Unit 2: Getting Started

Unit Objectives

After completing this unit, you should be able to:

- Understand the basic architecture of dynamically generated web sites.
- Understand the features and capabilities of the ColdFusion server.
- Create a project using ColdFusion Builder.
- Use ColdFusion's built-in troubleshooting features to help you debug your code.

Unit Topics

- Reviewing ColdFusion's Features and Capabilities
- Introducing the ColdFusion Administrator
- Working with ColdFusion Builder
- Debugging and Troubleshooting your Apps

Reviewing ColdFusion's Features and Capabilities



The ColdFusion Server is a J2EE application server that is used to dynamically generate content from requests that are typically received via the Hypertext transfer protocol (http).

You'll create applications for the CF server using a combination of the ColdFusion Markup Language (CFML) which syntactically resembles HTML and ColdFusion Script (cfscript) which is similar to Javascript.

The response from a ColdFusion server is typically derived from a variety of inputs and data sources including, but not limited to:

•

• User input from HTML forms

User input from PDF forms

- Content stored in PDF files
- User credentials derived from a single sign-on architecture (LDAP / Active Directory/ Oauth)
- Content on the server's file system or network
- POP Mail Gateways

• Contant stand in Missage

Content stored in databases

- Content stored in Microsoft Excel files
- Content stored in Microsoft Sharepoint
- Data pulled from other websites / web services.
- WebSocket requests

The ColdFusion server can generate every commonly used file format, including, but not limited to:

• HTML

•

- Javascript
- CSS
- PDF
- ZIP Files

- Microsoft Word
- JPEG
- PNG
- Microsoft Excel
- JSON / XML

Accessing Your Back Office Resources

ColdFusion is the "glue" that responds to your requests from your web client and accesses back-office resources. Features and capabilities include, but are not limited to the following:

- Enterprise relational databases
- SMTP/POP Mail Gateways
- PDF Generation
- PDF Form Filling & Data Extraction
- Authentication & Authorization
- Logging
- Deploy rich UI widgets
- SOAP web service creation/invocation
- REST web service creation/invocation
- Oauth (CF 11)

- Spreadsheet read/write
- Read/Write Zip Files
- LDAP Integration
- Sharepoint Integration
- Exchange Integration
- Output Caching
- File I/O
- FTP
- Invoke .NET Assemblies
- Invoke Java Servlets
- Output social media widgets (CF 11)

Understanding Dynamic Content Generation

As illustrated by figure 1, the ColdFusion server is "middleware" that receives requests from any http or websocket client and generates a dynamically created response from data that is marshaled from a variety of back-office resources.



Figure 1: ColdFusion dynamic content generation

HTTP requests are handled by a separate web server process which has been configured to pass requests to the ColdFusion server for processing based on the following requested file name extensions:

File Extension	Description
.cfm	Implies that the generated output will be an HTML page.
.cfml	Implies that the generated output will be an HTML page.
.cfc	Implies that the returned data will be in JSON/XML format. CFC files are typically used for supporting AJAX/SOAP web services and to contain the business logic for fetching the raw data that is output in response to .cfm/.cfml requests.
.cfr	Executes a ColdFusion report file, generated by ColdFusion's Report Builder application.

Therefore, the following http requests would be passed from the web server to the ColdFusion server for processing:

- http://localhost/index.cfm
- http://localhost/displayrecord.cfml?id=25
- http://localhost/index.cfc?method=GetSomeData

Using ColdFusion in a Three-Tiered Architecture

In the pre-smartphone days, organizations could settle on creating a single front-end that supported only a limited number of desktop browsers. With the proliferation of mobile devices of all shapes, sizes, and capabilities, corporate IT must now consider developing multiple front-ends for their apps.

The best practice for building web-based applications is to organize your code into three distinct service layers:

- 1. The User-Interface
- 2. The Business Intelligence Tier
- 3. The Database Tier



Figure 2: 3-Tiered Architecture

At an absolute minimum, line-of-business apps should support desktop and tablet with reduced functionality available for phones. This requirement frequently requires that multiple front-end apps be developed in parallel, each accessing a common REST-based webservices api implemented at the business intelligence tier.

ColdFusion 11 meets the requirements of the business intelligence tier by making it easy to:

- Connect to enterprise databases
- Implement RESTful web services
- Convert data to/from Javascript object notation (JSON) and XML.
- Partition your codebase into business rules and data handling stored in ColdFusion components (CFC) while handling html markup generation via ColdFusion pages (CFM).

Understanding the Challenges of Dynamically Serving Content

Dynamically serving web pages enables you to:

- Deliver personalized content
- Manage structured content in a database
- Marshal data from back-office servers or the cloud to produce a "mashup"
- Implement roles-based security

However, there are some potential "gotchas" associated with using this architecture that you should constantly evaluate during architecture and code reviews that include:

- Scalability
- Performance
- Robustness
- Security

Building a Scalable Infrastructure

The term "scalability" generally refers to how well your application supports multiple users simultaneously accessing your system. An optimally scalable application will provide a consistently acceptable response time for each concurrent user of your system. While no system is infinitely scalable, however, a well-built architecture's response times should degrade linearly and predictably in proportion to the number of concurrent users.

Scalability can be measured by performing load testing whereby an automated program simulates concurrent users by running use-case scripts against your application.

Items affecting scalability include, but are not limited to, the following:

- ColdFusion server configuration
- Server hardware
- Database performance
- Server network infrastructure
- Source code efficiency under load

Building a Performant App

The term "performance" generally refers to the end-user's experience with using your application and the time that it takes for them to complete a single task. Multi-page applications that require full-page reloads, forcing the user to wait for interface redraws can be inherently difficult to make performant. Other issues affecting performance involve:

- User Bandwidth
- Server Bandwidth
- Data compression / minification
- Use of GPU intensive CSS transitions and animations
- Using html tables to layout the content of your pages into multiple columns.
- Failure to merge and compress CSS files
- Failure to use sprites and base-64 encoding to reduce the number of http requests needed to load images.

Single-page applications that only make http requests to transmit and receive data via AJAX requests generally tend to be more performant than multi-page apps.

Building a Robust Application

The term "robustness" generally refers to the ease in which an application can be modified to adapt to ever-changing business requirements and the addition of new features. Since labor costs typically represent the vast majority of an application's development budget, robustness considerations are typically the most important part of your decision-making processes. To create a robust app:

- Always comment your code.
- Separate your business logic from your presentation tier by implementing a 3-tiered architecture.
- Use code libraries and well-defined frameworks whenever possible.
- Group related functions into "packages"
- Adopt coding standards and stick to them.
- Participate in code reviews with your peers.
- Implement source control.
- Create a well-documented, automated build/test/deploy process that migrates your code from development to testing to production.

Building a Secure Application Architecture

Security is of paramount importance when developing any application. During this course, we'll discuss a series of features in ColdFusion that you should implement to prevent well-known exploits such as SQL injection and cross-site scripting.

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Memory Variables Mappings	Enable Secure Profile		
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Document	Secure Profile Settings Summary		~
Settings Summary	Setting Name	Current Value	Secure Default Value
DATA & SERVICES	Enable Robust Exception Information	true	false
Data Sources	Session Cookie Timeout (Minutes)	15768000	1440
Solr Server	Enable CFSTAT	true	false
Neb Services	Enable RDS	true	true
REST Services Flex Integration PDE Service	Disable access to internal ColdFusion Java components	false	true
DEBUGGING & LOGGING	Site Error Handler		/CFIDE/administrator/templates/secure_profile_error.cfm
SERVER MONITORING	Use UUID for cftoken	true	true
EXTENSIONS	Missing Template Error Handler		/CFIDE/administrator/templates/missing_template_error.cfm
EVENT GATEWAYS	Start Flash Policy Server	true	false
SECURITY	Disable updating of ColdFusion internal cookies	false	true
Administrator	Admin separate UserID Required	false	true
Sandbox Security	RDS Authentication Enabled	true	true
Jser Manager	Admin Authentication Enabled	true	true
Allowed IP Addresses Secure Profile	BDS separate UserID Disabled	true	false
PACKAGING & DEPLOYMENT	Allow concurrent login sessions for Administrator Console	true	false
J2EE Archives	Enable WebSocket Server	true	false
ENTERPRISE MANAGER	Maxium size of post data (MB)	20.0	20.0
Instance Manager	Enable Global Script Protection	true	true
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Figure 3: Using the ColdFusion 11 Secure Profile Feature

Other techniques to harden your implementation include, but are not limited to:

- Installing ColdFusion using a secure profile.
- Making the ColdFusion Administrator tool only accessible to users who have direct access to the server console.
- Staying current with CF server updates and operating system updates.
- Disabling ColdFusion features that give developers direct access to the server's file system.
- Encrypting sensitive data in your database using FIPS strong encryption (CF Enterprise)
- Making your app only available via the HTTPS protocol.

Choosing the Correct ColdFusion Version

ColdFusion has five different licenses:

• Adobe ColdFusion Developer Edition

This is a free, fully functional version of ColdFusion for local development of applications. The service will only respond to requests from two remote IP addresses.

• Adobe ColdFusion Express

Enables you to quickly setup a development or demonstration instance of ColdFusion without running a full installer or following the complete installation procedure. Essentially this is ColdFusion without the Apache Solr full text search engine, Jetty web server, PDF generation service, or Microsoft .NET services connector. These services can be installed later by using the ColdFusion Add On Services Installers, detailed later in this chapter.

• ColdFusion 11 Standard

Supports the same features as ColdFusion 11 Enterprise except has limited support for WebSockets, PDF generation, Microsoft Exchange integration, encryption, enterprise databases (ORACLE), J2EE deployment, Multisite REST services, event gateways, execution of scheduled tasks, and server management.

• ColdFusion 11 Enterprise

Supports all ColdFusion features and capabilities.

• Amazon AWS

ColdFusion is also available as a pay-as-you-go service on Amazon Web Services.

See the ColdFusion buyers guide at <u>http://adobe.ly/1GkWhz6</u> for full details regarding the differences between versions.

Installing ColdFusion

Adobe ColdFusion has installers for Windows, OS/X, Linux, and Solaris. However, other installers are also available that enable CF to communicate with other server-side processes, including:

- The ColdFusion Add On Services Installer that includes:
 - Apache Solr full-text search engine
 - Jetty web server
 - PDF generation service (Windows and Linux only)

PhoneGap Shell App

This is the recommended approach to quickly test and debug hybrid ios/android applications that are generated by ColdFusion 11.

Adobe LiveCycle Data Services

Typically used to push data in realtime to Adobe Flash/Flex/AIR applications.

- ColdFusion .NET Integration Services Enables your ColdFusion server to execute Microsoft .NET assemblies.
- ColdFusion 11 Sharepoint Integration WebParts Allows ColdFusion applications to be displayed as a Sharepoint webpart.
- ColdFusion 11 Server Manager WAR files Application-server specific WAR files that enable you to run Start and Stop operations from the ColdFusion Server Manager.

Programming with the ColdFusion Markup Language

The ColdFusion Markup Language (CFML), uses an intuitive, caseinsensitive, tag-based syntax to interact with server-side resources and dynamically generate content based on user's requests.

The following snippet outputs a web page containing the text "hello world"

```
<html>
<head>
<body>
<cfset out = "Hello World">
<cfoutput>
#variables.out#
</cfoutput>
</body>
```

</body> </html>

Programming with CFSCRIPT

As illustrated by the following code snippet, CFScript resembles Javascript and generally requires less typing than CFML.

```
<html>
<head>
<body>
<cfscript>
out = "Hello World";
writeOutput(out);
</cfscript>
</body>
</html>
```

Note, however, that there are several key differences between CFScript and Javascript that include, but are not limited to the following:

- Variable declarations (var keyword) may only used in user-defined functions and threads.
- Unlike Javascript, CFScript is not case sensitive.
- All CFScript statements must end with a semicolon.
- Line breaks in CFScript are ignored.
- CFScript does not have access to the browser's DOM.
- CFScript supports hundreds of server-side functions including methods for interfacing with databases.

Note: This course focuses on using CFML

Using Alternatives to ColdFusion

In addition to the Adobe ColdFusion server, other CFML engines are available, however, none are 100% compatible with Adobe ColdFusion's feature set. These include:

- **Railo (www.getrailo.com)** An open-source ColdFusion engine
- Lucee (www.lucee.org) An open-source fork of Railo that uses a more community-driven model to evolve the ColdFusion language and feature set.
- BlueDragon

(http://www.newatlanta.com/products/bluedragon/index.cfm) Enables you to run CFML as a .NET framework assembly and is generally compatible with ColdFusion 7 syntax.

Walkthrough 2-1: Getting Started with CFML



During this exercise you will verify that your ColdFusion server is processing requests.

In this walkthrough, you will perform the following tasks:

- Define a ColdFusion variable
- Output a ColdFusion variable

Steps

Create the Hello World Example

- 1. Using Notepad, Sublime Text, or any other text editor, open /ftcf11/walk/walk2-1/index.html
- 2. Between the <body> tags, use the <cfset> tag to define a variable named "myname" that is equal to your name.

<cfset myname = "Steve Drucker">

3. After the code that you inserted in the prior step, insert a <cfoutput> block.

<cfoutput>

</cfoutput>

4. Inside the <cfoutput> block, insert an <h1> block that outputs the string "Hello", along with the variable that you defined in step 2.

<h1>Hello #variables.myname#</h1>

5. Save the file and browse the following url:

http://localhost:8500/ftcf11/walk/walk2-1/index.html

Note that your output contains the CFML code.

- 6. Return to your editor and save a copy of the file into the same folder, using a file name of index.cfm
- 7. Browse the following url:

http://localhost:8500/ftcf11/walk/walk2-1/index.cfm

Note that you should now see your name output to the web page.

8. Use your browser's View Source feature to view the generated html source code. Note that ColdFusion stripped all of the CFML from the generated output. Why?

– End of Walkthrough --

Introducing the ColdFusion Administrator



The ColdFusion Administrator, depicted in Figure 4, is a web-based application that enables you to configure ColdFusion to connect to other enterprise servers and gateways, allocate system resources for optimal scalability, download and apply server patches, and more.

Cf Adobe ColdFusion 11 Adm		# • • •	LOGOUT
Server: clusion Expand Alice / Collapse Ali Co * SEVER SETTINGS Settings Request Turing Caching Claring Claring	Data & Services > Data Sources Add and manage your data source connections and Data Source Names (DSNs). You use a DSN to connect ColdFusion to a variety of data sources.		
Mappings	Add New Data Source		
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Java Applets CFX Tags Custom Tag Paths CORBA Connectors	Vertly Al Connections	MysqL 5	
· EVENT GATEWAYS			
Settings Gateway Types	© 1997 - 2014 Adobe Systems Incorporated and its licensors. All Rights Reserved.		

Figure 4: ColdFusion Administrator

Configuration settings generally fall into the following categories:

- Throughput Settings
- Caching
- Variable Persistence*
- SMTP Mail Settings*
- Task Scheduling
- Datasources*
- REST services*
- Debugging*

- Custom Tag Paths*
- Server Mappings*
- Event Gateways
- Security
- Packaging & Deployment
- Clustering
- Server Monitoring
- Server Updates*

Items marked with an asterisk will be covered in this course.

Every feature of the ColdFusion Administrator is available for you to invoke programmatically via the CF Admin API.

Note: For a complete description of how to properly secure and configure your ColdFusion server, please see our follow-on class, <u>Administering</u> <u>ColdFusion 10/11</u>.

Connecting to a Database

Writing code to interface with a database first requires that you register that database with the ColdFusion Administrator.

ColdFusion Enterprise supports the following databases:

- Apache Derby
- Postgress

ORACLE

- Microsoft SQL Server
 Sybase
- MySQL

DB2

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You can also connect to any other database that has an available JDBC driver available.

Note: You will use MySQL and Apache Derby during this course.

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Figure 5: Connecting to a MySQL5 Database

As illustrated in Figure 5, connecting CF to your database generally requires you to enter the following information:

Datasource Name

This is the name by which you will refer to your data schema from within your ColdFusion application. While it can be any string, the best practice is to not embed any spaces or special characters in the name.

• Database

The name of the database schema that you intend to access.

• Server

The TCP/IP address or host name of your database server

• Port

The TCP/IP port on which your database server is listening for requests.

• Username

The database account under which all requests will be issued, unless an alternative username is supplied in your code. Care should be taken to create a database user account that is specific to your ColdFusion application and that has limited rights to the specified schema.

• Password

The password for the database account under which all requests will be issued unless an alternative password is supplied in your code.

• CLOB

This box should be checked if your database has any TEXT/Memo fields that can exceed 64K characters in length.

Allowed SQL

This feature enables you to restrict access to specific SQL commands. Most ColdFusion applications typically only issue SELECT/INSERT/UPDATE/DELETE commands as well as invoke Stored Procedures.

Connecting to an SMTP Mail Gateway

ColFusion's <cfmail> tag enables you to dynamically generate and send email messages. Before you can use <cfmail>, however, you must set a default SMPT mail gateway as illustrated in figure 6.



Figure 6: Connecting to a Mail Server

Downloading and Applying Server Updates

As illustrated by Figure 7, the ColdFusion Administrator alerts you when new product updates are available.

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Updates	© 1997 - 2014 Adobe Systems Incorporated and its licensors. All Rights Reserved.	
	Notices, terms and conditions pertaining to third party software are located at http://www.adobe.com/go/thirdparty/ and incorporated by reference herein.	

Figure 7: Patching the ColdFusion Service

Clicking on the *Server Updates* link takes you to a screen where you can download and install the latest updates at the click of a button. Note that server updates should always be tested on your development and staging infrastructure before being moved into production.

Walkthrough 2-2: Using the ColdFusion Administrator



During this exercise you will configure your ColdFusion server for development and apply any available patches.

In this lab, you will perform the following tasks:

- Install any available ColdFusion patches
- Define a MySQL Datasource
- Connect to an SMTP mail gateway

Steps

Install ColdFusion Patches

- 1. Open your web browser to http://localhost:8500/CFIDE/administrator/
- 2. Enter your admin password and click the Login button.
- 3. Click on **Server Update** > **Updates**. You should see at least one update that is available.
- 4. Click on the Download and Install button.
- 5. At the prompt notifying you that the CF service will be restarted, click the **Continue** button.
- 6. Wait for the CF service to restart.
- 7. Click the **OK** button to view installed updates.
- 8. Enter your password and click the Login button.
- 9. Verify that the latest update was installed.

Define a MySQL Datasource

- 10. Click on Data & Services > Data Sources
- 11. Enter the following information:
 - Data Source Name: ProposalManager
 - Driver: MySQL 5
- 12. Click Add

- 13. Enter the following information:
 - Database: ProposalManager
 - Server: 127.0.0.1
 - UserName: cfuser-ftcf
 - password: learncf!
- 14. Click the **Submit** button. The ColdFusion administrator should report that your connection to the database succeeded.
- 15. Click on the ProposalManager datasource.
- 16. Click on the Show Advanced Settings button.
- 17. Turn on the checkbox to Enable long text retrieval (CLOB)
- 18. Turn off the checkboxes to allow CREATE, DROP, ALTER, GRANT, and REVOKE operations.
- 19. Click the **Submit** button.

Connect to an SMTP Mail Gateway

- 20. Click on Server Settings > Mail
- 21. Enter the following information:
 - Mail Server: localhost
 - Verify Mail Server Connection: checked
- 22. Click the **Submit Changes** button. ColdFusion should report that it can connect to your local James mail server.

- End of Walkthrough --

Working with ColdFusion Builder



Since ColdFusion is a script-based language, you can use any editor that outputs plain text to develop your codebase. However, there are a number of integrated development environments (IDE) available that can help facilitate coding and debugging including:

- Sublime Text
- JetBrains IntelliJ IDEA
- Adobe Brackets
- ColdFusion Builder
- ColdFusion Report Builder

Using Sublime Text

Sublime Text 2 is a nearly-free text editor with a plugin architecture. Language helpers are available for ColdFusion, HTML, CSS, and nearly every other web framework.

Figure 8: Sublime Text 2

Developers who have achieved a good working knowledge of ColdFusion and web scripting tend to gravitate towards using Sublime because of it's speed and laser-focus on writing code.

ColdFusion-specific plugins for sublime can be installed via Sublime's package manager.

Using JetBrains IntelliJ IDEA

JetBrains IntelliJ IDEA is a well-respected, commercial integrated development environment for developing Java applications. As illustrated in Figure 9, IntelliJ IDEA has built-in code hinting for CFML.



Figure 9: JetBrains IntelliJ IDEA

Using Adobe Brackets

Adobe Brackets is a free, open-source editor geared towards web development. It features a plugin architecture similar to the one found in Sublime Text that supports CFML code hinting.



Figure 10: Adobe Brackets has a CFML plugin for limited code hinting.

Using ColdFusion Builder

ColdFusion Builder 3.x is the only fully-featured integrated development environment for building ColdFusion applications. It is based on Eclipse and packaged in either a standalone app or as an Eclipse plugin.

Adobe ColdFusion Builder	3 File Edit Navigate Search Project Run	Window Help M 2 9	🎍 🕼 🐷 🗢 🕙 💲 🖷 100% BBBF ThuApr16 1.	:47 PN
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Figure 11: ColdFusion Builder v3

Features include, but are not limited to the following:

- Code Completion
- RDS Connection to Server
- Query Builder
- ColdFusion Framework Support
- Tailview Log Viewer
- CF Server Stop/Start
- Advanced Find/Replace

- Automatic Code Formatting
- Integrated Task Management
- Code Insight
- Interactive Debugging
- Integration with Phonegap Build
- Multidevice Inspection
- Snippets

Creating a ColdFusion Project

Create a new ColdFusion project in ColdFusion builder by selecting File>New>ColdFusion project or, if you have an existing codebase, File>Import>ColdFusion>Import existing Project.

As illustrated in Figure 12, defining your project is simply a matter of assigning it a name, location, and ColdFusion version number.

	New ColdFusion Project
Project Information Enter the project name.	Cf
Project Settings	
Project Name	ftcf
Use Default Location	
Project Location	/Applications/ColdFusion11/cfusion/wwwroot/ftcf11 Browse
CFML Dictionary Version	ColdFusion 11
?	< Back Next > Cancel Finish

Figure 12: Creating a New ColdFusion Project

Configuring the RDS Connection

RDS is a protocol whereby CFBuilder communicates interactively with your ColdFusion server over http/https in order to display information about datasources, edit files on the server, and use the step-through interactive debugger.



Figure 13: Configuring RDS

To link your project to a server via RDS, open the RDS Dataview view, right-click on your server, and select RDS configuration. The RDS configuration dialog should appear as illustrated in Figure 13.

Enabling RDS

The username and password fields of the RDS configuration in ColdFusion Builder map to the RDS section of the ColdFusion Administrator as illustrated in Figure 14.

Cf ColdFusion Administ	rator ×	Steve
← → C □ localhost:8500/	CFIDE/administrator/index.cfm	९☆ 4 ≡
Cf Adobe ColdFusion 11 Administ	rator 🦊	🖲 🗊 🕐 logout
Server: cfusion Expand All 7 Collapse All 7 SERVER SETTINGS	Citizh Back Marco at Backalah bundah BPB Baranard	Bukenil Charanne
DATA & SERVICES	Citox are ballon on the light to aparte NDG nassword	Submit Changes
DEBUGGING & LOGGING SERVER MONITORING	Security > RDS	
► EXTENSIONS	R Enable RDS Service	
► EVENT GATEWAYS	The ColdFusion RDS service allows you to connect to this server using the RDS password you define below. This is intended for development use only, if this	s is a production
SECURITY Administrator RD8 Sandbox Security User Manager Alowed IP Addresses Secure Profile PACKAGING & DEPLOYMENT PROKAGING & DEPLOYMENT	machine, leave the option understand. ROS authentication You should restrict access to ROS to trusted users. By default ROS requires authentication. However, you may disable this authentication and rely on your w instead. Seciet the type of ROS authentication: () E Use a ringing password only (default) () Rosautimication needs (or to commanded) () No authentication needs (or to commanded)	eb server's security
SERVER UPDATE		
	RDS Single Password	
	To change the single RDS password, enter old password, new password and then confirm Old Password New Password Confirm Password (50-chanadar limit.)	
	Click the button on the right to update RDS Password	Submit Changes
	© 1997 - 2014 Adobe Systems Incorporated and its licensors. All Rights Reserved.	

Figure 14: Configuring RDS Logins

Note that you can create separate username/passwords for each of your developers, or give them a single RDS password to use.

Adding RDS Accounts for Developers

You can define additional RDS logins by accessing the User Manager section of the ColdFusion Administrator, as illustrated in Figure 15.

\rightarrow C localhost:85	500/CFIDE/administrator/index.cfm C	1 2 2
f Adobe ColdFusion 11 Adm	ninistrator 🧳 💿 🕻) 🛞 LOGOU
rver: clusion and Alio / Collapse Ali o SERVER SETTINGS DATA & SERVICES DEBUGGING & LOGGING SERVER MONITORING	Security > User Manager	
EXTENSIONS	Authentication (Add Mode)	
EVENT GATEWAYS	*User name: (Minimum 5	
SECURITY	characters)	
Administrator RDS Sandbox Security User Manager Allowed IP Addresses Secure Profile	"Pasword: "Confirm Pasword: Description:	
PACKAGING & DEPLOYMENT	RDS and Administrator Access	
ENTERPRISE MANAGER	Allow RDS Access	
	Administration of APT Access Only Prohibited Roles: Prohibited Rol	
	Data a del video y riex integration	
	Expused Devices	
	Automa an rusa. Automa an rusa. Automa and rus	
	Sandboxes: Data Source Permissions	
	Allowed Data sources: Prohibited Data sources:	
	>>> coALLDATABOURCES>> clargingty <<	
	To select more than one data source, hold down the Control key and click the name of the data source. This user cannot use data sources listed in the DI Sources box. Note: The ALL DATASOURCES option includes all data sources not otherwise specified as enabled or disabled as well as all future data sources rested Sources section of the Codificuent administrator.	sabled Data

Figure 15: Adding RDS User Accounts

Note that each developer can be granted restricted access to specific datasources, directories on the server's file system, and features of the ColdFusion Administrator.

Inspecting Datasources From ColdFusion Builder

ColdFusion Builder's RDS Dataview view communicates over RDS to the ColdFusion server, making critical information about your datasources available for you to view.



Figure 16: RDS DataView

From RDS Dataview you can:

- Inspect tables, columns, views, and stored procedures for any registered datasource.
- View the contents of any database table.
- Graphically create a SQL query.
- Drag and drop datasource names, table names, and column names from the DataView panel into your source code.

Using the ColdFusion Report Builder

The Adobe ColdFusion Report Builder is a visual integrated development environment for creating reports from ColdFusion datasources.

			C C	olurusion kepo	n builder - livew	Colurusionkepo	nr)			
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Calast	NewColdFusion	Report *					- 8	× Properties		0
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1		:								
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		:								
		-	_	_	_	_		~		
Find Results							,			
Location		Text								

Figure 17: The ColdFusion Report Builder

In order to function properly, the report builder must be able to access your ColdFusion server via RDS. Using the report builder, you define a single query that supplies the core data for your report. You can then drag and drop the resulting fields into any position that you'd like.

The report builder generates .CFR files, which can be accessed either directly by URL or invoked via ColdFusion's <cfreport> command. Output from reports can be translated into any of the following file formats:

- PDF •
- Excel

• XML

HTML

• RTF

•

The ColdFusion Report Builder is available as a free download for Windows operating systems from:

https://www.adobe.com/support/coldfusion/downloads.html

Walkthrough 2-3: Using ColdFusion Builder



During this exercise you will configure a new project in ColdFusion builder by performing the following tasks:

- Enable RDS
- Create a new project
- Configure the CF Builder RDS connection
- Inspect datasources
- Browse a project file

Steps

Verify that RDS is Enabled

- 1. Open the ColdFusion Administrator at http://localhost:8500/CFIDE/administrator/
- 2. Click on Security > RDS
- 3. Verify that Enable RDS is checked.

Create a New CF Builder Project

- 4. Launch ColdFusion Builder
- 5. Select File > New > ColdFusion Project
- 6. Click the Next button.
- 7. Enter a project name of **FTCF**
- 8. Uncheck the checkbox labeled Use Default Location
- 9. Click the Browse button and select /ColdFusion11/cfusion/wwwroot/ftcf11
- 10. Click Next.
- 11. Click the Servers select box and choose Add New Server
- 12. Enter the following information:
 - Server name: localhost
 - Host Name:
 - WebServer Port: **8500**
 - RDS User Name: Admin
 - RDS Password: learnef!
- 13. Click the **Next** button.

localhost

- 14. Click the **Browse** button adjacent to **Server Home** and select your ColdFusion installation folder, e.g. <u>C:\ColdFusion11</u>. The Document Root field should automatically populate.
- 15. Click the version select box and choose 11.0
- 16. Click on the URL Prefix tab.
- 17. Click the Browse button adjacent to the Local Path property and choose your ftcf11 folder, e.g. C:\ColdFusion11\cfusion\wwwroot\ftcf11
- 18. Enter a URL prefix of http://localhost:8500/ftcf11
- 19. Click the Add button.
- 20. On the Install Extensions dialog box, click the Next button.
- 21. Click Finish.
- 22. On the Server Details dialog box, click the Finish button.

Enable RDS Query View

- 23. In the Navigator view, confirm that there is a directory named .rdsTempFiles. If no such directory exists, create one by right-clicking on the ftcf project and selecting New > Folder.
- 24. Inside the **.rdsTempFiles** folder, confirm that there exists a file named "RDS Query Viewer". Create the empty file if none exists.

Use RDS Query View

- 25. Click on the RDS Dataview view.
- 26. Confirm that you can inspect the ColdFusion datasources.
- 27. In the RDS Dataview, select ProposalManager > Tables > AppUser
- 28. Right-click on the **AppUser** table and select **Show Table Contents**. The contents of the data table should appear on screen.

Browse a Project File

- 29. Open /ftcf11/walksolution/walk2-1/index.cfm
- 30. Select **Run** > **Run As** > **ColdFusion Application**. Your default browser should activate and run the currently selected file.

- End of Walkthrough --

Debugging and Troubleshooting your Apps



ColdFusion has a number of features to help you debug and troubleshoot your code including:

- Outputting diagnostic information at the bottom of every page.
- Interactive, step-through debugging with the ColdFusion Administrator.
- Logging error messages in text files.
- Using the <cflog> tag to output custom messages into log files.

Outputting Diagnostic Information

The ColdFusion Administrator as depicted in Figure 18 contains a feature that outputs diagnostic information at the bottom of every dynamically generated page.

There is also a feature that you can use to output very specific diagnostic messages whenever an error occurs.

ColdFusion Admi	niatator ×	Steve
← → C 🗋 localhost.85	DUCFIDE/administrator/index.cfm Q fg	G ≡
Cf Adobe ColdFusion 11 Admir	istrator 💅 • • •	L000UT
Barver chaster to extract setTracts SetTract setTracts SetTract Respect toring Control Respect Toring Control Respect Re	Cites the builtor on the right to update Dosing Output Settings Execution Debugging & Logging > Debug Output Settings Execution If shale Rebuilt Execution Influences Execution Influence If shale Rebuilt Execution Influences Execution Influence If shale Rebuilt Execution Influences Execution Influence If shale Rebuilt Execution Influences Execution Influences If shale Rebuilt Execution Influences Execution Rebuil	Owngen specified.
PORSIDE 4 : 200885 PORSIDE 4 : 200885 Delag Organ P Astress Scottes Organ Scottes Scottes Organ Scottes Sco	Select Debugging Ordput Format Tates of m Cold sum of the versmit Antiogong public formats. Condition of the versmit Antinologing public formats. Con	
+ SERVER UPDATE	It Exception Information Bench the option to collect all ColdFusion exceptions relead for the request in the debugging output.	

Figure 18: Enabling Request Debug Output

Enabling Robust Exception Information

Turning on the Enable Robust Exception Information feature in the ColdFusion Administrator causes the ColdFusion server to output very specific and highly detailed error messages in the format illustrated by Figure 19.

Please contact the website administrator.



Figure 19: Robust Exception Information

When an error occurs, ColdFusion will show the line number and file name where the problem occurred, your application's source code in the vicinity of the trouble, a full stack trace, and other pertinent details.

Note: Since this feature potentially exposes source code to users of your application, it should be disabled on production servers.

Enabling Request Debug Output

٠

The Request Debug Output, as illustrated in figure 20, outputs the following diagnostic information at the end of each CFM page request:

•

- **Report Execution Times**
- **Exception Information Tracing Information**
- General Debug Information .

Database Activity

- **Timer Information** •
- Variables •

Debugging	Inform	ation									
ColdFusion S	erver Deve	loner 11	0.04.293328								
Template	find the second se										
Time Stamp	me Stame 17-Anr-15 10:42 AM										
Locale		En	glish (US)								
User Agent		M	azilla/5.0 (Macintosh; Intel Mac OS X 10, 10, 3) AppleWebKit/537;35 (KHTML, like Gecko) Chrome/42.0.2311.90 Safari/537;36								
Remote IP		0:0	0:0:0:0:0:1								
Host Name		0:0	10.0.0.0.1								
Execution	Time										
Total Time	Avg Time	Count	Template								
3 ms	3 ms	1	Applications/ColdFusion11/cfusion/www.root/ftcf11/demos/unit01/heliocfml.cfm								
5 ms			STARTUP, PARSING, COMPILING, LOADING, & SHUTDOWN								
8 ms TOTAL EVECUTION TIME											
red = over 24	0 ms avers		To the succession time								
reu – over 2:	NO HIS AVEF	ige exec									
SOL Ouer	les										
q (Datasou	rce=Prop	osalMa	nager2, Time=2ms, Records=7) in /Applications/ColdPusion11/cfusion/wwwroot/ftcf11/demos/unit01/hellocfm								
50	lect . f	rom cl	ient								
Scone Ver	inblas										
Scope var	labics										
CGI Variab	les										
AUTH_PASSW	ORD=										
AUTH_TYPE-											
AUTH_USER-											
CERT_COOKI	E -										
CERT ISSUE	R=										
ERT KEYST	28-										

Figure 20: Request Debug Output

Use this feature to identify poorly performing code that may cause your application to exhibit scalability problems. Note that while there is a feature of the ColdFusion Administrator that enables you to restrict the output of this diagnostic information to specific IP addresses, activation of this feature will degrade overall application performance for all users, not just the ones who see it appear in their browsers.

Starting a Debugging Session

ColdFusion Builder communicates via RDS to the ColdFusion debugging service to enable you to interactively step through and trace your code as its running on the server. Before you can use this application feature, however, you must first start the debugger server as illustrated in Figure 21.

Cf Adobe ColdFusion 11 Administrate	ог 😽 💿 💿 LOGOUT
Server: clusion Expand All () / Collapse All () SERVER SETTINGS	Click the button on the right to undate Debugger Settions
Settings Request Tuning Caching Client Variables	Debugging & Logging > Debugger Settings
Memory Variables Mappings Mail Scheduled Tasks	Enable the Allow Line Debugging option to use the ColdFusion Debugger that runs in Eclipse(ColdFusion Builder). Specify the port and the maximum number of simultaneous debugging sessions.
WebSocket Charting	Line Debugger Setting
Font Management	Allow Line Debugging
Java and JVM	Debugger Port: 5006
Settings Summary DATA & SERVICES	Maximum Simultaneous Debugging 5 Sessions:
Data Sources ColdFusion Collections	Debugging Server
Soir Server Web Services REST Services Flex Integration	The debugging server runs as a process separate from the ColdFusion Sarver. You can start, stop or restart the debugging server from this page, however, this is usually not necessary because the debug process is managed automatically when a debug session is started.
PDF Service	Start Debugger Server
Debug Output Settings Debugging IP Addresses Debugger Settings	Click the button on the right to update Debugger Settings Submit Changes
Log Files C	1997 - 2014 Adobe Systems Incorporated and its licensors. All Rights Reserved.
System Probes No Code Analyzer inc	tices, terms and conditions pertaining to third party software are located at http://www.adobe.com/go/thirdparty/ and orporated by reference herein.

Figure 21: Starting the Debugging Server

After the debugging server has come online you can use ColdFusion Builder to set breakpoints in your code by double clicking in the code editor's margin. Small blue dots in the margin indicate where breakpoints have been set and execution will be paused. You then begin the debugging session by launching the debugging perspective as illustrated in Figure 22.



Figure 22: Setting a breakpoint and starting a debug session

Using the Interactive Debugger

The debugging perspective, as illustrated in Figure 23, segments the interface into the following views:

- The **Debug** View indicates the file that you are currently debugging.
- The **Variables** View enables you to inspect and change the contents of any variable.
- The **Debug Output Buffer** indicates the output generated from your code up to the currently active line.
- The **Breakpoints View** shows a listing of all breakpoints in your code.
- The **Expressions View** enables you to output the value from any valid ColdFusion expression.

	1				Cf ColdFusio	on 移ColdFusion Deb	ողեն
🌣 Debug 🛙	Terminate Debug Session Run to Next Breakpoint	×	×)= Variables 🖾 🤬 Del	oug Output B	Breakpoint	s 🙀 Expressions	-
T ftcf11Config [0	ColdFusion Application]					#a =1	A
V 🥵 localhost			Name			Value	
🔻 🧬 ColdFus	ion Template		Variables			ColdFusion Scope	
Z /App	ications/ColdFusion11/cfusion/wwwroot/	ftcf11Solution/index.cfm	Ø MYNAME			Steve	
FDS Query Viewe	r lindex.cfm ⊠ 			¢Х	Filter:	X ⊞ ⊟ ‡ _Z J0	
	se insert your code here>				Plea</th <th>ase insert your code h</th> <th>ere</th>	ase insert your code h	ere
1 Plea</td <td></td> <td></td> <td></td> <td></td> <td>cf cfo</td> <td>utput</td> <td></td>					cf cfo	utput	
1 Plea</th <th>ame = "Steve"></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	ame = "Steve">						
1 Plea<br 2 ● 3 <cfset myn<br="">↓ 4 <cfoutput></cfoutput></cfset>	ame = "Steve"> #variables.myname#						

Figure 23: Using the Debugging Perspective

Stepping Through Your Code

Once a breakpoint has become active, you can proceed to execute the following lines of code by using the controls in the top toolbar as illustrated by Figure 24.



Figure 24: Using the Debugging Controls

Configuring the Request Timeout

Note that even though you are in a debugging session, your page remains subject to the ColdFusion Server's timeout settings as illustrated in Figure 25. Before you debug, consider increasing the request timeout value to give yourself enough time to complete your debugging task.



Figure 25: Configuring the Request Timeout

Reviewing the Log Files

Periodically reviewing your ColdFusion server's log files is a best practice to ensure that your applications are continuing to perform correctly under all conditions and use-cases.

Cf Adobe ColdFusion 11 Adm	inistrator										👹 🐵 🌚 Logout	
Server: clusion Expand Ni@ / Collepse Al @	Deb ColdF and d	uggi usior	ing icre	& L ates files.	oggi	ng al k	> Log Files	you troubles?	noot applications	and track events	. Use this page to search, view, download, archive,	
Mappings	Avai	Available Log Files										
Mail Scheduled Tasks		Act	ion	•			File Name		Type	Size	Last Modified	
WebSocket	0	۲	٠	۰			application.log		CFML	4043	Apr 17, 2015 1:29 PM	
Font Management	0	۲	٠	۰	۲		audit.log	1	CFML	4614	Apr 17, 2015 1:36 PM	
Java and JVM		۲	۲	۲	۲		axis2.log		Other	0	May 23, 2014 1:16 PM	
Settings Summary		۲	۲	۲	۲		coldfusion-error.log		CFML	82377	Apr 17, 2015 1:12 PM	
DATA & SERVICES		۲	۲	۲	۲		coldfusion-out.log		CFML	130719	Apr 17, 2015 1:36 PM	
ColdFusion Collections		۲	۲	۲		9	derby.log		Other	21476	Apr 17, 2015 1:14 PM	
Solr Services		۲	۲	۲	۲		esapiconfig.log		Other	0	May 23, 2014 1:16 PM	
REST Services	0	۲	۲	۲		9	eventgateway.log		CFML	1061	Apr 17, 2015 1:11 PM	
PDF Service		۲	۲	۲	۲		exception.log		Other	724195	Apr 17, 2015 1:29 PM	
 DEBUGGING & LOGGING 		۲	۲	۲	۲		hibernatesql.log		Other	0	May 23, 2014 1:16 PM	
Debug Output Settings Debugging IP Addresses	0	۲	۲	۲		9	http:/og		CFML	4548	Apr 17, 2015 1:13 PM	
Debugger Settings	0	۲	۲	۲		9	mail.log		CFML	3063	Mar 11, 2015 8:50 PM	
Logging Settings	0	۲	۲	۲		9	metrics.log		CFML	36189	Apr 17, 2015 1:35 PM	
System Probes Code Analyzer	0	۲	۲	۲		9	monitor.log		CFML	1408	Apr 17, 2015 1:12 PM	
License Scanner	0	۲	۲	۲		9	putlog.log		CFML	9779	Apr 2, 2015 7:34 AM	
SERVER MONITORING	0	۲	۲	۲	۲		restservice.log		CFML	4760	Apr 8, 2015 1:20 PM	
+ EXTENSIONS	- D	۲	۲	۲		9	security.log		CFML	15686	Apr 17, 2015 12:56 PM	
EVENT GATEWAYS	0	۲	۲	۲	۲		server.log		CFML	223953	Apr 17, 2015 1:13 PM	
► SECURITY	0	۲	۲			9	update.log		CFML	931	Apr 1, 2015 4:07 PM	

Figure 26: ColdFusion Log Files

In the event that an error occurs, ColdFusion will output details to a series of log files that you can inspect from within the ColdFusion Administrator and ColdFusion Builder. Typically, each application error is written to the application.log file and a complete stack trace is written to exception.log.

You can review all of the ColdFusion logs by accessing **Debugging & Logging** > **Log Files** from the ColdFusion Administrator as depicted in Figure 26.

Log files can get quite lengthy so you might want to set a business rule to archive the logs at various intervals. In addition, you can manually activate the following features for each log file:

Button	Description						
	Search/View Log File						
٤	Download Log File						
B	Archive Log File						
×	Delete Log File						

Using the ColdFusion Administrator Log Viewer

The ColdFusion Administrator log viewer, depicted in Figure 27, parses the comma-delimited log file, displaying entries in a tablular format. Clicking on the Launch Filter button spawns a new browser window where you can enter filter criteria in order to pare down the list.

Cf ColdFusion Adm	inistrator ×				Steve								
← → C 🗋 localhost:85	600/CFIDE/administra	ator/index.cfm			ବ୍ଳ 😩 🗉								
Cf Adobe ColdFusion 11 Adm	inistrator				📵 🗊 🕐 LOGOUT								
Server: cfusion Expand All© / Collapse All © SERVER SETTINGS Settings	Click arro	Click arrow on left to return to the log file list.											
Request Tuning Caching Client Veriables	Searching file : a	pplication.log		Compact View	1 - 10 of 46 / Next / Last								
Memory Variables Mappings Mail	Date Apr 28, 2015	Time 10:08 AM	Severity Information	ThreadID http-bio-8500-exec-7	Application Name								
Scheduled Tasks WebSocket Charting	Apr 28, 2015 Session rotated	10:08 AM successfully.	Information	http-blo-8500-exec-4									
Java and JVM Settings Summary	ColdFusion Log Viewer ColdFusion Log Viewer ColdFusion Log Viewer ColdFusion Log Viewer												
- DATA & SERVICES	Change Councilia	Para a serie of Fatal of Error of Warning of Information											
Data Sources ColdEusion Collections	Show Seventy												
Solr Server	Keywords			Find exact phra	se ¢								
Web Services REST Services	Applications			ThreadIDs									
Flex Integration	Most recent	Anytime \$	(or specify time/date	range below)									
PDF Service	Date Range	to		Time Span	to								
Pebug Output Settings		YYYY-MM-DD		HH:MM:SS									
Debugging IP Addresses	Search within: • Ye	as O No Show Mat	ches Hide Matches	1									
Debugger Settings													
Logging Settings Log Files													
System Probes													
License Scanner	-												
Remote Inspection Settings	© 1997 - 2014 Adobe Sy	stems incorporated and i	ts licensors. All Rights Re	eserved.									
SERVER MONITORING	Notices, terms and condi	itions pertaining to third p	arty software are located	at http://www.adobe.com/go/thirdparty/ ar	d incorporated by reference herein.								
► EXTENSIONS													
EVENT GATEWAYS													
> SECURITY													
PACKAGING & DEPLOYMENT													
ENTERPRISE MANAGER													

Figure 27: The ColdFusion Log Viewer

Using the Integrated Baretail Viewer in ColdFusion Builder

ColdFusion Builder's integrated Baretail Viewer, depicted in Figure 28, enables you to monitor the contents of your log files in real-time from within your development environment. You can also create rules to color-code log entries based on their contents.



Figure 28: The Baretail Viewer

Programmatically Writing to a Log File with <cflog>

Use the <cflog> tag to output messages to your own custom logs, or ColdFusion's default log files. The basic syntax is as follows:

```
<cflog
text = "text"
type = "information|warning|error|fatal"
application = "yes|no"
file = "filename"
log = "log type">
```

Writing data to logs can help you trace problems with business logic at runtime, without significantly impacting performance.

The following example illustrates how to dump the contents of a variable to a custom log file, resulting in the log entry depicted in Figure 29:

```
<cfset myname = "Steve">
<cfoutput>
<h1>Hello world, my name is #variables.myname#</h1>
</cfoutput>
<cflog
file="ProposalManager"
type="information"
text="MyName: #variables.myname#">
```



Walkthrough 2-4: Debugging your Code



During this exercise you will experiment with debugging and logging

In this lab, you will perform the following tasks:

- Log the contents of a variable to the debugger
- Step through your code interactively

Steps

Write Entries to a Log File

- 1. Open ColdFusion Builder
- 2. Open /walk/walk2-4/index.cfm
- 3. At the bottom of the file, insert a <cflog> tag to output the contents of the myname variable to a log file named "ProposalManager" with an severity level of "information"

```
<cflog
file="ProposalManager"
type="information"
text="MyName: #variables.myname#">
```

- 4. Save the file.
- 5. Browse the file.

View Log Entries

- 6. Open the ColdFusion Administrator by browsing http://localhost:8500/CFIDE/administrator/index.cfm
- 7. Click on Debugging & Logging > Log Files
- 8. Click on ProposalManager.Log. You should see your custom log entry.
- 9. Press the browser's back button.

Filter a Log File

- 10. Click on application.log and review its contents
- 11. Click the Launch Filter button.
- 12. Uncheck the **Warning** and **Information** severity checkboxes and press the **Show Matches** button. Note if any errors were displayed.
- 13. Close the **Filter** window.

Turn on Debug Output

- 14. In the ColdFusion Administrator, click on **Debugging & Logging** > **Debug Output Settings.**
- 15. Check the following boxes if they are not already checked:
 - Enable Robust Exception Handling
 - Enable Request Debugging Output
- 16. Click the Submit Changes button.
- 17. Return to your browser and reload /**walk/walk2-4/index.cfm**. You should see that diagnostic information information was output to the bottom of the page.

Enable the Interactive Debugging Service

- 18. Return to the ColdFusion Administrator.
- 19. Click on Debugging & Logging > Debugger Settings
- 20. Click on the Start Debugger Server button.
- 21. Click on Server Settings > Settings
- 22. Uncheck the "**Timeout Requests after seconds**" checkbox and press **Submit Changes**.

Interactively Step Through Your Code

- 23. Return to ColdFusion Builder and /walk2-4/index.cfm
- 24. Double-Click in the gray left margin of the code view on the line that sets the myname variable. A small blue dot should appear.
- 25. Launch the debugger by right-clicking on the index.cfm file in the Navigator view and selecting Debug As > ColdFusion Application. Google Chrome should launch and you should see an arrow appear next to your breakpoint.
- ॐ ColdFusion Debugging
 - P
- 26. In the top-right corner of ColdFusion Builder, click on the ColdFusion Debugging button to enter the ColdFusion Debugger Perspective.
- 27. Click the **Step Over** button to advance execution to the next line. You should see that the variable myname appears in the Variables view.
- 28. Click the **Step Into** button to advance into the <cfoutput> block.
- 29. Click **Step Over** to advance past the <h1> element.
- 30. Click on the **Debug Output Buffer** view and inspect its contents.
- 31. Step through the code until you reach the end of the file.

Cf ColdFusion

32. Click on the ColdFusion perspective button to return back to your coding workspace.

- End of Exercise –

Unit Summary



- ColdFusion Server is a J2EE application server that is used to dynamically generate content from requests that are typically received via the Hypertext transfer protocol.
- You can program the server using a combination of CFML and CFScript.
- ColdFusion can dynamically generate every commonly used file format.
- Requests are passed from the webserver to the ColdFusion server based on the requested filename's extension.
- ColdFusion supports the creation of RESTful web services for participation in a three-tiered architecture.
- As you develop your application, consider your code's impact on scalability, performance, robustness, and security.
- ColdFusion is available in multiple editions and on Amazon Web Services.
- Use the ColdFusion Administrator to link your server to external backoffice resources such as databases and mail gateways.
- You can develop apps using any text editor.
- ColdFusion Builder communicates with your server over RDS and has features that can help you rapidly build your applications.
- Many features are available to help you troubleshoot your apps.
- The interactive debugger in ColdFusion Builder enables you to step through your code one line at a time.
- You should regularly inspect your server logs to verify that your applications are performing as expected.

Unit Review



- 1. List three differences between ColdFusion Standard and ColdFusion Enterprise.
- 2. List three differences between CFScript and Javascript.
- 3. Describe a three-tiered architecture.
- 4. ColdFusion requires a connection to a web server in order to respond to http requests (true/false)?
- 5. ColdFusion can only respond to http requests (true / false)?
- 6. What are the advantages to using the step-through debugger to troubleshoot your code?
- 7. Which ColdFusion features discussed in this unit affect scalability?
- 8. Which ColdFusion features discussed in this unit affect security?