

Keyword Driven Framework In Uft With Complete Source Code

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Automating tests is crucial for efficient software development, and UFT (Unified Functional Testing) offers robust capabilities for this. A particularly powerful approach is using a **keyword-driven framework in UFT**, which significantly improves test maintainability, reusability, and collaboration. This article dives deep into building such a framework, providing complete source code examples and exploring its advantages. We will also cover topics like **UFT test automation**, **data-driven testing in UFT**, and the overall implementation of a **keyword driven test framework**.

Understanding the Keyword Driven Framework in UFT

A keyword-driven framework, also known as a table-driven framework or action word framework, separates test script logic from test data. Test steps are represented by keywords, which are then mapped to actions within UFT. This decoupling allows business users, with limited coding experience, to design tests by selecting keywords and inputting data, while developers focus on creating robust, reusable functions. This approach dramatically reduces the time and effort needed for test creation and maintenance. For example, instead of writing complex VBScript code for each login attempt, a keyword like "Login" would execute the necessary actions.

Benefits of a Keyword Driven Framework in UFT

Adopting a keyword-driven testing approach in UFT offers several significant advantages:

- **Increased Reusability:** Keywords represent reusable components, significantly reducing redundant code. A single "ClickButton" keyword, for instance, can be used across multiple tests and applications.
 - **Enhanced Maintainability:** Changes to the application under test require modifications only in the keyword's implementation, not across multiple test scripts.
- **Improved Collaboration:** Business analysts and testers can design tests using keywords without deep programming knowledge, fostering better collaboration between development and testing teams.
 - **Reduced Development Time:** The reusable nature of keywords significantly accelerates test development.
- **Easier Test Data Management:** Test data is separated from the script logic, making it easier to manage and update. This naturally integrates with **data-driven testing in UFT**, enhancing the framework's flexibility.

Implementing a Keyword Driven Framework in UFT: Step-by-Step Guide

Let's illustrate the implementation with a simple login scenario. We will utilize Excel sheets to store our test data and keywords.

1. Keyword Repository (Excel Sheet):

Create an Excel sheet with columns for "Keyword," "Action," "Object," and "Value."

Keyword	Action	Object	Value
OpenBrowser	OpenBrowser	Browser	Chrome
Navigate	Navigate	URL	https://www.google.com
EnterText	Type	UsernameTextbox	myusername

| EnterText | Type | PasswordTextbox | mypassword |

| ClickButton | Click | LoginButton | |

| CloseBrowser | CloseBrowser | Browser | |

2. UFT Test Script:

```
````vbscript
```

```
Option Explicit
```

```
Function RunKeyword(Keyword, Action, Object, Value)
```

```
On Error Resume Next
```

```
Dim objObject
```

```
Set objObject = Description.Create()
```

```
objObject("name").Value = Object
```

```
Select Case Keyword
```

```
Case "OpenBrowser"
```

```
Browser("title:=.*").Open Value
```

```
Case "Navigate"
```

```
Browser("title:=.*").Navigate Value
```

```
Case "EnterText"
```

```
objObject.Type Value
```

```
Case "ClickButton"
```

```
objObject.Click
```

```
Case "CloseBrowser"
```

```
Browser("title:=.*").Close
```

```
Case Else
```

```
MsgBox "Keyword not found: " & Keyword
```

```
End Select
```

```
On Error GoTo 0
```

```
End Function

Sub Main

 Dim objExcel, objWorksheet, i, LastRow

 Set objExcel = CreateObject("Excel.Application")

 objExcel.Visible = True

 Set objWorksheet = objExcel.Workbooks.Open("C:\Keywords.xls").Worksheets(1) 'Path to your Excel file

 LastRow = objWorksheet.Cells(Rows.Count, 1).End(xlUp).Row

 For i = 2 To LastRow 'Start from row 2 to skip header row

 RunKeyword objWorksheet.Cells(i, 1).Value, objWorksheet.Cells(i, 2).Value, objWorksheet.Cells(i, 3).Value, objWorksheet.Cells(i, 4).Value

 Next

 objExcel.Quit

 Set objExcel = Nothing

End Sub

'''
```

This script reads the keyword data from the Excel sheet and executes the corresponding actions in UFT. Remember to replace `"C:\Keywords.xls"` with the actual path to your Excel file. This basic example demonstrates the fundamental principles. A more robust implementation would include error handling, logging, and more sophisticated object identification techniques. Furthermore, the usage of external libraries or customized functions can significantly enhance the capabilities of your **keyword driven test framework**.

## Extending the Keyword Driven Framework: Advanced Techniques

This simple framework can be extended considerably. Consider adding features like:

- **Parameterization:** Pass dynamic values to keywords, allowing for greater flexibility in test execution.
- **Reporting:** Integrate with reporting tools to generate detailed test results.
- **Modular Design:** Break down complex keywords into smaller, more manageable sub-keywords.
- **Object Repository:** Utilize UFT's object repository for better object identification and maintenance.
- **Data-Driven Testing Integration:** Seamlessly integrate data from external sources like databases or CSV files.

## Conclusion

Implementing a keyword-driven framework in UFT offers a significant upgrade in your test automation strategy. By separating test logic from test data, you achieve better maintainability, reusability, and collaboration. While the initial setup requires planning, the long-term benefits, including reduced development time and increased efficiency, are substantial. The provided code serves as a foundation; further development and customization will tailor it to your specific needs and testing environment. Remember that robust error handling and comprehensive reporting are essential for a production-ready keyword-driven framework. Utilizing this approach effectively leverages the strengths of UFT for robust and efficient test automation.

## FAQ

### Q1: What are the limitations of a keyword-driven framework?

A1: While keyword-driven frameworks offer many advantages, they also have limitations. Complex test scenarios might require intricate keyword combinations, increasing the complexity of the keyword repository. Also, debugging can be more challenging compared to script-based approaches as you're working at a higher level of abstraction. Furthermore, initial setup and maintenance of the keyword repository can be time-consuming.

### Q2: How does a keyword-driven framework differ from a data-driven framework?

A2: Keyword-driven frameworks separate test logic (keywords) from test data, while data-driven frameworks primarily focus on separating test data from test scripts. A keyword-driven framework uses keywords to represent actions, while a data-driven framework uses data sets to drive the test execution. Often, a hybrid approach is used, combining the strengths of both.

### Q3: Can I use external data sources with my keyword-driven framework?

A3: Absolutely! The power of a keyword-driven framework shines when combined with external data sources. You can easily read test data from Excel files, databases (like SQL Server or Oracle), CSV files, or even APIs. This allows for a more efficient and flexible testing process.

### Q4: How do I handle error conditions within my keywords?

A4: Robust error handling is crucial. Incorporate error-checking mechanisms within each keyword function. Use `On Error Resume Next` and `On Error GoTo 0` statements in VBScript to gracefully handle exceptions. Log error messages for detailed debugging and reporting.

### Q5: What are some best practices for designing keywords?

A5: Keywords should be concise, descriptive, and easily understandable. Strive for reusability, making them as generic as possible. Avoid overly complex keywords; break down complex actions into smaller, more manageable units. Maintain a consistent naming convention.

### Q6: How can I integrate my keyword-driven framework with a CI/CD pipeline?

A6: Integrate your UFT tests into your CI/CD pipeline using tools like Jenkins or Azure DevOps. This allows for automated test execution as part of the build process, providing continuous feedback and improving the development cycle.

### Q7: What are some alternatives to a keyword-driven framework in UFT?

A7: Other approaches include data-driven frameworks, modular frameworks, and hybrid frameworks combining aspects of various approaches. The best choice depends on the project's complexity and specific needs.

### Q8: How can I improve the object identification within my keyword-driven framework?

A8: Employ a robust object repository and explore different object identification techniques, such as using descriptive programming, regular expressions, and smart identification. Consider using image-based recognition for scenarios with challenging object identification.

## Keyword Driven Framework in UFT with Complete Source Code: Streamlining Your Test Automation

Automating QA procedures is crucial in today's rapid software development lifecycle. Among the plethora of testing frameworks available, the Keyword Driven Framework (KDF) sits out for its flexibility and maintainability. This article investigates into the deployment of a KDF inside UFT (Unified Functional Testing), providing a complete source code example and stressing its perks.

The core idea behind a KDF includes separating test reasoning from test details. Test actions are depicted as keywords, each relating to a particular action within the application under test (AUT). Such keywords

are stored in outside data sources like databases, allowing testers to readily alter test scenarios without changing the foundational code. This encourages recyclability and considerably reduces preservation exertion .

Think of it like a guideline: the keywords are like the elements, and the data sheet is the recipe itself. You can readily replace elements (data) without re-writing the complete guideline (script).

### **Implementing a Keyword Driven Framework in UFT:**

The following sections outline the implementation of a KDF using UFT. We will focus on a basic example, but the concepts can be extended to handle more intricate cases.

#### **1. Keyword Definition:**

We begin by defining our keywords. These keywords will embody frequent actions carried out during testing, such as sign-in, travel to a particular page, input data into entries, and verify outcomes . Each keyword will be associated to a corresponding UFT subroutine .

#### **2. Data Sheet:**

Next, we generate an separate data sheet (e.g., an Excel spreadsheet) to contain test data. That sheet will include columns for each keyword and the associated data necessary for that keyword. For example, for the "login" keyword, we might have columns for "username" and "password".

#### **3. UFT Script:**

Our UFT program will then read the data from the separate data sheet and execute the appropriate UFT functions dependent on the keywords present in the data.

#### **Complete Source Code Example:**

(Note: This is a simplified example. A real-world implementation would be significantly more extensive .)

```
```vbscript
' UFT Script

Option Explicit

Sub Main()

Dim objExcel, objWorksheet, strKeyword, strData

Dim iRow, iCol, lastRow

' Create Excel object

Set objExcel = CreateObject("Excel.Application")

Set objWorksheet = objExcel.Workbooks.Open("C:\testData.xls").Worksheets("Sheet1") 'Change path

' Get last row

lastRow = objWorksheet.Cells(Rows.Count, 1).End(xlUp).Row

' Loop through each row in the Excel sheet
```

```
For iRow = 2 To lastRow 'Start from row 2 to skip header
    strKeyword = objWorksheet.Cells(iRow, 1).Value
    Select Case strKeyword
        Case "Login"
            Call Login(objWorksheet.Cells(iRow, 2).Value, objWorksheet.Cells(iRow, 3).Value)
        Case "NavigateToPage"
            Call NavigateToPage(objWorksheet.Cells(iRow, 2).Value)
        Case "EnterData"
            Call EnterData(objWorksheet.Cells(iRow, 2).Value, objWorksheet.Cells(iRow, 3).Value)
        Case "VerifyResult"
            Call VerifyResult(objWorksheet.Cells(iRow, 2).Value)
        Case Else
            Reporter.ReportEvent micFail, "Keyword not found:", strKeyword
    End Select
    Next iRow
    ' Clean up
    objWorksheet.Close
    objExcel.Quit
    Set objWorksheet = Nothing
    Set objExcel = Nothing
End Sub

' Function to perform login
Sub Login(strUsername, strPassword)
    ' UFT code to perform login using strUsername and strPassword
    ' ...your login code here...
    Reporter.ReportEvent micPass, "Login successful", "User: " & strUsername
```

End Sub

' ...other functions for NavigateToPage, EnterData, VerifyResult...

...

testData.xls (Example):

| Keyword | Data1 | Data2 |

|-----|-----|-----|

| Login | user1 | pass1 |

| NavigateToPage | /homePage | |

| EnterData | txtFirstName | John |

| VerifyResult | Success Message | |

Advantages of Keyword Driven Framework:

- Improved reusability of test components .
 - Easier test preservation.
- Improved teamwork between QA engineers and business stakeholders .
 - Reduced test development time.
 - Stronger test reach .

Conclusion:

The Keyword Driven Framework offers a strong and effective approach to quality assurance. By distinguishing test logic from test data, it substantially enhances sustainability and reduces maintenance cost. The demonstration source code provides a fundamental skeleton that can be enlarged and adapted to fit various validation needs.

Frequently Asked Questions (FAQs):

Q1: What are the limitations of a Keyword Driven Framework?

A1: While strong, KDFs can become complex to control for extremely extensive and complex projects. The initial setup can also necessitate substantial work.

Q2: Can I integrate a Keyword Driven Framework with other testing tools?

A2: Yes, KDFs are not restricted to UFT. The foundational ideas can be utilized via other testing tools and dialects .

Q3: How do I handle errors in a Keyword Driven Framework?

A3: Solid error management is essential . You can deploy error-handling blocks inside your UFT functions to seize and process errors elegantly.

Q4: What are some best practices for designing a Keyword Driven Framework?

A4: Follow clear naming guidelines for keywords. Keep keywords small and targeted. Correctly document your keywords and their purpose . Use a revision control system to monitor changes to your framework .

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