc	cript
When you play back the script, you set the datapool iteration count. Each time the script runs, it pulls a different record from the datapool.	IBM Rational Functional Tester Image: Specify Playback Options Specify Playback Options Image: Specify the arguments to run this script and set datapool iterator count. Run arguments: Image: Specify Playback Options Datapool Iteration Count: Image: Specify Playback Options
Or, you can add a parameter to CallScript to iterate through the entire datapool:	
	< Back Next > Finish Cancel Help
CallScript ("myScript", DEFAUI	LT_ARGS, DP_ALL)
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You can add a parameter to CallScript to iterate through a datapool. When you play back the script, you set the datapool iteration count. Each time the script runs, it pulls a different record from the datapool.



Scenario 2: Importing an external datapool

Functional Test allows you to import data from:

An external spreadsheet (.csv file)

Another Functional Test datapool or

An existing IBM Rational TestManager datapool

However, keep in mind that:

The data must be imported into the same Functional Test project as the scripts that will access it.

Spreadsheet data must be saved as a .csv file before you import it.

To import data from a TestManager datapool, you must first associate the Functional Test project with the Rational project that contains the datastore.

	IBM Software G	rou	Rational software	IEM					
m	nporting an external datapool								
Firs	irst, import the datapool into a Functional Tester project. TestClassics_v2 - IBM Rational Functional Tester [design] - Start Page								
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			j project Ctri+Snirt+N						
	Close] Electric Current	On the main menu click					
*	Add New Item Ctrl+Shift+A								
	Add Existing Item Shift+Alt+A		Add Script Lising Recorder	Add Test Detensel					
	Add Project	<u>،</u>	Add Empty Script	Add Test Datapool					
<u> </u>	Open Solution		Add Test Object Map						
	Close Solution		Add Test Datapool						
	Save Selected Items Ctrl+S	X		-					
	Save Selected Items <u>A</u> s	17	Modifi	ed					
ø	Save All Ctrl+Shift+S	Ŀ	8/17/200	04 N4					
	Sou <u>r</u> ce Control	•	8/16/200	04					
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6	Print Ctrl+P								
	Recent <u>F</u> iles	•							
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	Exit								
				© 2006 IBM Corpora					

In this scenario, you import an external datapool (.csv file) into a Functional Test project and then associate it with a test script.

<complex-block></complex-block>	IBM Software Group Rational software	IEM
Add New Item - Test Classics_v2 Categories: Functional Test project Items Functional Test project Items Type a Name for the datapool and select a target location inside the Functional Test project. A new rest Datapool. Name: OrderTotal:ftdp Look in: My Documents History My Neweds History My Neweds Files My Documents My Neweds Files My Neweds Files My Neweds Files My Neweds Files My Neweds Files My Documents My Neweds Files My Neweds Files My Neweds Files My Neweds Files My Neweds Files My Neweds Files My Documents My Neweds Files My Documents My Neweds Files My Documents My Documents My Neweds Files My Neweds Files My SclassicsOrders.csv My New SclassicSUrders.csv My New SclassicSUrders.csv My Documents My SclassicSUrders.csv My New SclassicSUrders.csv My New SclassicSUrders.csv My New SclassicSUrders.csv My New SclassicSUrders.csv My New SclassicSUrders.csv	Importing a datapool (cont.)	
Type a Name for the datapool and select a target location inside the Functional Test project. A new rest Datapool. Name: OrderTotal:rftdp Lock in: My Pictures My Pocuments Withe Machines RuPPuider Security W Donputer My Documents Withe Classics Orders.csv File name:	Add New Item - TestClassics_v2	
Open Car My Documents My Documents My Documents MHS-ClassicsOrders.csv File name: MHS-ClassicsOrders.csv	Type a Name for the datapool and select a target location inside the Functional Test project. A new rest Datapool. Name: OrderTotal.rftdp Deation: CilomokelTestClassics v2/TetClassics v2	₹× ⊒• he
My Network P Files of type: Csv files (*.csv) Cancel	Creation: Creation: Creation: RUPBuilder Open Car My Documents MHS-ClassicsOrders.csv My Network P File name: MHS-ClassicsOrders.csv My Network P Files of type: csv files (*.csv)	Open Cancel

This window shows how to import from the UI. Follow the directions above to import a datapool.

IBM Software Group Rational software	EX
Importing a datapool (cont.)	
IBM Rational Functional Tester Import Datapool Import data from an existing Functional Test datapool, a Rational TestManage datapool, or a .csv file	er El
Import From: MHS-ClassicsOrders.csv - E:\Documents and Settings\myers\My Browse C.SV format options	TM Browse
Field Separator:	Verify the Import From location.
First Record is Variable Information Note: Variable is a column in a datapool. Record is a row in a datapool.	Confirm the Field Separator value. Check the box if the first record of your datapool contains variable information.
Finish	Cancel Help
	© 2006 IBM Corporation

Verify the Import From location and other information on this window.

	L.								
_	1	Z	3		4		2 3 6		
	2	123456/83456	3-May		\$16.99		🤣 Solution 'TestCla	ssics_v2' (1 project)	
	3	454561617979	5-1ul		\$48.97	6	🗄 🐸 TestClassi	cs_v2	
	4	111177775555	5-Aug		\$64.96		🥭 LOGS		
	5	123456783456	3-Sep		\$80.95		OrderTo	tal	
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En	dit the reaning	Variable row	star	t Page 1 Quantit 1 2 3 4 Iude	OrderTota	I.rftdp CreditCardNum 123456783456 222233334444 454561617979 111177775555 123456783456 123412346565	ExpDate 3-May 4-Jun 5-Jul 5-Aug 3-Sep 3-Oct 4-Mar	OrderTotal CorderTotal States OrderTotal States States States States States States States States States States States States States States States States	data. ↓ ▷ ×

Once the datapool is imported, it shows up under the project in the Solution Explorer and opens in the datapool window. Verify the data shown. You can also edit the variable row to include meaningful variable names.

IBM Software Group Rationa	al software	IEM
Associating the Data	apool with a Test Script	
Solution Explorer - TestClassics_v2 Solution in TestClassics_v2' (1 project) TestClassics_v2' (1 project) TestClassics_v2 Conservation Conservati	Once you have recorded a test script, associate the datapool with the test script. In the Solution Explorer, right-click the datapool and click Associate With Script on context menu.	×
iorderTot ○ Open Image: Solution of the second	Associate the Datapool With Scripts Select scripts to associate with the datapool Select scripts: Select the test script that you want to associate with the datapool.	
	Finish Cancel	Help
		A Corporation

Once you have recorded a test script, associate the datapool with the test script. In the Solution Explorer, right-click the datapool and click **Associate With Script** on context menu.

IBM Software Group Rational software	IEM
Changing the verification point refe	erence to the datapool
Verification Point Editor1699_text	×
	Open a verification point.
Test Objects □- □ □ New: Java: Frame: orderFor □ ☑ Wew: Java: Label: totalP \$16.99	Click the Convert Value to Datapool Reference button.
Datapool Reference Converter Convert to Datapool Reference Enter or select a variable name. Datapool Variable: OrderTotal	From the Datapool Variable drop down list, select the variable that you want to replace the literal value.
Administrative MetaData Recognition Property Value .class javax.swing.JLabel	
.classIndex 9 .testObjectState ENABLED VISIBL accessibleConte \$16.99 name totalPrice	
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You can also change the Verification Point Reference to the Datapool here.

BM Se	oftware Group	Rational software	IEM
Replacing	literals	in the test script wi	th variables
I cestClassics, y22 - 10M Rational Fund Ele Edit Yew Project Build Deb III - III - IIII - IIII - IIIIIIIIIIII	tional tester Microsoft Vis vug Script Configure Tool * * * * * * * * * * * * Start Page OrderTotal	대한 Base C Net (Geson) = Onder Book VO s	Click the Find Literals and Replace with Datapool
CardWumberIndudeTheSpe	' Frau Quant: PlaceJ CardNv PlaceJ	<pre>se: Place an Order tryText().Click(<u>APPoint</u>(4,7)) hnOrder().InputKeys("(ExtHome)+(ExtHome) inorder().InputChars("10) wheerIncludeTheSpaceSText().Click(<u>At</u> hnOrder().InputChars("1234")</pre>	Reference button to replace literal values in the script with
ClassicsJava	Datapool Literal Substituti Literal Type: All Types Mumbers Strings Socieans	In Uteral: Eind Next Eind	In the Datapool Literal Substitution
Quantity CreditCardi 0 1 129456783 1 2 22223334 2 3 45561617 3 4 11117775 4 5 129456783 5 10 600015153 6 20 12941248	Search yp 456 3-5ep \$8 737 3-Oct \$1 655 4-Mar \$3	Add Iteral to datapool Help	to move to the next literal. To replace a
OrderTotaluftdp Output			variable to from the Datapool Variable drop down list.
			© 2006 IBM Corporation

You can replace literals in the Replacing Literals in the Test Script with Variables. This feature allows you to check verification points dynamically.

IBM Software C	Group Rational software	
Playing back	the test script to test the datapoo	
	Log: OrderTotal	
Failures	19-Aug-2004 05:10:13.678 PM Script start [OrderTotal] • line_number = 1	
Warnings	PASS 19-Aug-2004 05:10:14:459 PM Start application [ClassicsJavaA] • name = ClassicsJavaA • ine_number = 24 • script_name = OrderTotal • script_id = OrderTotal	
to navigate the test log.	FAIL 19-Aug-2004 05:10:34 518 PM Verification Point [_1699_text] failed. • vp_oppe = object_data • ame = _1699_text • script_name = OrderTotal • ime_mumber = 42 • script_id = OrderTotal vb • baseline = resources/OrderTotal_1699_text base.rftvp • expected = OrderTotal 00011699_text base.rftvp • actual = OrderTotal 00000011699_text ext.thm View Results	
۵ ۵ (۱)	results in the comparator.	

After you playback the script, the log will be displayed, showing the results in the comparator.



Scenario 3: Exporting, editing, and importing a datapool

Functional Test also allows you to export a public or a private datapool from a Functional Test project. The datapool is exported to a .csv file. Exporting a datapool allows you to:

Add data to the datapool using a spreadsheet application

Use the datapool in a different Functional Test project

IBM Software	Group Rational softwar	re	TEM
Exporting a data	apool private datapool, open	the derTotal.vb	
Ele Edt View script the data Image: Sector State Right-click the Image: Sector State Explorer, and Image: Sector State Shortcut mention	apool is associated wi e datapool in the Scrip I then click Export on u.	ith. ot the 國際論社 律律 国 d b x 缅	
Order Total Helper Test Datapool Private Test Datapool Private Test Datapool Private Test Datapool Private Test Objects Private Test Objects	Script Header Class OrderTotal cherits OrderTotalH cort Cenerated : Aug 'Generated : Aug 'Description : Fun 'Original Host : Win Choose a name and	IDM Rational Functional Tester Export Export detapool to csv file Export resources(OrderTotal.rftxdp to destination File: C:(Documents and Settings(pat)My Documents)	Datapools\OrderTotal.csv
 	ocation, and select a field separator for the .csv file.	eld Separator:	
	2 - 2 - 5	+ <u>†</u> →	Finish Cancel Help

This window explains how to export the datapool. Follow the steps above to complete the export. For more information on exporting, editing, and importing a datapool, review the tutorials from the dynamic help menu.

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