An Introduction to the Bean Scripting Framework

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BSF accomplishes this by providing an API for Java to call scripting languages to execute scripts and an object registry that exposes Java objects (rather than only Java Beans) to scripting languages.

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Authors

- Original authors:
  - Sanjiva Weerawarana
  - Matthew Duftler
  - Sam Ruby

A Little History (cont.)

Authors (cont.)

- Authors of initial pass at debugging
  - Olivier Gruber
  - Jason Crawford
  - John Ponzo
- Author of several modifications to Jasper involving BSF
  - John Shin
- Current maintainers (also had a hand in adding debugging)
  - Chuck Murcko
  - Victor Orlikowski

Supported Languages

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- Tcl (via Jacl)
- NetRexx
- XSLT stylesheets (via Xalan and Xerces)

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- VBScript, LotusScript and PerlScript were supported under an ActiveScript engine, but this engine is not currently actively developed.

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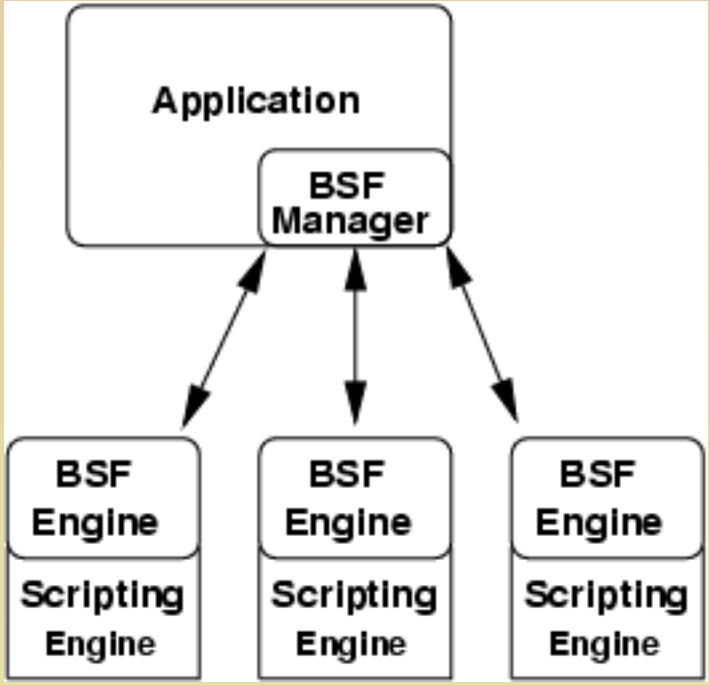

Application Server Installation

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When developing standalone Java applications, ensure that bsf.jar and any jars required for your desired scripting language are in the CLASSPATH.
When executing scripts calling Java functions or using Java objects, BSF provides a wrapper for calling the scripts in bsf.jar

Usage - JSP

Under either Tomcat or Websphere, set the language attribute
in the page directive to make a JSP use a language other than Java.

```
<%@ page language=‘‘javascript’’ %>
```

This instructs the page compiler to call BSF for any scriptlets, expressions, etc.
in the JSP, and informs BSF that the language being used is Javascript.

Usage - JSP (cont.)

JSPs using scripting languages under BSF have the same set of JSP implicit objects available as Java JSPs.

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Example:

```
<html>
<head><title>A Minimal Hello World JSP</title></head>
<%@ page language=‘‘javascript’’ %>
<body>
<%
    out.println(‘‘<b>Hello world, from Javascript!</b>’’);
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In this case, BSF is used to execute the scriptlet, and uses the `out` implicit object to print a boldface string.

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Both of these tags have a required language attribute, which allows you to specify the language used on a per-expression or per-scriptlet basis.

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The following code snippet illustrates the process:

Usage - Servlets and Applications (cont.)

```
import com.ibm.bsf.*;

class Foo {
    BSFManager mgr = new BSFManager ();
    ...
    public void fooExec() {
        mgr.registerBean(‘‘myWin’’, myWindow);
        BSFEngine jsEngine =
              mgr.loadScriptingEngine(‘‘javascript’’);
        jsEngine.exec(‘‘fooScript.js’’, 0, 0, ‘‘2+2’’);
    }
}
```

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- `public BSFEngine loadScriptingEngine(String lang)`
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The BSFManager also provides methods for compiling scripts and expressions into a CodeBuffer object, and for calling anonymous methods.

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- `public void declareBean(String beanName, Object bean, Class type)`
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  Used to look up objects in the object registry, and return them for use in a script
- `public void declareBean(String beanName, Object bean, Class type)`
  Used to make an object "automatically" available to scripts (not needing to be looked up using `lookupBean()`

The first two methods provide access to Java objects via BSF's object registry. The third makes the specified object an implicit object within the context of all currently loaded scripting language engines.

Usage - Servlets and Applications (cont.)

Within the execution context of any script that is being executed underneath BSF, an implicit `bsf` object is available, which represents the BSFManager that is managing the script.

This object provides access to all of the BSFManager's methods, but is usually used for calling `lookupBean()` within scripts in order to access objects made available through the object registry.

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In order to add a new language engine, one must implement the BSFEngine interface for the new language.

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- Create an instance of BSFManager in your application
- Make the BSFManager aware of your language via the `registerScriptingEngine()` method.

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If you have written a scripting language, and would like to hook it into a Java application using BSF, you must do the following:

- Implement the BSFEngine interface for your language
- Create an instance of BSFManager in your application
- Make the BSFManager aware of your language via the `registerScriptingEngine()` method.

```
public static void registerScriptingEngine (String lang,
                String engineClassName, String[] extensions)
```

`lang` is the language name for use with the `loadScriptingEngine()` method, `engineClassName` is the name of your class implementing BSFEngine, and `extensions` is an array of possible filename extensions for your scripts.

Running standalone scripts

BSF provides a wrapper for running standalone scripts that require it.

Simply run:

```
java com.ibm.bsf.Main
```

and a help message will be provided.

As in the case of all other scripts, the implicit `bsf` object is available to standalone scripts.

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An emphasis was placed on designing a generic API for script debugging;
this is still an area in need of work.
Interested parties are encouraged to contribute.

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