What is QTP

► QTP stands QuickTest Professional

► It is an automated testing tool provided by HP/Mercury Interactive

► QTP integrates with other Mercury testing solutions including:

- TestDirector/Quality Center
- WinRunner
- LoadRunner

► Utilizes an add-in architecture for compactness and extensibility

Types of Testing

► Manual

- ▪ Usage of steps defined within test cases to manually test the application to ensure that it functions properly

► Automated

- ▪ Automation of the manual testing process to all unattended execution and ensure repeatability

Benefits of Automated Testing

► Speed
  - ▪ Automated tests are fast and can execute at a speed faster than a person can click

► Reliable
  - ▪ The tests can perform the exact same steps every time without concern about human error

► Repeatable
  - ▪ You run the same test against multiple builds/versions of an application

► Reusable
  - ▪ Can be reused as a sub-part of different tests

What Should Be Automated

► Good candidates

- Tests executed for each build
- Business critical tests
- Tests that are difficult/tedious to perform manually

► Bad candidates

- Tests without predictable results
- Test that require variable input/responses from the tester
- Tests that perform operations in multiple environments

QTP Environment

► Windows

- C++, Visual Basic, Java, .NET

► Web

- Web Applications, Web services, Flash

► Other technologies

- SAP, Siebel, Oracle, Peoplesoft, ActiveX

Add-in Architecture

► Enables QTP to provide support for multiple technologies.

► Add-ins are software that need to be installed on a system that has QTP. It then becomes integrated with the QTP environment.

► QTP is sold with the ability to understand a few technologies, add-ins provide QTP with the ability to understand additional technologies

► Users are able to select the specific add-ins for the technologies they are testing thereby reducing the memory footprint of QTP

QTP Add-ins

► When QTP is started, you should select only the add-ins for technologies that are used with your application.

► Some of the available add-ins are

- ActiveX - For testing software written using ActiveX (also known as COM) technology. This technology allows people to create objects in one language and use those objects within other languages/applications

- Visual Basic - For applications written in the Visual Basic language

- Web - For testing web applications written in any language. In web applications, we interact with the application though a web browser and so the web application can be written in any language.

Testing Process

- ► Create Object Repository
- ► Create Tests
  - ▪ Record
  - ▪ Edit
    - ► Insert checkpoints
    - ► Insert synchronization points
    - ► Insert output values
    - ► Parameterize test
    - ► Include VBScript code
- ► Debug test
- ► Run tests

Introduction To ExpenseCalculator

► Windows based application written in Visual Basic

► Available at
http://www.genixcorp.com/testing/ExpenseCalculator.zip

► Allows individuals to track expenses

► Uses a local Access database

What is a QTP Test

► It is called a test script but is actually a folder containing several files

► Broken down into subparts known as 'Actions'

► Internally represented using the VBScript programming language

Actions

► A test is broken into a series of 'Actions'

  ▪ Actions can be renamed to reflect what they do

  ▪ Actions can be invoked multiple times within a test

  ▪ Actions can be marked as reusable so they can be called from other tests

    ► Only reusable actions can be called from other tests

Overview QTP Tool

► Menus

► Toolbar
  ▪ Provides easy access to items on the menus

► Record & Run Settings

► Test Settings

► Tools

QTP Tool [Code Window]

► Provides a WYSIWYG editor to use in writing your test script

- Keyboard view

  ► Provides an icon-based representation of the code being written. This is often the easiest code view for non-programmers

- Expert View

  ► Provides a VBScript code based representation of the code being written. This is the most flexible code

QTP Tool [Views]

► Active Screen

  - Provides screenshots of all objects recorded and also supports object highlighting

► Data Table

  - Shows the data file that can be used to configure the application

► Debug Viewer

  - Provides tools to debug code and view the value of variable/expression during code execution

Create Object Repository [STEP 1]

► **Intro to Object Oriented Programming**

- Objects are a representation of every item found in an application
- Objects are visual (e.g. Button, Textbox) and non-visual (e.g. Dictionary, Reporter) elements within an application. Each object has the following elements
  ► Properties, Methods & Events
- All objects must have a unique name and belong to a class.
- Objects are referenced in code using dot notation
  objectName.Method()

Objects

► Properties
  - These are characteristics of the object e.g. the text on a button. QTP uses this to recognize the object

► Methods
  - These are built in functionality of the object. The VBScript code that we write (or record) actually makes calls to the methods of an object e.g. Reporter.ReportEvent()
    Here ReportEvent is the method of the Reporter object

► Events
  - These are what can be done to an object. This is used by programmers to determine what an object does in response to an action you perform. It is however unused in QTP.

QTP Object Identification Process

► Object Identification

- The tool determines what properties of objects are recorded

► Object Spy

- Allows users to view the property of an object without recording it

► Object Repository

- Holds information recorded about each object allowing the test to identify the object during execution

Creating an Object Repository

► Per Action

- An object repository is created for each action
- This means that multiple object repositories can be created per test

► Shared

- A single objected repository is used for multiple tests

CREATE TEST [STEP 2]

► Record Steps

► Edit

- Insert synchronization points
- Insert checkpoints
- Insert output values
- Parameterize values
- Include VBScript code

Record

- ► Read the outline of steps to perform
- ► Practice performing the steps to minimize error
- ► Choose record mode
  - ▪ Context Sensitive
  - ▪ Analog
  - ▪ Low level
- ► RECORD
- ► Stop, Save test, playback

Edit Test

- ► Insert synchronization points
  - ▪ Used to slow down execution of a test script
- ► Checkpoints
  - ▪ Used to **check** <u>expected value</u> of a step against the <u>actual value</u> at a specific **point** during execution
- ► Insert output values
  - ▪ Used to retrieve values from the AUT
- ► Insert Parameterization
  - ▪ Allows you to store data in the data table
- ► Include VB Script code
  - ▪ Last option. Very powerful.

Synchronization Point

► Specific time

- Uses the wait function to pause the test for a specific amount of time [in seconds]

► Until an event occurs

- Pauses until a specific property of an object has a specific value

Checkpoints

► Standard
- Checks multiple properties of a single object

► Text
- Checks part or all the text within an object

► Text Area
- Checks part or all the text within a text area object

► Bitmap
- Checks the visual layout of an entire object or a portion of the object

► Database
- Checks data in the database

► Accessibility
- Checks web content accessibility against W3C accessibility rules for the disabled

► XML
- Checks files using XML rules

Output values

- ► Standard
  - ▪ Stores a single property of an object in the data table
- ► Text
  - ▪ Stores part or all the text of an object in the data table
- ► Text Area
  - ▪ Stores the content of a text area in the data table
- ► Database
  - ▪ Retrieves content from a database [using a SQL query] and stores it in the data table
- ► XML
  - ▪ Retrieves content from an XML file and store it in the data table

Parameterize Data

► Allows your test to read data from the data table.

► The data table is an Excel spreadsheet file editable from using Excel or any other application that can edit a .xls document

► The DataTable is encapsulated in QTP in the DataTable object. This object contains a sheet for every action in the test as well as a globally accessible sheet known as the global sheet

► Each sheet in the DataTable contains several columns and rows.

► The columns can be renamed by double-clicking on the header of the column.

VBScript Coding

► When the tools provided by QTP are not sufficient to test an application, VBScript coding can be used.

► VBScript was created as a web programming language by Microsoft and licensed by many companies for use in their tools.

Recap

► Checkpoints - check

► Synchronization points - wait

► Output values – retrieve information

► Parameterization – configuration data

► VBScript – adds programmable logic