

## 第8章 检查点

## ■ 教学目标

- 了解检查点
- 掌握各种检查点类型

## ■ 重点

- 检查点的设置
- 自定义检查点的创建



# 本章安排

- 8.1 检查点定义
- 8.2 标准检查点
- 8.3 文本检查点
- 8.4 位图检查点
- 8.5 数据库检查点
- **8.6 自定义检查点**



## 检查点的理解：

- 一个检查点是一个特殊的步骤，它用来比较两个值然后将其结果报告出来。
- 预期结果是基于测试的需求的，实际结果是基于测试运行过程中发生的事件。

## 一个检查点是用来：

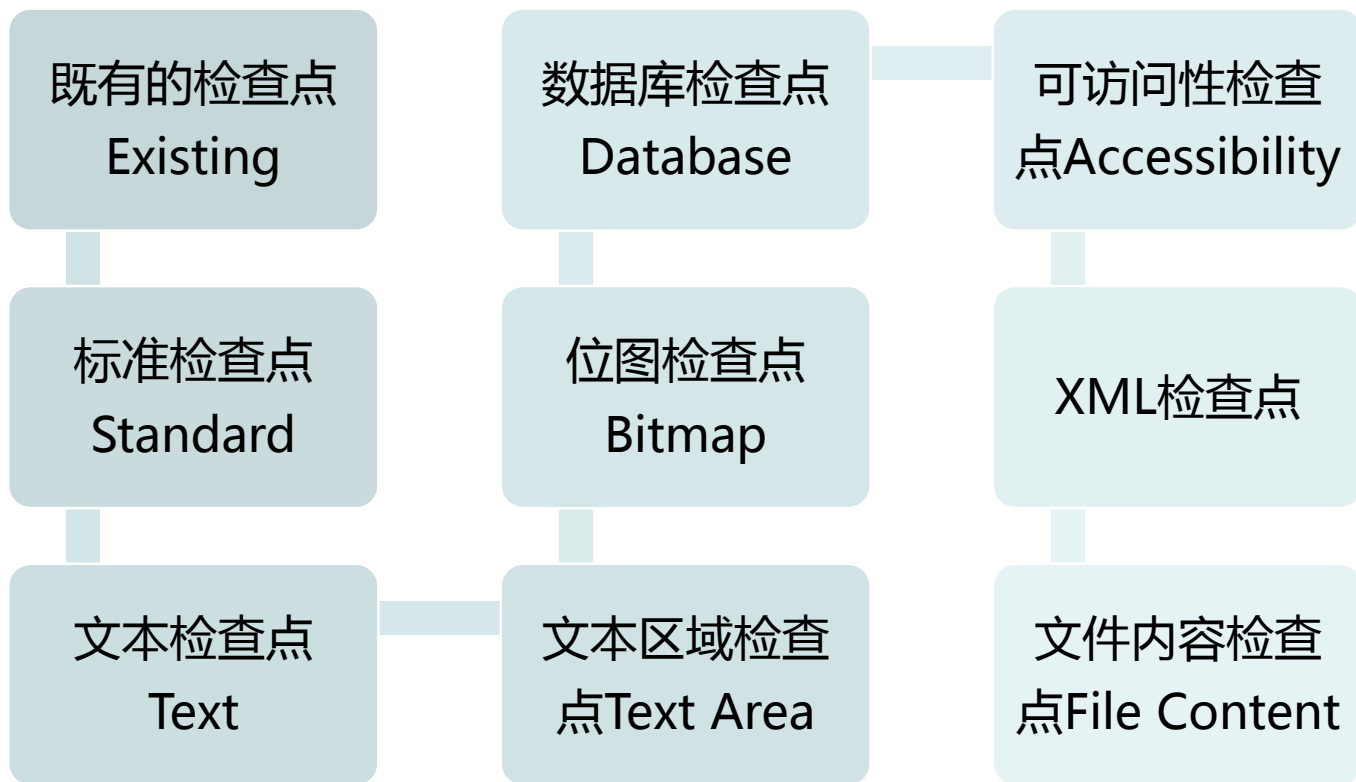
- 校验一个对象的状态
- 确认应用程序是按照预期的在运行



# 8.1 检查点定义

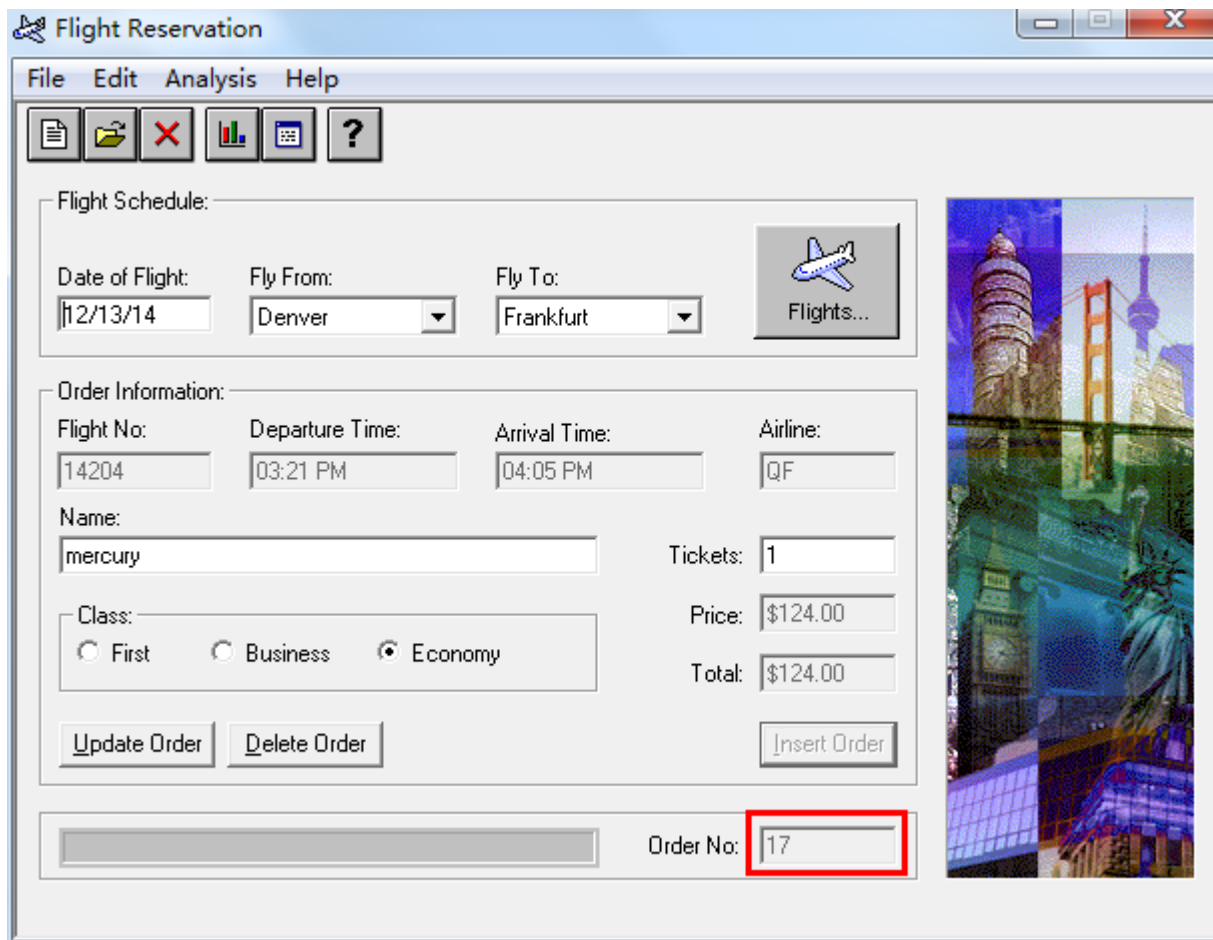
## ■ 检查点

- 检查点是可以验证被测应用的功能是否达到预期的一种描述，是将指定属性的当前值与该属性的期望值进行比较的验证点。



# 8.1 检查点定义

## ■ 视觉效果



The screenshot displays a 'Flight Reservation' application window. It features a menu bar with 'File', 'Edit', 'Analysis', and 'Help'. Below the menu is a toolbar with icons for document, folder, delete, chart, calendar, and help. The main interface is divided into two sections: 'Flight Schedule' and 'Order Information'. The 'Flight Schedule' section includes fields for 'Date of Flight' (12/13/14), 'Fly From' (Denver), and 'Fly To' (Frankfurt), along with a 'Flights...' button. The 'Order Information' section includes fields for 'Flight No.' (14204), 'Departure Time' (03:21 PM), 'Arrival Time' (04:05 PM), and 'Airline' (QF). It also has a 'Name' field (mercury), 'Tickets' (1), 'Price' (\$124.00), and 'Total' (\$124.00). The 'Class' section has radio buttons for 'First', 'Business', and 'Economy' (selected). At the bottom, there are buttons for 'Update Order', 'Delete Order', and 'Insert Order'. A red box highlights the 'Order No.' field, which contains the value '17'. On the right side of the window, there is a vertical strip of images showing various landmarks, including the Golden Gate Bridge and the Statue of Liberty.

Flight Reservation

File Edit Analysis Help

Flight Schedule:

Date of Flight: 12/13/14 Fly From: Denver Fly To: Frankfurt Flights...

Order Information:

Flight No: 14204 Departure Time: 03:21 PM Arrival Time: 04:05 PM Airline: QF

Name: mercury Tickets: 1

Class: First Business Economy Price: \$124.00

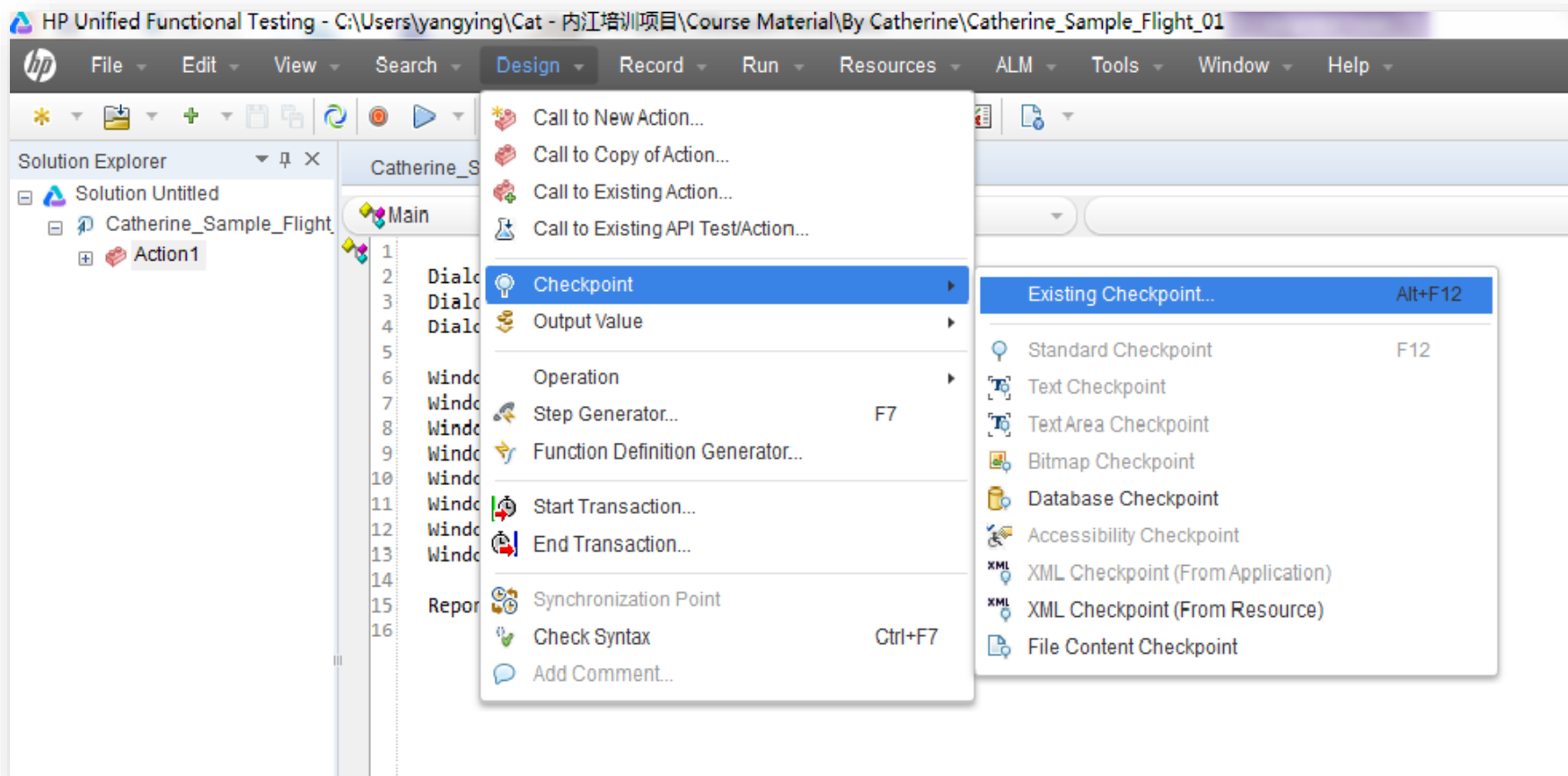
Total: \$124.00

Update Order Delete Order Insert Order

Order No: 17

# 8.1 检查点定义

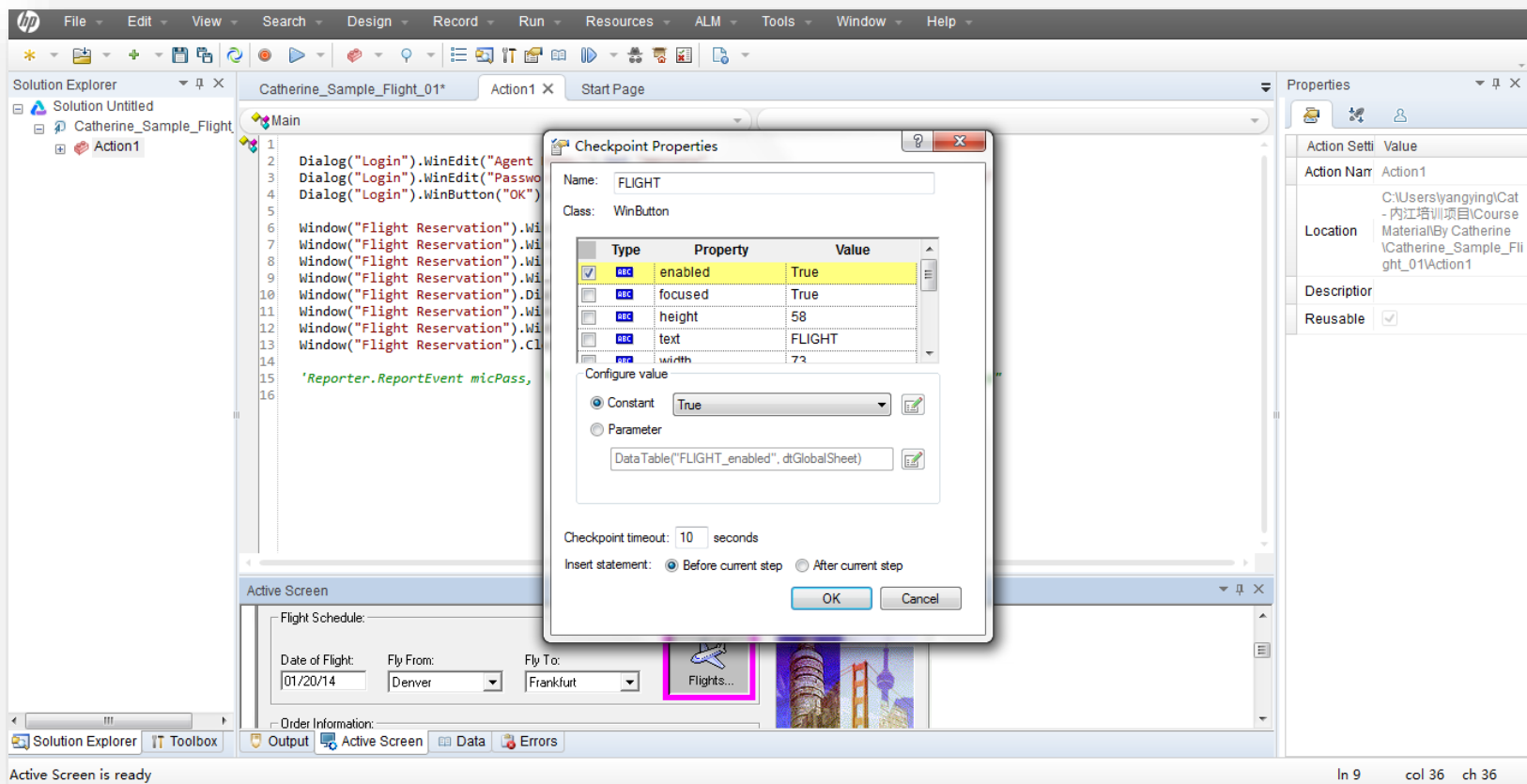
## 检查点类型



## 8.2 标准检查点

### 8.2.1 标准检查点的定义

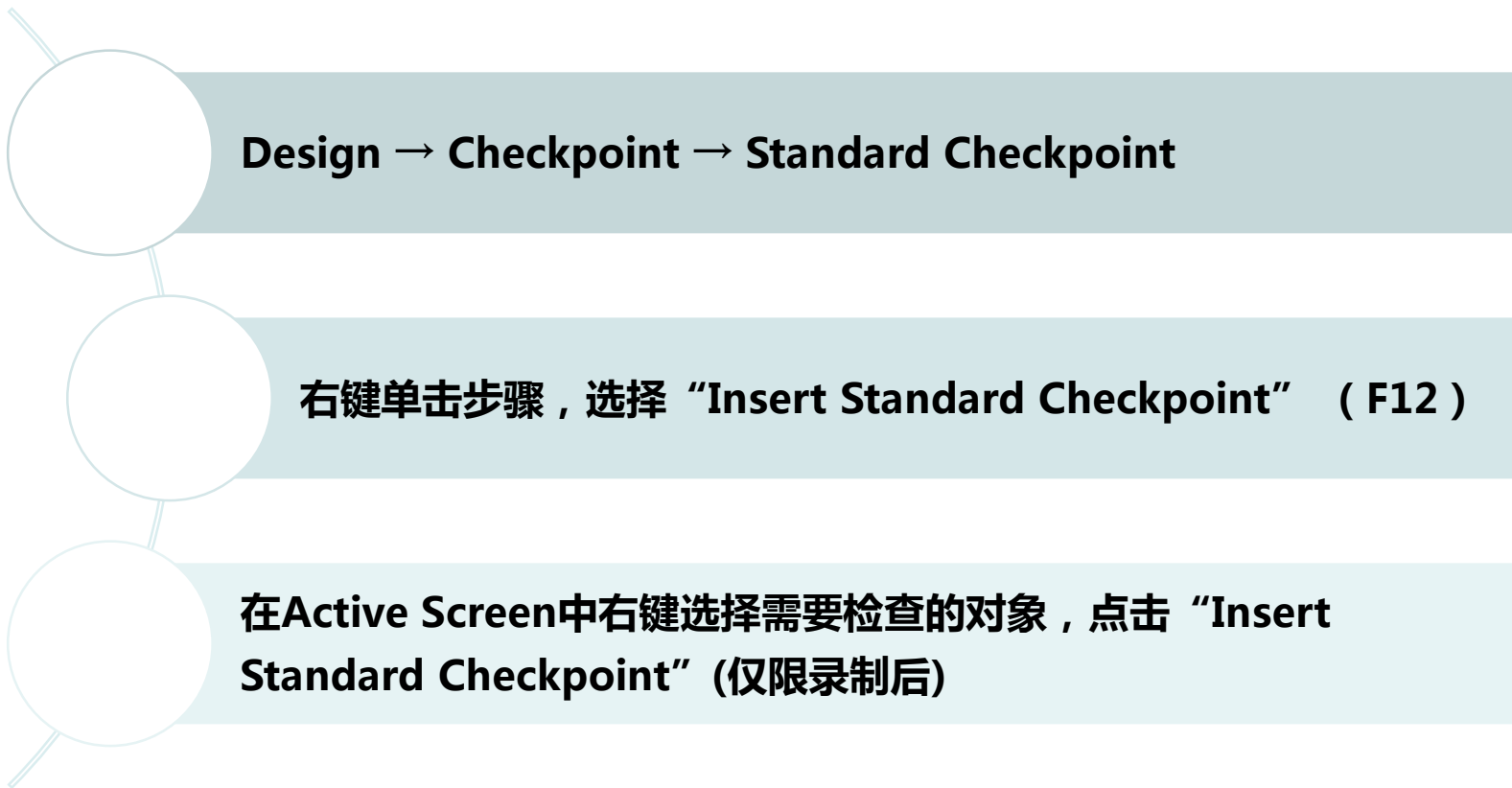
- 标准检查点检查应用程序或网页中对象的属性值





## 8.2.2 添加标准检查点

### ■ 添加标准检查点的方法（录制时和录制后）



**Design → Checkpoint → Standard Checkpoint**

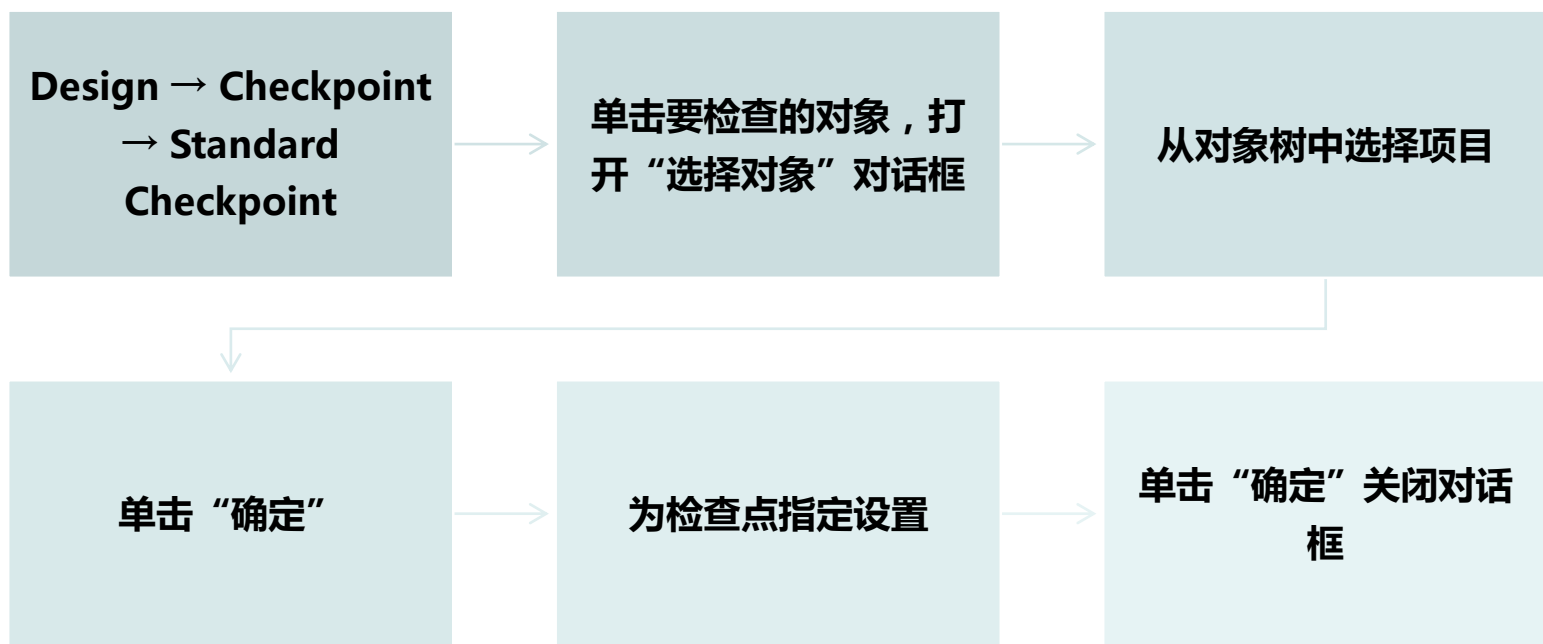
**右键单击步骤，选择 “Insert Standard Checkpoint” （ F12 ）**

**在Active Screen中右键选择需要检查的对象，点击 “Insert Standard Checkpoint” （仅限录制后）**



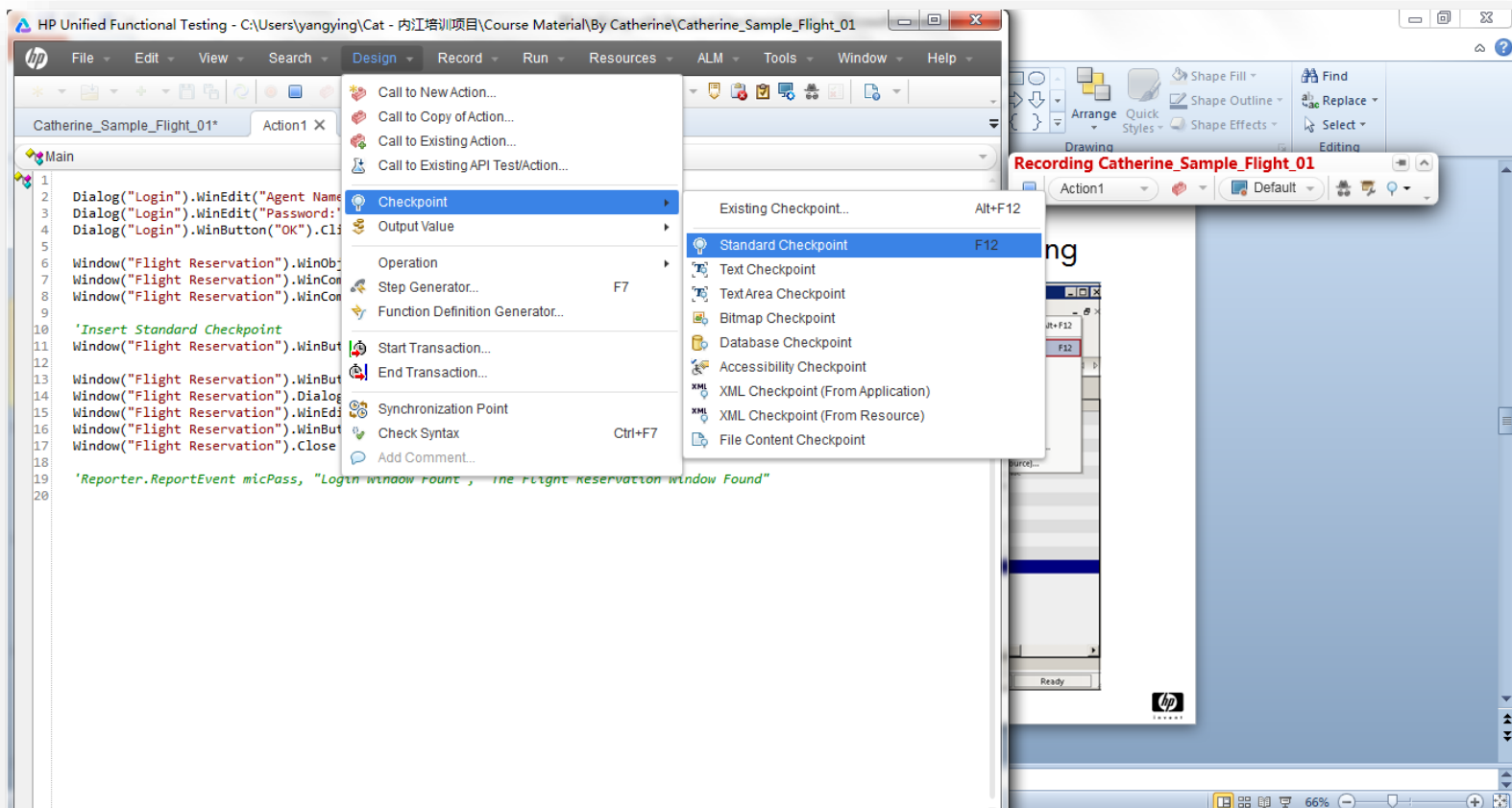
## 8.2.2 添加标准检查点

### ■ 录制时创建标准检查点



## 8.2.2 添加标准检查点

### ■ 录制时创建标准检查点



## 8.2.2 添加标准检查点

### ■ 编辑时创建标准检查点

右键单击步骤，选择  
“Insert Standard  
Checkpoint”

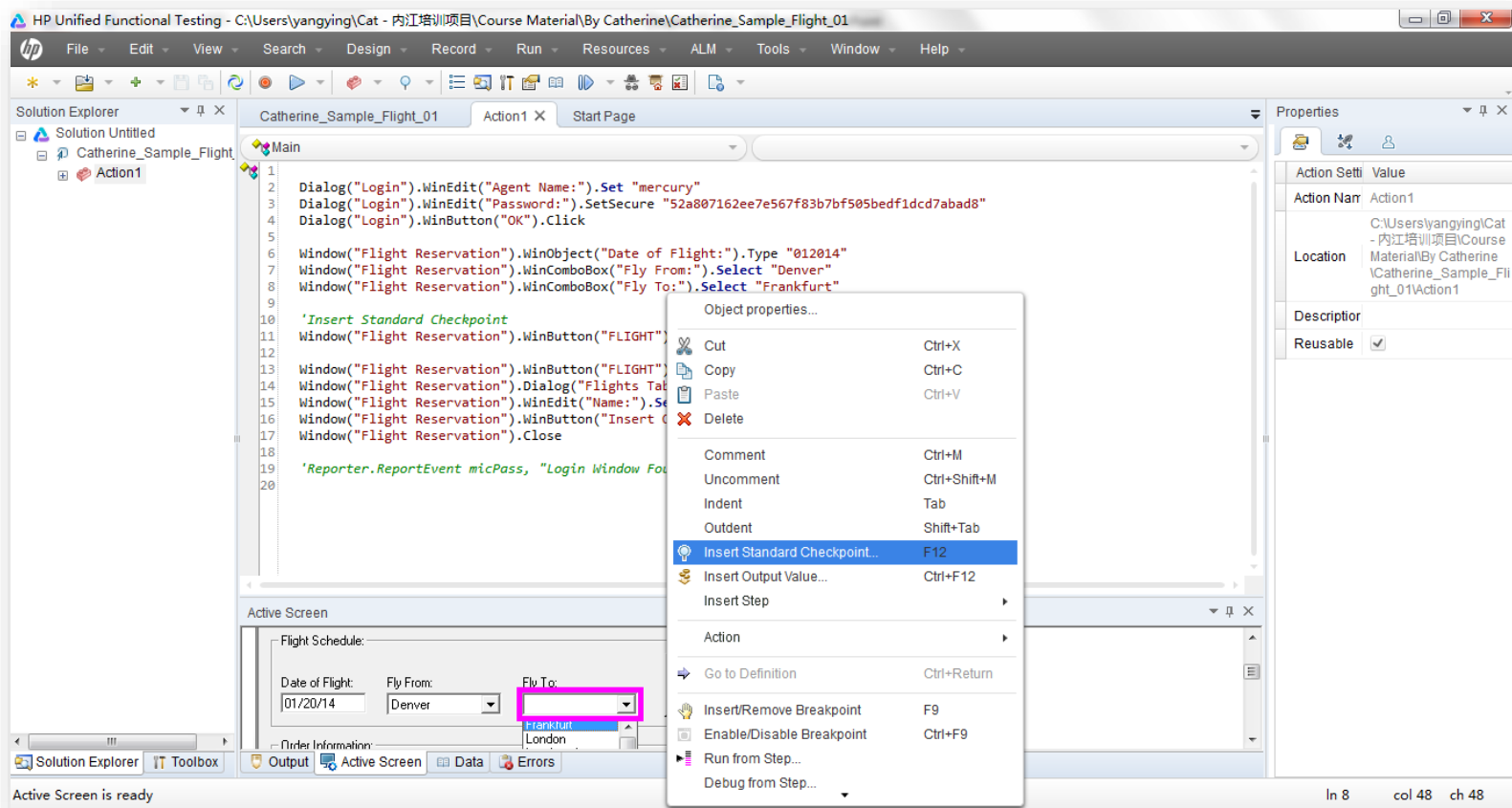
为检查点指定设置

单击“确定”关闭对  
话框



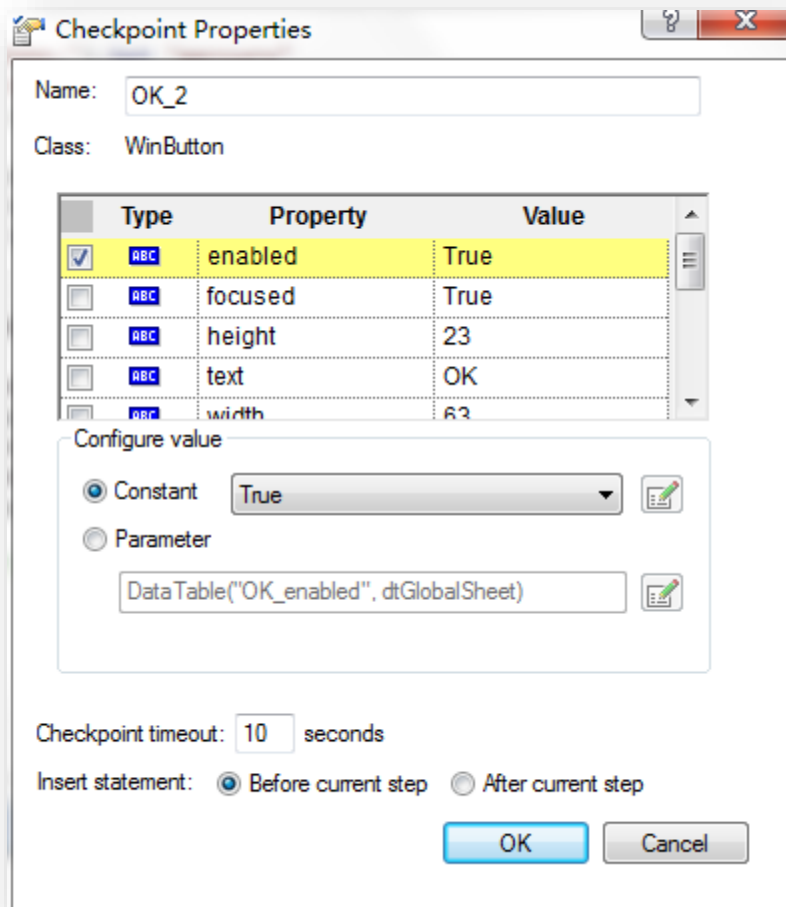
## 8.2.2 添加标准检查点

### ■ 编辑时创建标准检查点



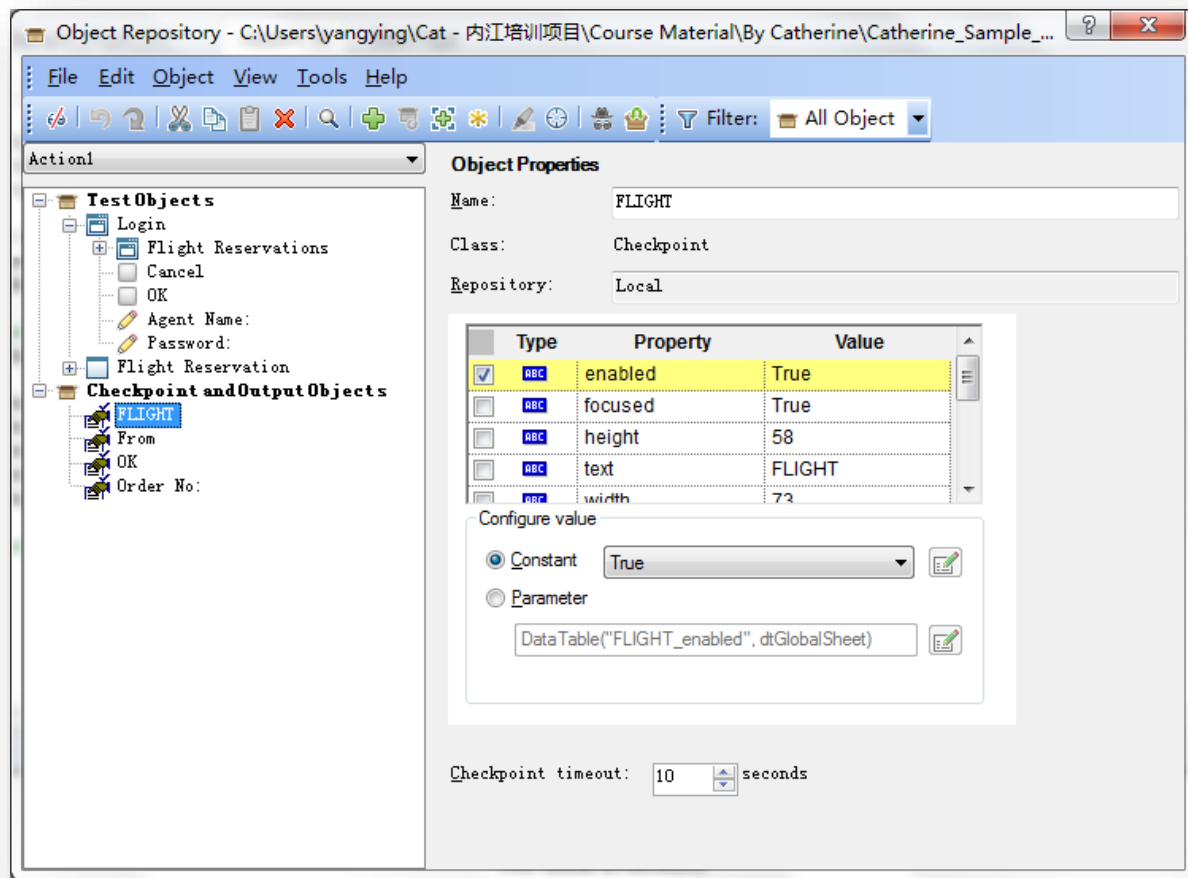
## 8.2.3 标准检查点的属性

### ■ 了解“检查点属性”对话框



## 8.2.3 标准检查点的属性

### ■ 查看标准检查点对象



## 8.2.3 标准检查点的属性

### ■ 识别失败的检查点

The screenshot displays the HP Run Results Viewer interface. On the left, a tree view shows the test structure: 'Test Catherine\_Sample\_Flight\_01' (failed), 'Catherine\_Sample\_Flight\_01 Iteration 1 (Row 1)' (failed), 'Action1 Summary', 'Login', 'Flight Reservation' (failed), and 'Order No.' (failed). The 'Checkpoint "Order No.: 2"' is highlighted with a red box. On the right, the 'Result Details' pane shows the details for this checkpoint, which is marked as 'Failed' in a red box. The 'Date and Time' is 2013/12/17 - 10:56:36, and the 'Checkpoint Timeout' is 'Waited 10 seconds out of a possible 10 seconds'. Below this, a table titled 'Order No.: 2 Results' shows the 'Property Name' and 'Property Value' for the 'text' property. The 'Property Value' is 100, and the 'text' value is 144, both highlighted with red boxes. At the bottom, the 'Captured Data' pane shows the 'Tickets' property with a value of 1.

Catherine\_Sample\_Flight\_01 \ Res7 - HP Run Results Viewer

File View Tools Help

Search for

Test Catherine\_Sample\_Flight\_01 Summary  
Catherine\_Sample\_Flight\_01 Iteration 1 (Row 1)  
Action1 Summary  
Login  
Flight Reservation  
Date of Flight::Type  
Fly From::Select  
Fly To::Select  
FLIGHT  
FLIGHT.Click  
Flights Table  
Name::SetText  
Insert Order.Click  
Order No.:  
Checkpoint "Order No.: 2"  
Flight Reservation.Close

Result Details

Standard Checkpoint "Order No.: 2": **Failed**

Date and Time: 2013/12/17 - 10:56:36  
Checkpoint Timeout Waited 10 seconds out of a possible 10 seconds

Details

Order No.: 2 Results

Property Name	Property Value
text	100 144

Result Details Screen Recorder System Monitor

Captured Data

Tickets: 1

Captured Data Data Log Tracking

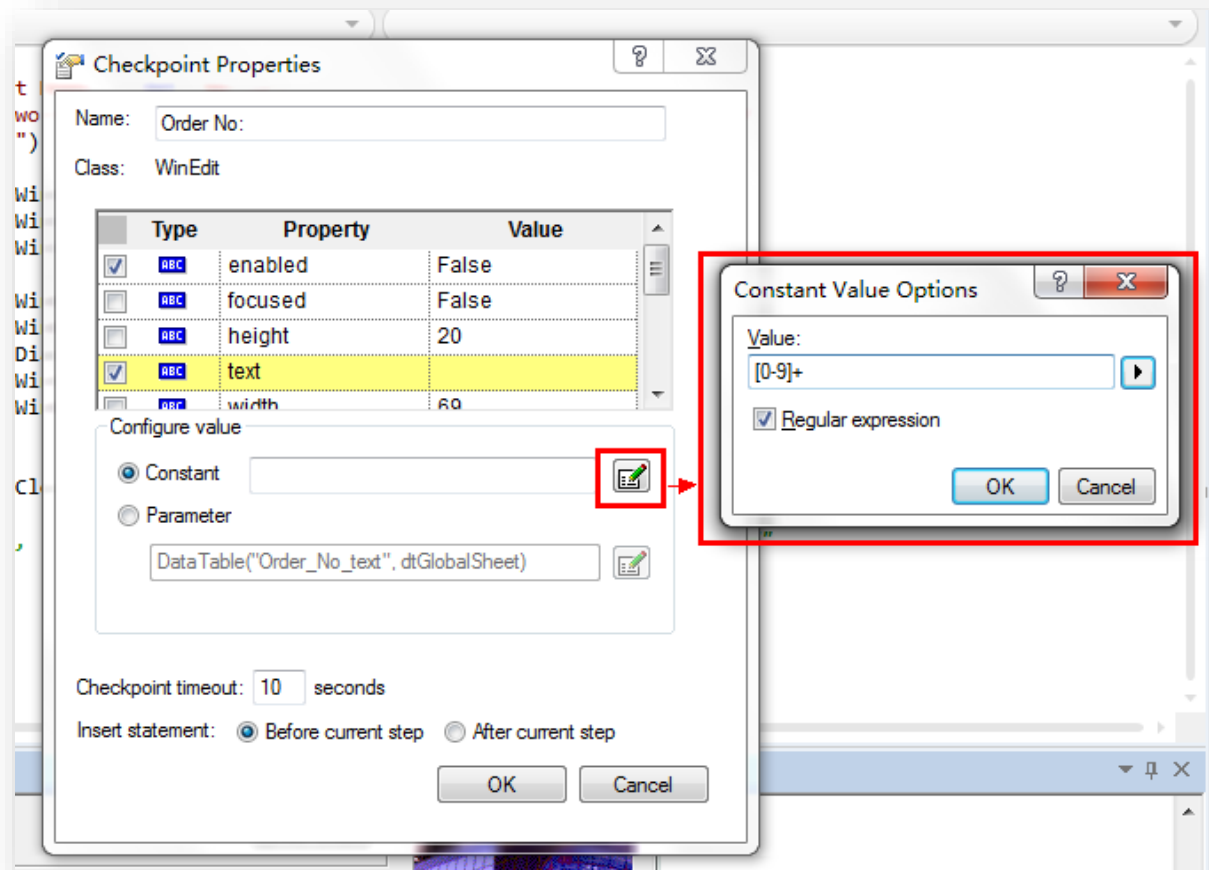
For help, press F1

Ready



## 8.2.3 标准检查点的属性

### ■ 使用正则表达式



## 8.2.3 标准检查点的属性

### ■ 常用正则表达式

Expressions	Char	Description
Period	.	Matches any single character.
Asterisk	*	Matches zero to any number of occurrences of the preceding character.
Plus	+	Matches one to any number of occurrences of the preceding character.
Brackets	[A-Z][a-z]	Matches a range of characters.
	[0-9]	Matches a range of numbers.
	\w	Matches any alphanumeric character including underscore.
	\W	Matches any non-alphanumeric character.
Digit	\d	Matches any digit.
	\d{4}	Matches exactly four digits.

## 8.2.3 标准检查点的属性

### ■ 重命名检查点

Checkpoint Properties

Name: **Order No:**

Class: WinEdit

Type	Property	Value
<input type="checkbox"/>	enabled	False
<input type="checkbox"/>	focused	False
<input type="checkbox"/>	height	20
<input checked="" type="checkbox"/>	text	[0-9]+
<input type="checkbox"/>	width	60

Configure value

☒ Constant [0-9]+

☐ Parameter  
DataTable("Order\_No\_text", dtGlobalSheet)

Checkpoint timeout: 10 seconds

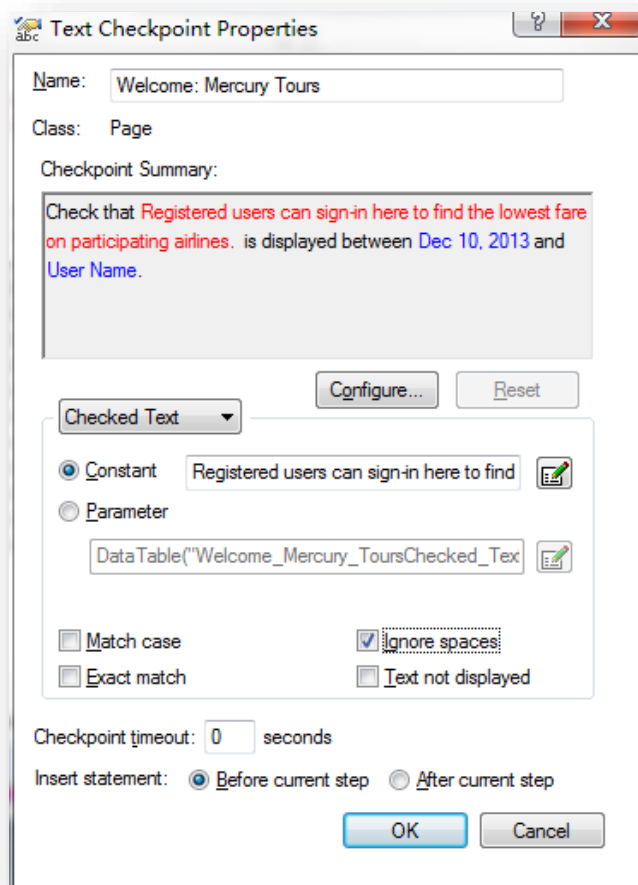
Insert statement: ☒ Before current step ☐ After current step

OK Cancel

## 8.3 文本检查点

### 8.3.1 文本检查点的定义

- “文本检查点” 检查**文本字符串是否显示在应用程序或网页的适当位置中**



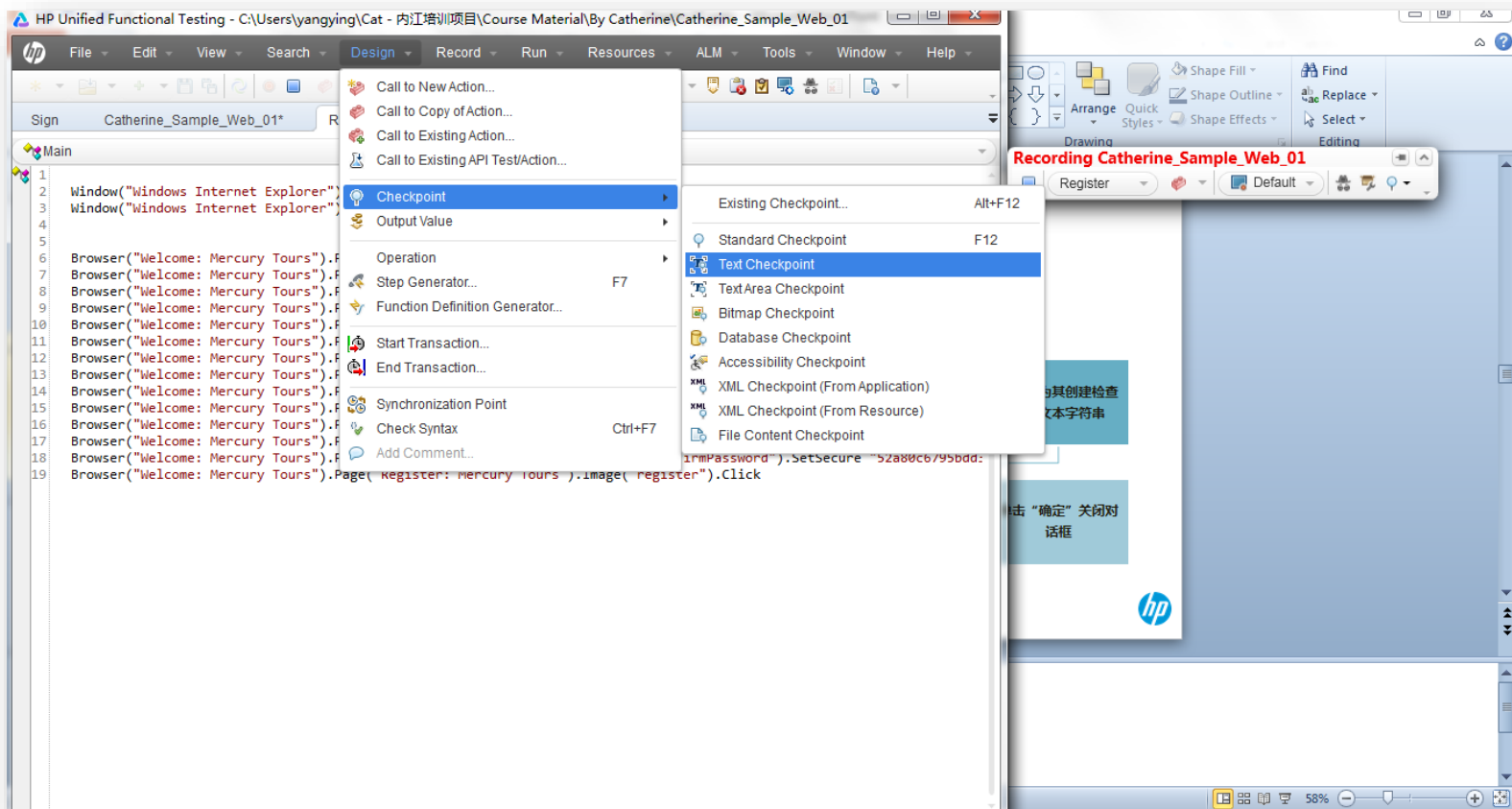
## 8.3.2 添加文本检查点

### ■ 在录制时添加文本检查点



## 8.3.2 添加文本检查点

### ■ 在录制时添加文本检查点



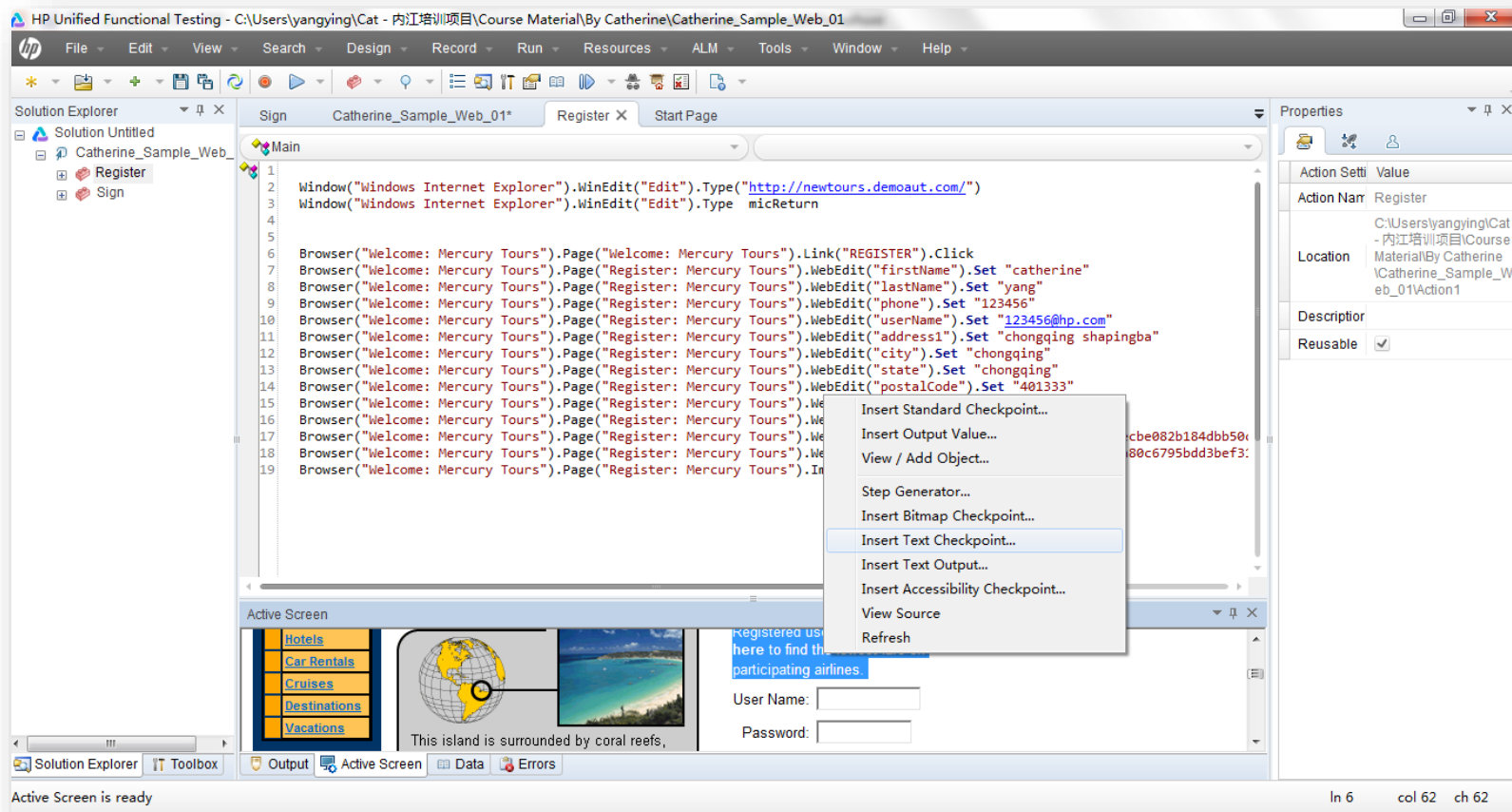
## 8.3.2 添加文本检查点

- 在编辑时添加文本检查点
- 只能为 Web 应用程序使用 Active Screen 插入文本检查点。其他环境不支持该选项。



## 8.3.2 添加文本检查点

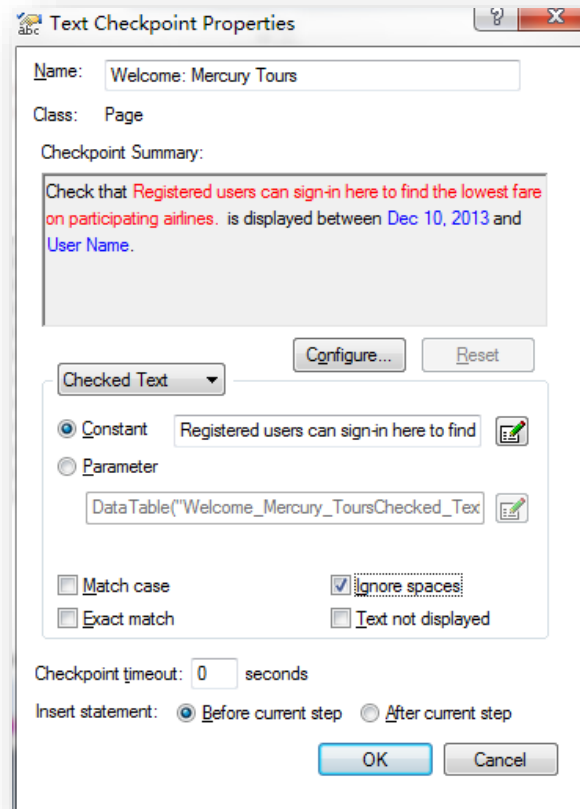
### ■ 在编辑时添加文本检查点





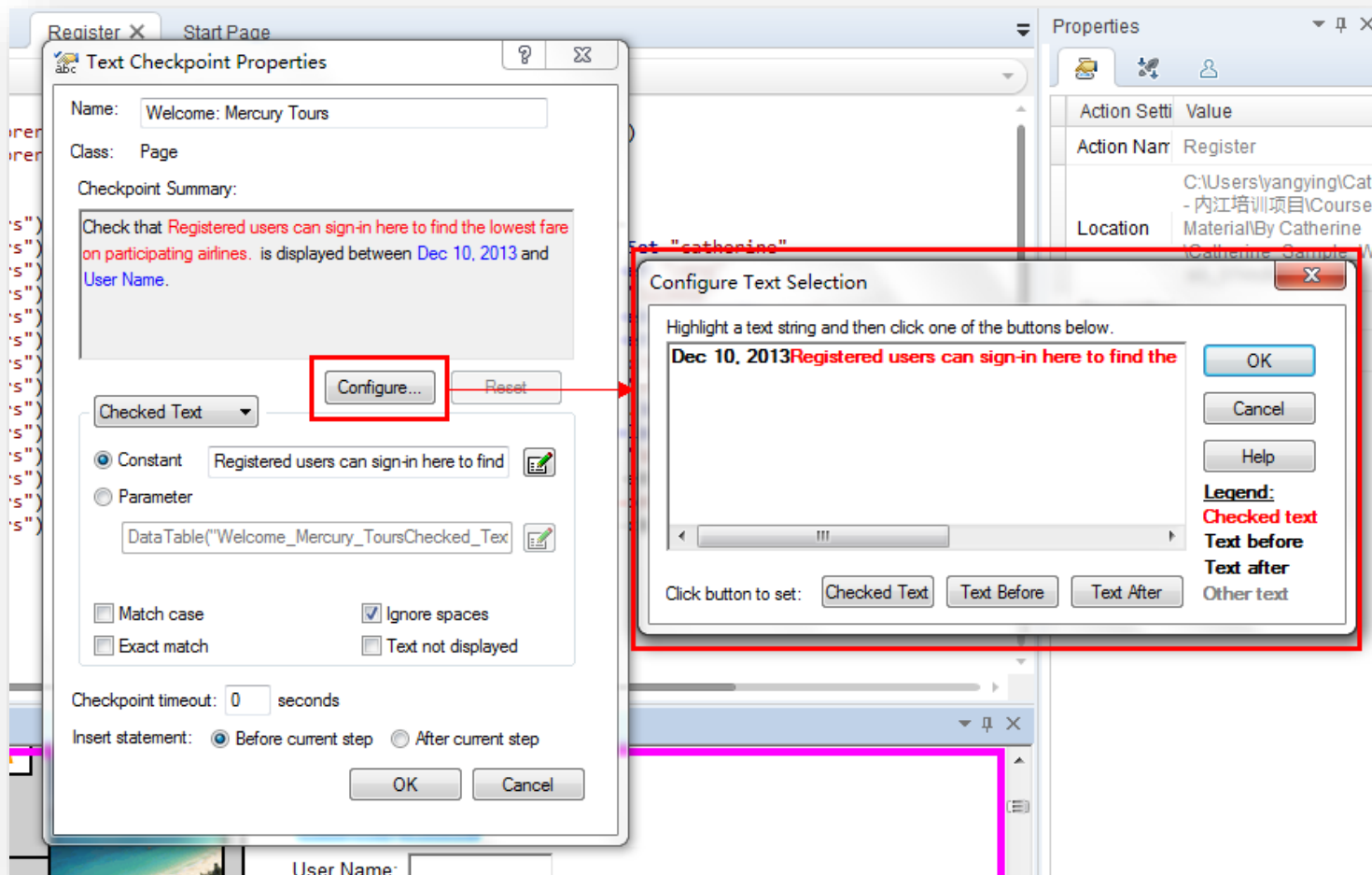
## 8.3.3 文本检查点的属性设置

- 基于Web，显示选择的文本及其前后的文本。基于 Windows，显示创建检查点时选择的文本。
- “已检查的文本” 显示为红色，其前后文本显示为蓝色



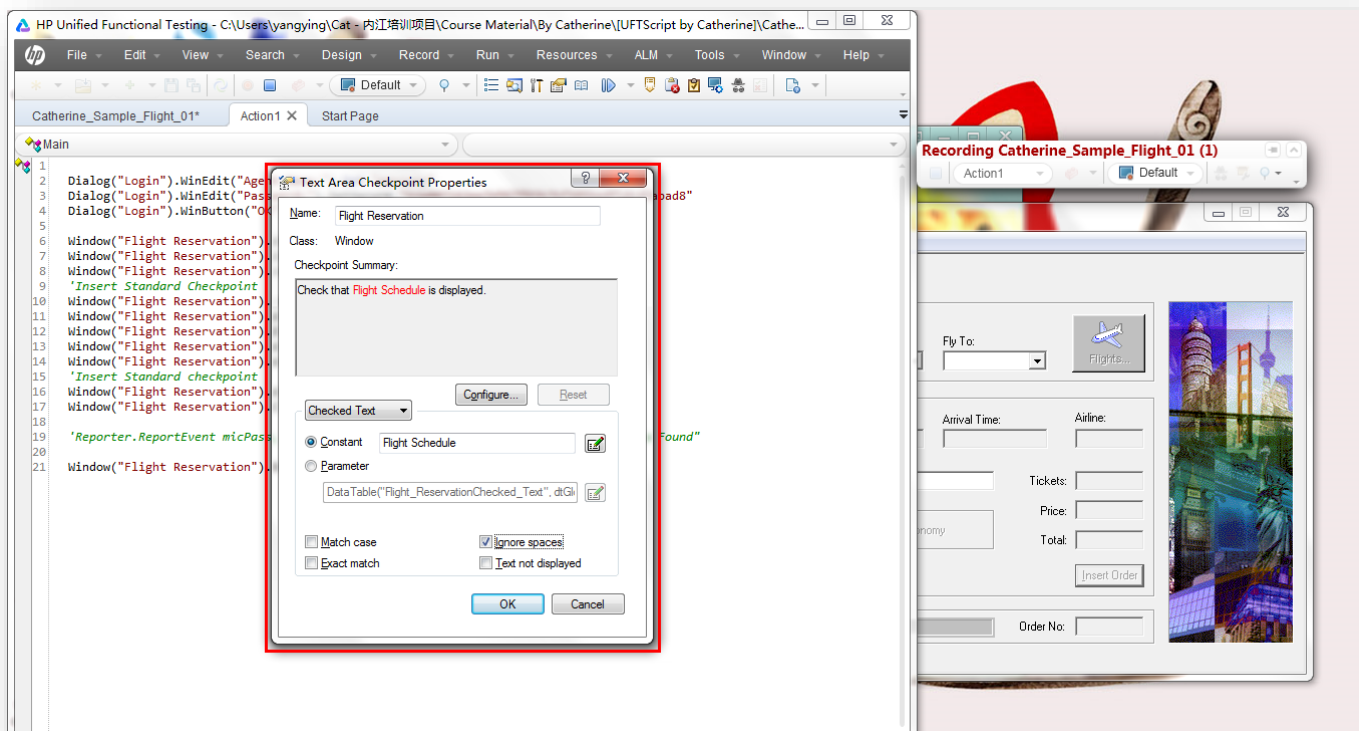
## 8.3.3 文本检查点的属性设置

### ■ 基于配置文本选择



## 8.3.4 文本区域检查点

- 只有在基于 Windows 的应用程序（标准 Windows、Visual Basic 和 ActiveX）上录制测试或组件时才能添加文本区域检查点。
- 被捕获区域必须足够大



## 8.4 位图检查点

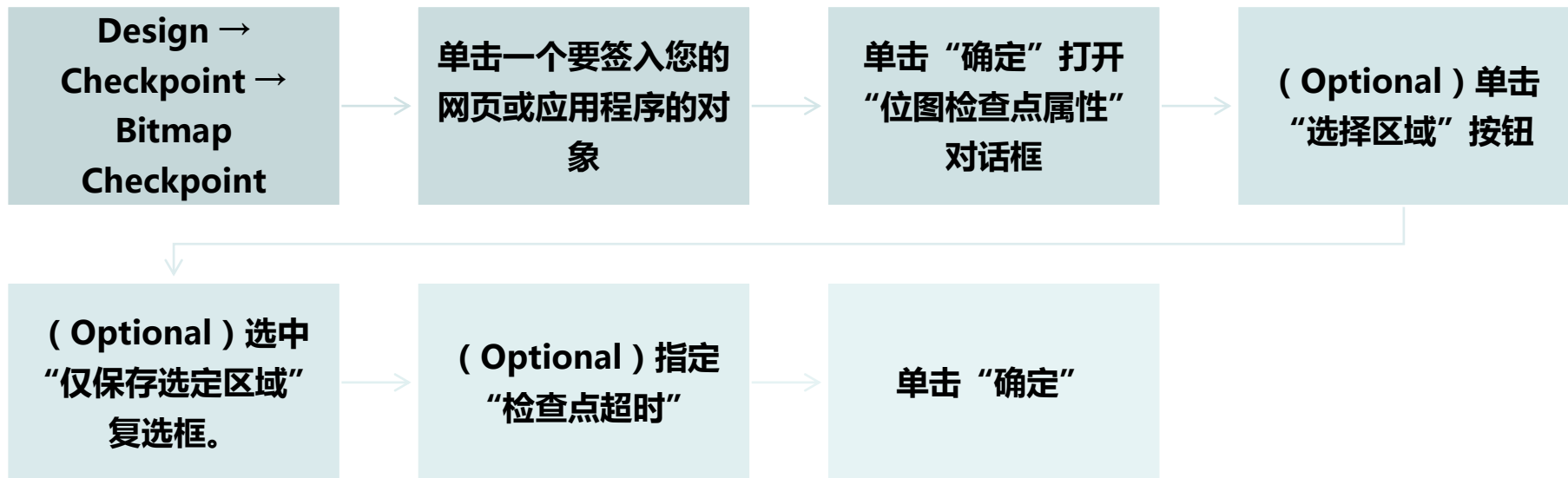
### 8.4.1 位图检查点的定义

- “位图检查点” 检查位图格式的网页或应用程序区域
- UFT将对录制该测试或组件时存储的位图与当前在网页上或应用程序中显示的对象或对象的选定区域进行比较。
- 如果存在差异，UFT将捕获实际对象的位图并将其与期望的位图一起显示在“测试结果”窗口的详细信息部分中。



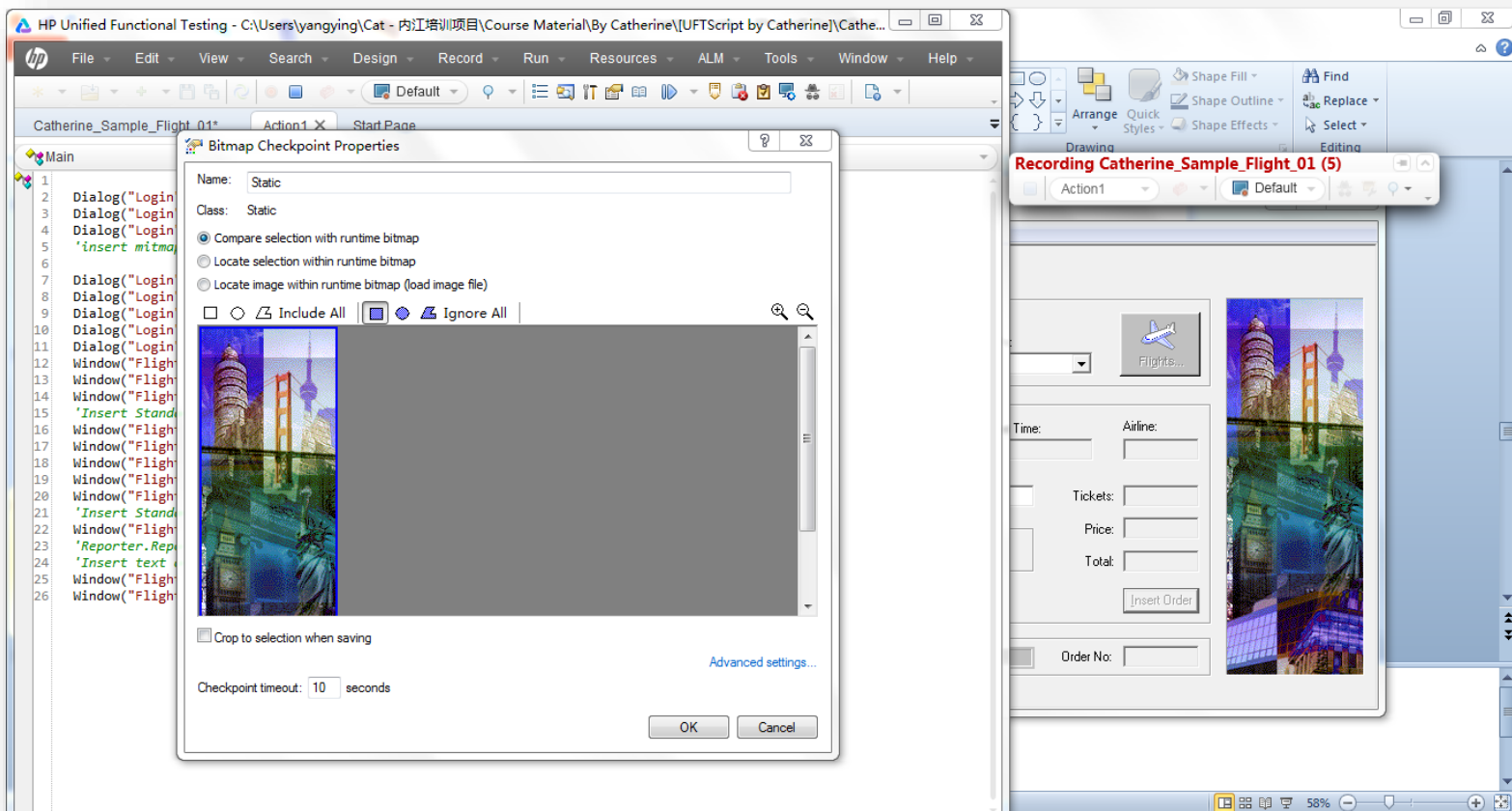
## 8.4.2 添加位图检查点

### ■ 在录制时添加位图检查点



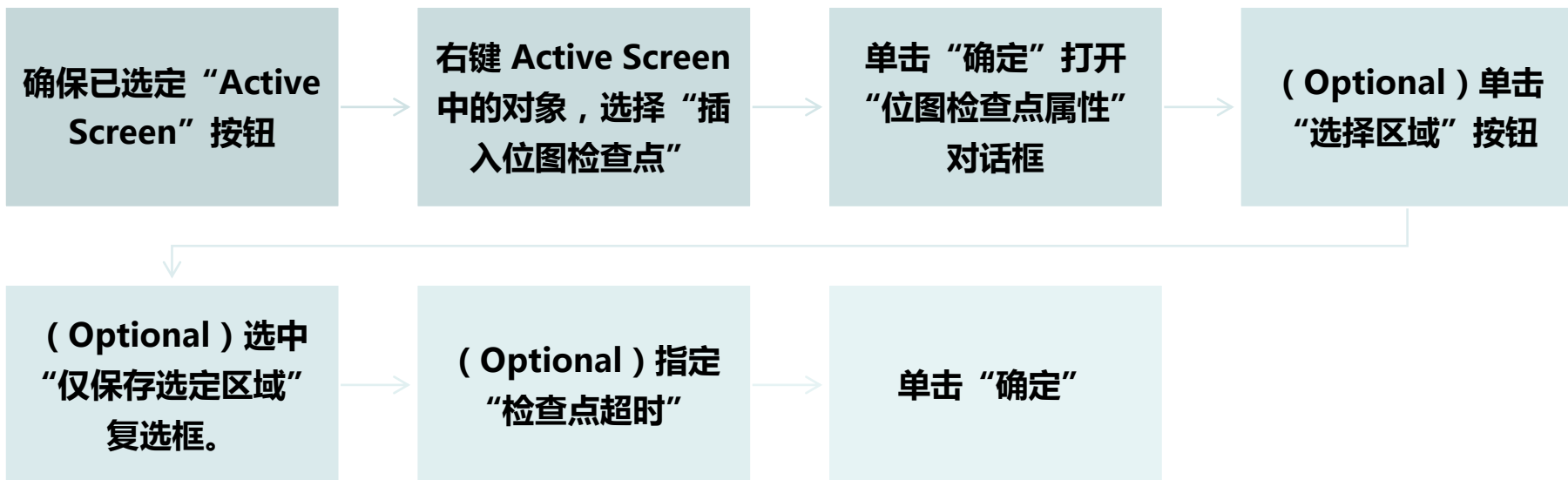
## 8.4.2 添加位图检查点

### ■ 在录制时添加位图检查点

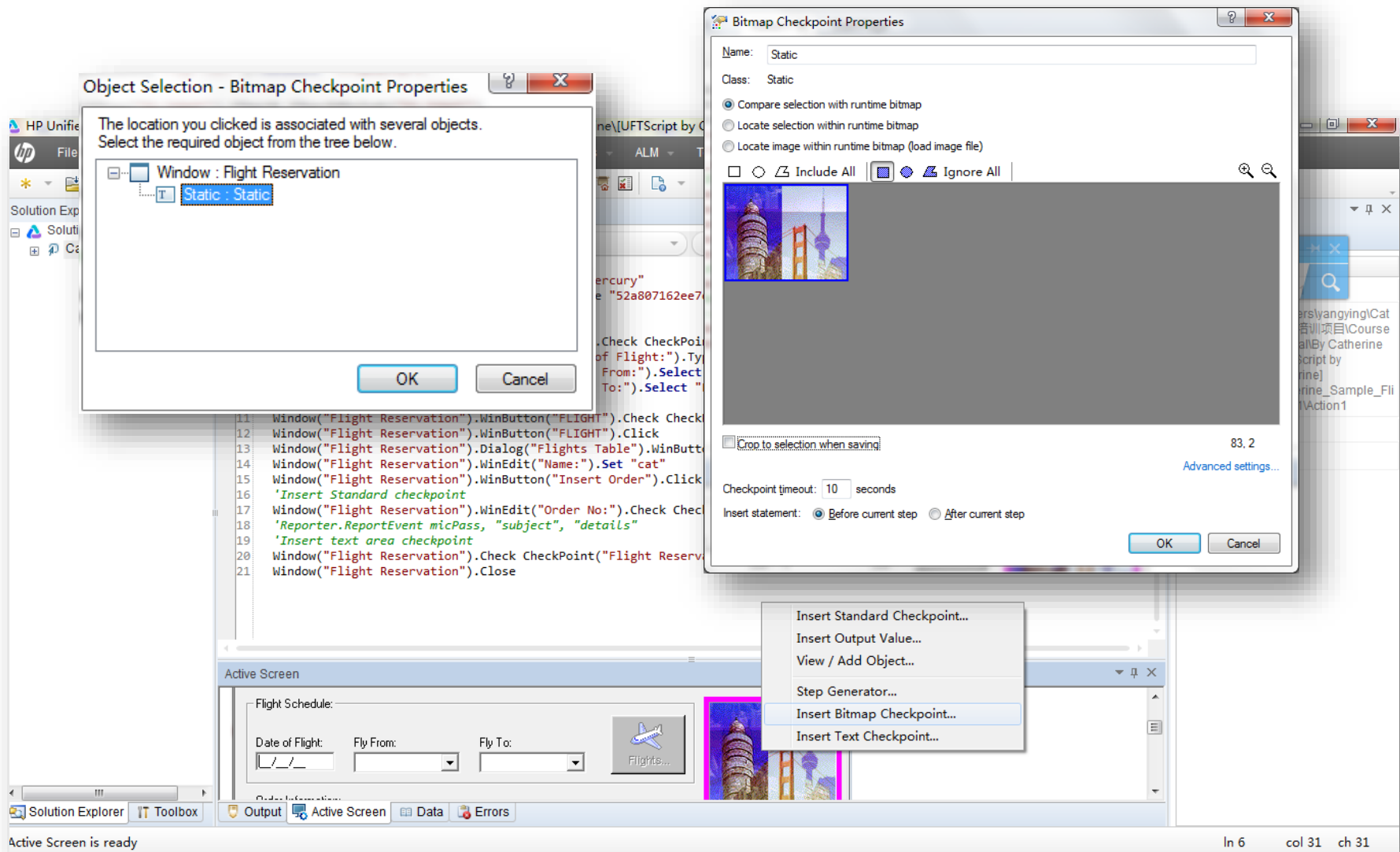


## 8.4.2 添加位图检查点

### ■ 在录制时添加位图检查点



## 8.4.2 添加位图检查点





## 8.6 自定义检查点

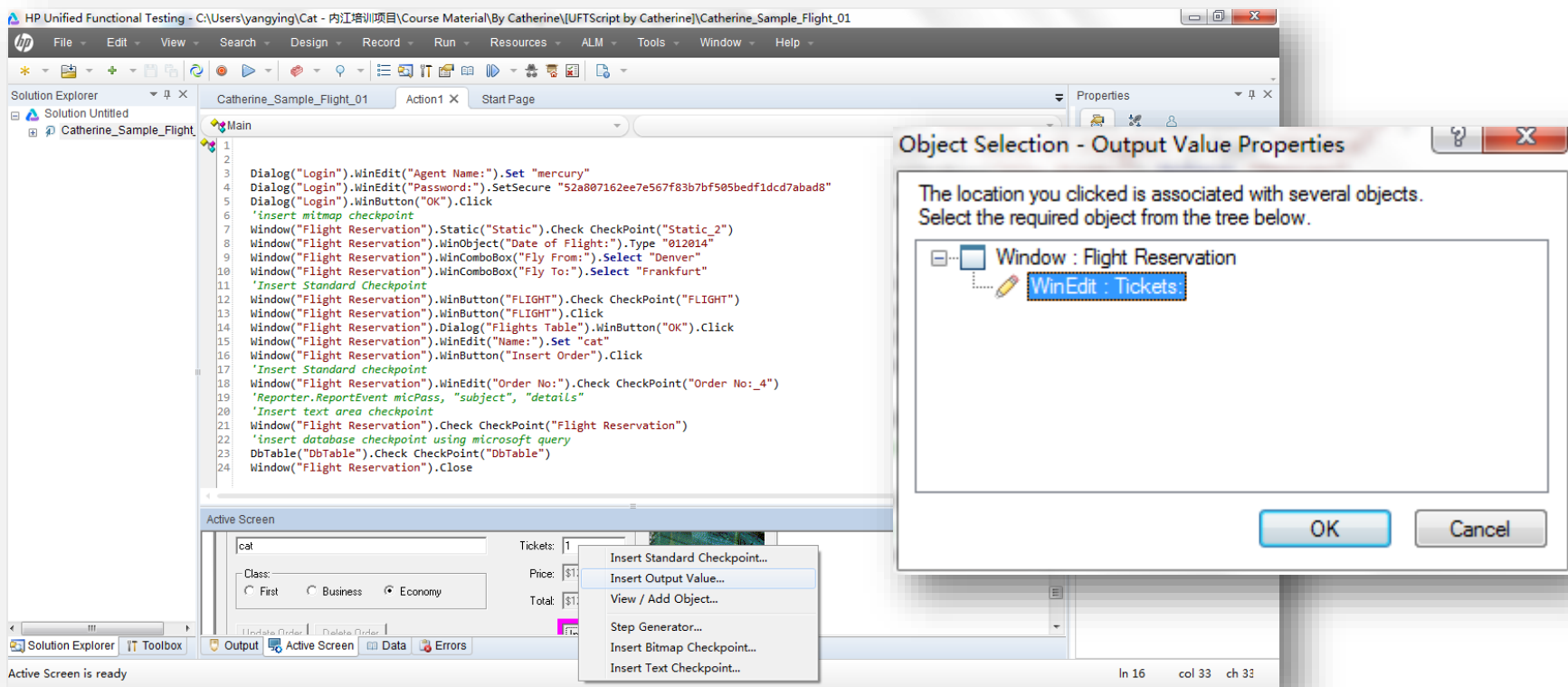
### 使用自定义检查点可以用来：

- 利用输出参数来校验测试中的动态值
- 利用条件语句来判断测试的输出是可接受还是不可接受的
- 如果测试的输出是通过或者失败，添加一个ReportEvent到报告中



## 8.6.2 UFT自定义检查点

### ■ 创建一个输出参数。



## 8.6.2 UFT自定义检查点

### ■ 创建一个输出参数。

The screenshot shows the HP Unified Functional Testing (UFT) interface. The main window displays a test script for 'Catherine\_Sample\_Flight\_01'. The script includes steps for logging in, reserving a flight, and checking checkpoints. A data table is visible at the bottom, with the following content:

	A1	B	C	D	E	F	G
1	Tickets_text_out						
2							
3							

The script code is as follows:

```

1 Dialog("Login").WinEdit("Agent Name:").Set "mercury"
2 Dialog("Login").WinEdit("Password:").SetSecure "52a807162ee7e567f83b7bf505b"
3 Dialog("Login").WinButton("OK").Click
4 'insert mitmap checkpoint
5 Window("Flight Reservation").Static("Static").Check CheckPoint("Static_2")
6 Window("Flight Reservation").WinObject("Date of Flight:").Type "012014"
7 Window("Flight Reservation").WinComboBox("Fly From:").Select "Denver"
8 Window("Flight Reservation").WinComboBox("Fly To:").Select "Frankfurt"
9 'Insert Standard Checkpoint
10 Window("Flight Reservation").WinButton("FLIGHT").Check CheckPoint("FLIGHT")
11 Window("Flight Reservation").WinButton("FLIGHT").Click
12 Window("Flight Reservation").Dialog("Flights Table").WinButton("OK").Click
13 Window("Flight Reservation").WinEdit("Name:").Set "cat"
14 'insert output parameter
15 Window("Flight Reservation").WinEdit("Tickets:").Output CheckPoint("Tickets")
16 Window("Flight Reservation").WinButton("Insert Order").Click
17 'Insert Standard checkpoint
18 Window("Flight Reservation").WinEdit("Order No:").Check CheckPoint("Order No")
19 'Reporter.ReportEvent micPass, "subject", "details"
20 'Insert text area checkpoint
21 Window("Flight Reservation").Check CheckPoint("Flight Reservation")
22 'insert database checkpoint using microsoft query
23 DbTable("DbTable").Check CheckPoint("DbTable")
24

```

The screenshot shows the 'Output Value Properties' dialog box. The 'Name' field is set to 'Tickets:'. The 'Class' is 'WinEdit'. The 'Type' is 'text'. The 'Property' is 'text'. The 'Value' is '<Tickets\_text\_out>'. The 'Configure value' section shows 'Output Type: DataTable', 'Output Name: Tickets\_text\_out', and 'Location: Global Sheet'. The 'Insert statement' section has 'Before current step' selected.

Type	Property	Value
<input type="checkbox"/> ABC	enabled	False
<input type="checkbox"/> ABC	focused	False
<input type="checkbox"/> ABC	height	20
<input checked="" type="checkbox"/> ABC	text	<Tickets_text_out>
<input type="checkbox"/> ABC	width	60

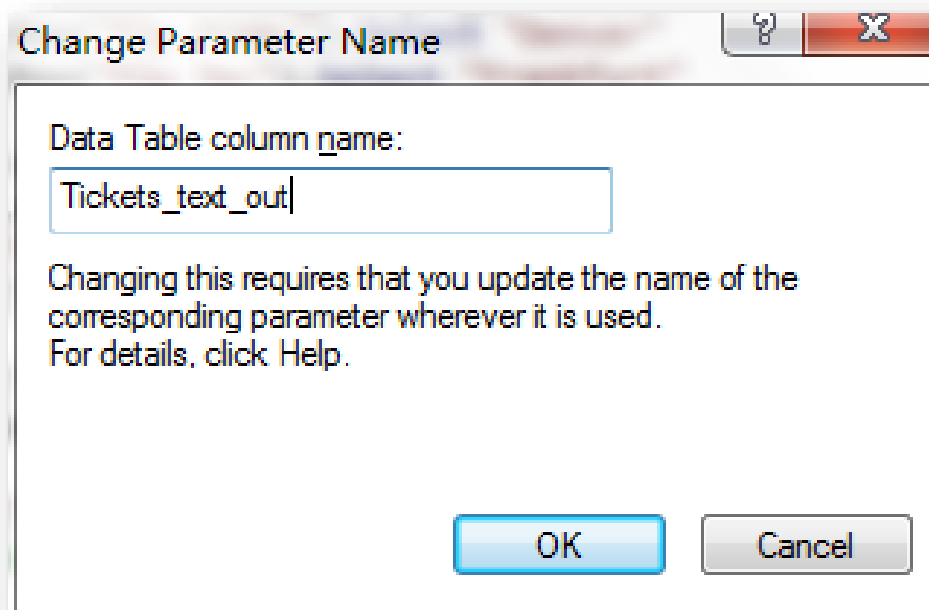
Configure value

Output Type: DataTable  
Output Name: Tickets\_text\_out  
Location: Global Sheet

Insert statement: ☒ Before current step ☐ After current step

## 8.6.2 UFT自定义检查点

### ■ 更改列名。



## 8.6.2 UFT自定义检查点

### ■ 使用数据表公式。

The screenshot displays the HP Unified Functional Testing (UFT) interface. The main window shows a test script for 'Catherine\_Sample\_Flight\_01'. The script includes steps for logging in, reserving a flight, and checking out. A data table is visible at the bottom of the script editor, containing columns for Tickets, Price, Total, PriceCheck, and others. The formula for the PriceCheck column is shown as  $\text{PriceCheck} = \text{ROUND}(\text{A1} * \text{B1.2}) - \text{ROUND}(\text{C1.2})$ .

**Test Script:**

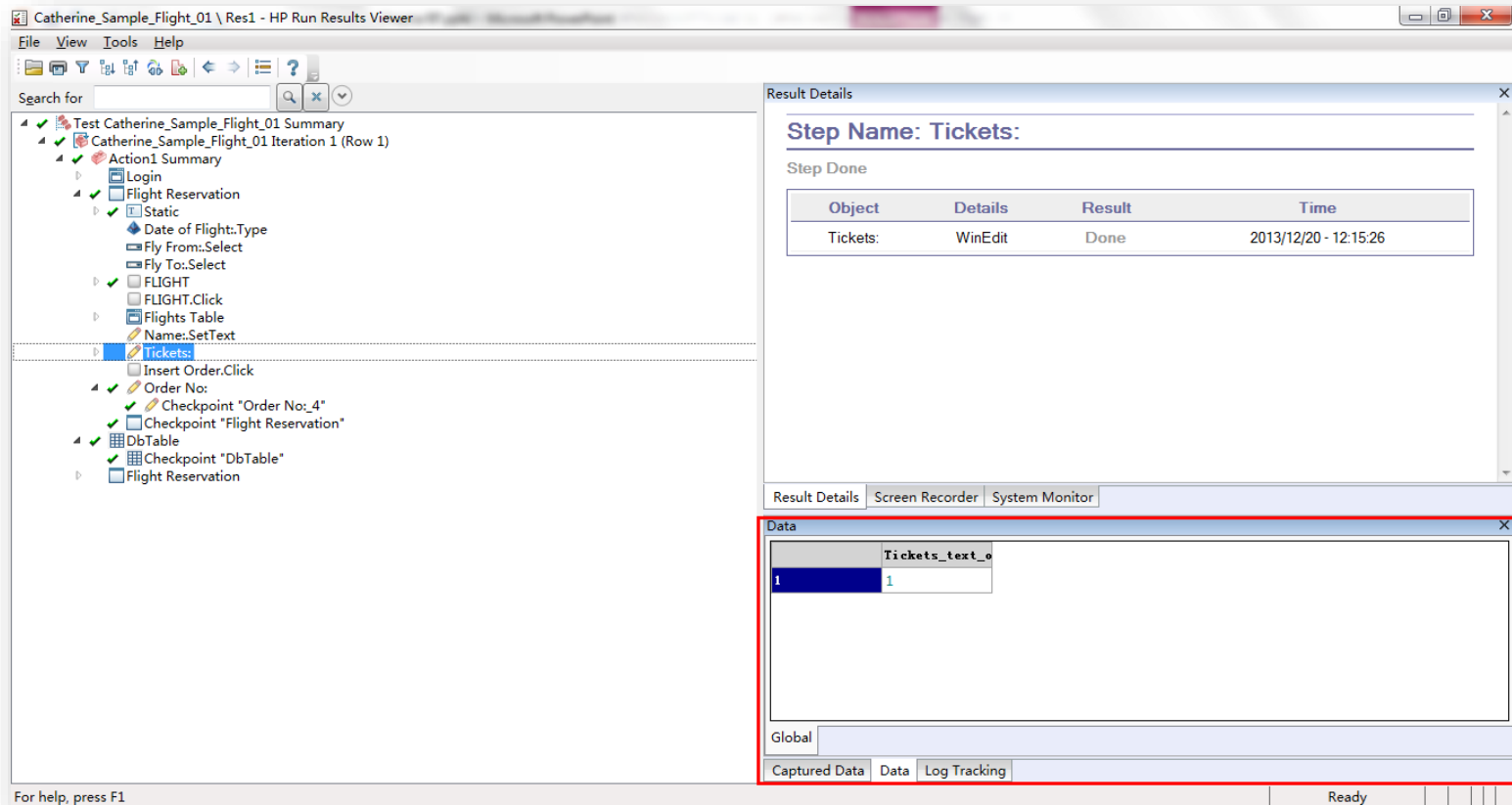
```
1 Dialog("Login").WinEdit("Agent Name:").Set "mercury"
2
3 Dialog("Login").WinEdit("Password:").SetSecure "52a807162ee7e567f83b7bf505bedf1dcd7abad8"
4
5 Dialog("Login").WinButton("OK").Click
6 'insert mitmap checkpoint
7 Window("Flight Reservation").Static("Static").Check CheckPoint("Static_2")
8 Window("Flight Reservation").WinObject("Date of Flight:").Type "012014"
9 Window("Flight Reservation").WinComboBox("Fly From:").Select "Denver"
10 Window("Flight Reservation").WinComboBox("Fly To:").Select "Frankfurt"
11 'Insert Standard Checkpoint
12 Window("Flight Reservation").WinButton("FLIGHT").Check CheckPoint("FLIGHT")
13 Window("Flight Reservation").WinButton("FLIGHT").Click
14 Window("Flight Reservation").Dialog("Flights Table").WinButton("OK").Click
15 Window("Flight Reservation").WinEdit("Name:").Set "cat"
16
17 'insert output parameter
18 Window("Flight Reservation").WinEdit("Price:").Output CheckPoint("Price:")
19 Window("Flight Reservation").WinEdit("Tickets:").Output CheckPoint("Tickets:")
20 Window("Flight Reservation").WinEdit("Total:").Output CheckPoint("Total:")
21
22 Window("Flight Reservation").WinButton("Insert Order").Click
23 'Insert Standard checkpoint
24 Window("Flight Reservation").WinEdit("Order No:").Check CheckPoint("Order No:_4")
25 'Reporter.ReportEvent micPass, "subject", "details"
```

**Data Table:**

	Tickets	Price	Total	PriceCheck	E	F	G	H	I	J	K	L	M
1				$\text{PriceCheck} = \text{ROUND}(\text{A1} * \text{B1.2}) - \text{ROUND}(\text{C1.2})$									
2													
3													

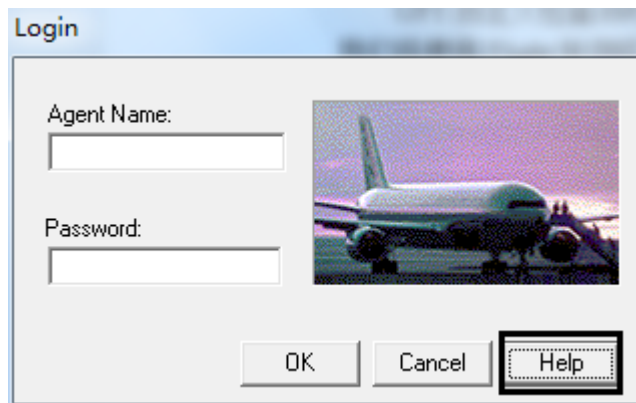
## 8.6.2 UFT自定义检查点

### ■ 查看运行结果。



## 8.6.2 UFT自定义检查点

### ■ 自定义检查点示例： 判定Help按钮是否存在：



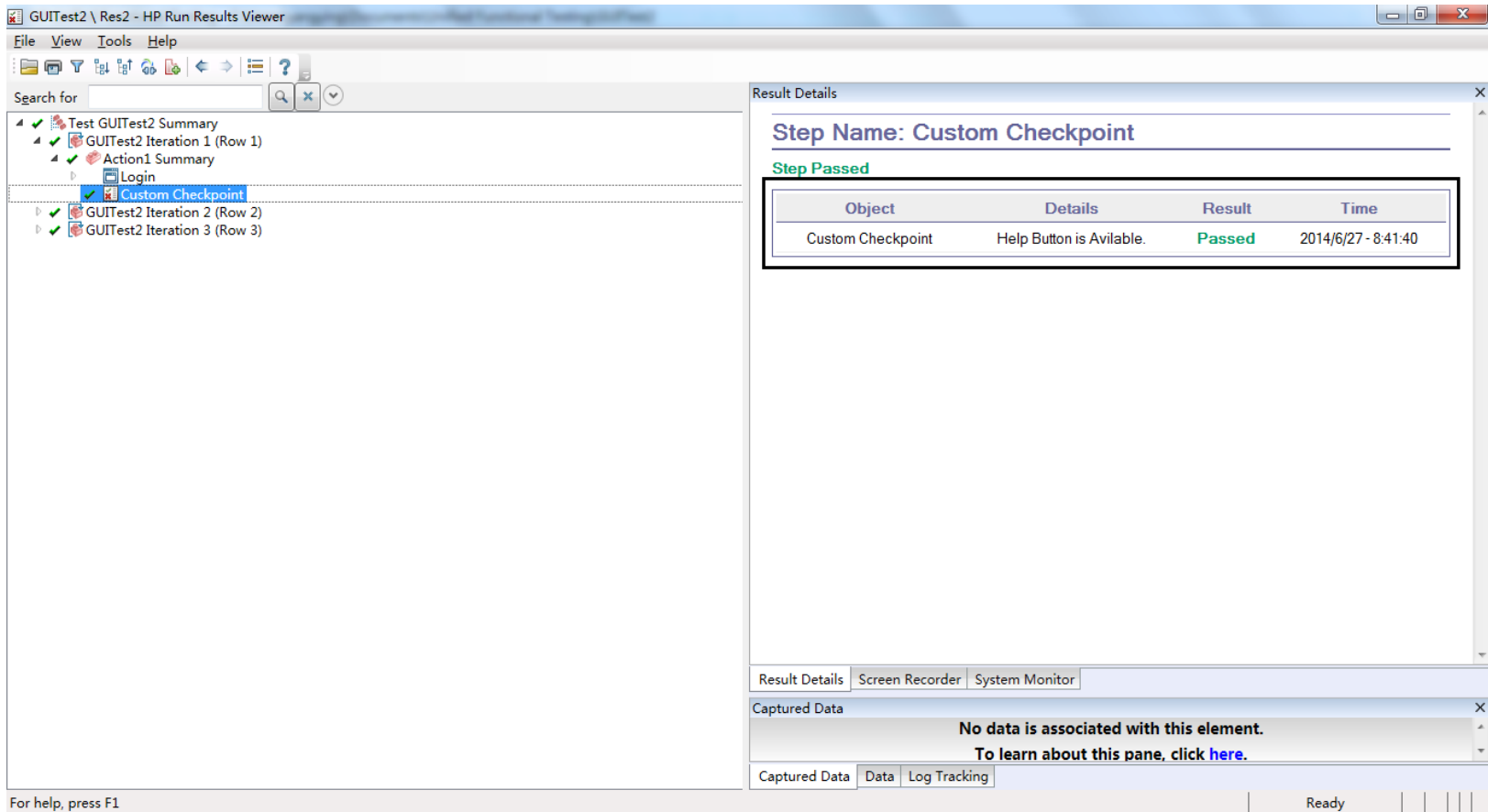
自定义检查点以条件语句对检查点进行判定，并将判定结果输出到“Run Results”中，如下代码所示：

```
If Dialog("Login").WinButton("Help").Exist(5) Then
    Reporter.ReportEvent micPass, "Custom Checkpoint", "Help Button
is Avilable."
Else
    Reporter.ReportEvent micFail, "Custom Checkpoint", "Help Button
is not Avilable."
End If
```

## 8.6.2 UFT自定义检查点

### ■ 自定义检查点示例：

### Report结果：



The screenshot displays the HP Run Results Viewer window for a test named 'GUI Test2'. The left pane shows a tree view of the test results, with 'Custom Checkpoint' selected under 'GUI Test2 Iteration 1 (Row 1)'. The right pane shows the 'Result Details' for this step, indicating it 'Passed'.

**Test GUI Test2 Summary**

- GUI Test2 Iteration 1 (Row 1)
  - Action1 Summary
    - Login
      - Custom Checkpoint**
- GUI Test2 Iteration 2 (Row 2)
- GUI Test2 Iteration 3 (Row 3)

**Result Details**

Step Name: Custom Checkpoint

Step Passed

Object	Details	Result	Time
Custom Checkpoint	Help Button is Available.	Passed	2014/6/27 - 8:41:40

For help, press F1

Ready



## 8.8.3 Reporter.ReportEvent方法

- 在创建自定义检查点时，我们常常用到 Reporter.ReportEvent 方法输出我们的检查结果：

**Reporter.ReportEvent EventStatus,  
ReportStepName, Details, [ImageFilePath]**



### ■ Reporter.ReportEvent方法讲解：

- **EventStatus:** 为数字或定义好的常量，其具体内容对应的输出情况如下：
  - 0 or micPass: 使运行结果显示为通过即Pass。
  - 1 or micFail: 使运行结果显示为失败即Fail。
  - 2 or micDone: 使运行结果不影响通过或者失败的结果。
  - 3 or micWarning: 显示警告信息，但不影响通过或者失败的结果，也不影响程序的回放。
- **ReportStepName:** 该步骤在Run Results中显示的名称。
- **Details:** 该步骤在Run Results中显示的描述。
- **ImagePath:** 该参数是可选的，可截取运行时的图片显示在该报告中。

- 本章主要讲解了UFT检查点的内容，包括UFT自身包含的检查点，重点讲解了标准检查点的使用和一些特殊对象的检查方法。并介绍了在实际项目中用的最多的自定义检查点的使用方法。

