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IBM Integration Bus

Message Modeling with DFDL

Lab 1 Modeling CSV Files

June, 2013

Hands-on lab built at product code level Version 9.0.0.0

1. Introduction to Message Modelling

A message model is used by IBM Integration Bus to model a message format. The message models used by IBM Integration Bus are all based on World Wide Web Consortium (W3C) XML Schema 1.0 (XSD).

XML Schema is an international standard that defines a language for describing the structure of XML documents. It is suited to describing the messages that flow between business applications, and it is widely used in the business community for this purpose. IBM Integration Bus uses models that are based on XML Schema to describe the structure of all kinds of message format, including message formats that are not XML.

Data Format Description Language 1.0 (DFDL) is an open standard modeling language from the Open Grid Forum (OGF) that builds upon the features of XML Schema 1.0 in order to model and validate all kinds of general text and binary data. It uses standard XSD model objects to describe the logical structure of data, together with DFDL annotations that describe the physical text or binary representation of data. IBM Integration Bus uses DFDL schema files to describe text and binary data, including industry standard formats.

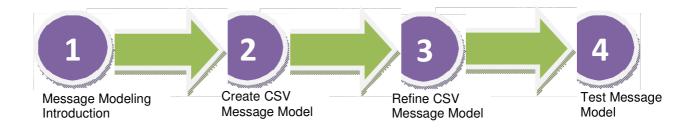
DFDL is not intended to be used to model XML documents. Use normal XML Schema files to model XML.

Support for DFDL in IBM Integration Bus includes:

- DFDL parser and domain.
- DFDL schema file creation wizards.
- DFDL schema editor for modeling text and binary data formats.
- DFDL Test perspective for testing your DFDL schema files.

For more information about DFDL you can go to the <u>Open Grid Forum (OGF)</u> web site. IBM Integration Bus supports DFDL 1.0, as defined in the following document: <u>Data Format Description</u> <u>Language (DFDL) 1.0</u>.

Unlike previous versions, you don't need to create a Message Set project and a Message Set to model a message type (although MRM Message Models are still supported), you just have to create a DFDL schema file.



1.1 Lab preparation

In the pre-built vmware, all this section has been done for you.

To run this lab, unzip the supplied file MessageModelling.zip into a directory c:\student directory. This will create a subdirectory called \MessageModeling with several further subdirectories.

2. Creating a CSV Message Model

This lab will create a Message Model that will model a CSV file. The file has a header record, and several detail records, but no trailer record.

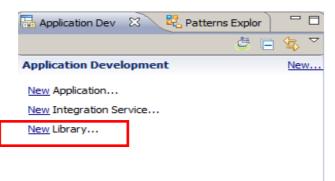
Records are delimited by CRLF characters, and fields within each record are delimited by a comma.

We will use the new Library function that was introduced in WebSphere Message Broker Version 8.

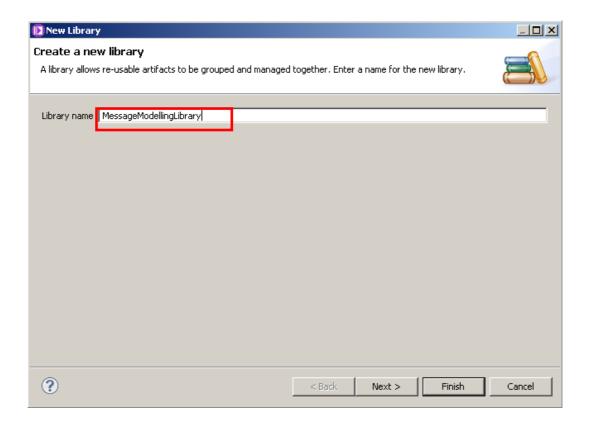
1. If not already started, start the Integration Toolkit by clicking its icon in the Start menu, or on the desktop.

Accept the default workspace location (C:\workspaces\IBWorkshop).

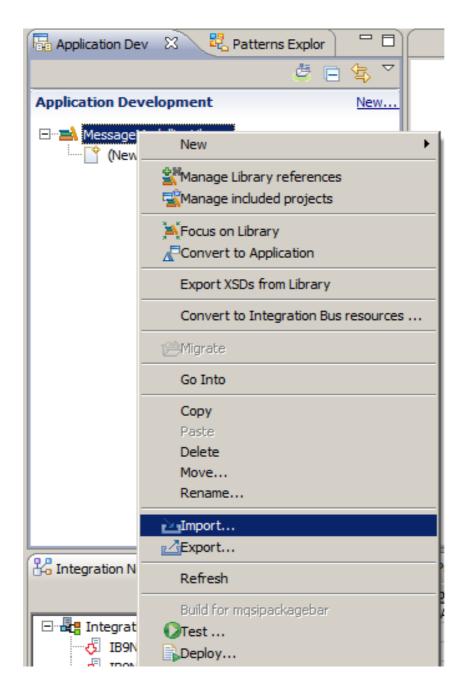
2. Create a new Library by clicking on "New library"



3. Call the library "MessageModellingLibrary", and click Finish.



4. Now import the CSV file by right-clicking the generated Integration Bus Project's name (MessageModelingLibrary) and selecting Import.



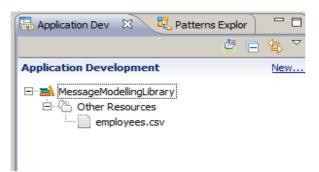
5. In the Import window, select General -> File System and click Next.

| D Import | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Select Import resources from the local file system into an existing project. | è |
| Select an import source: type filter text | |
| General Archive File Existing Projects into Workspace Existing RAD 6.x Data Definition Project Existing RAD 6.x Data Definition Project File System Preferences CVS E CVS E JB Modeling P Ava EE Modeling P Ava EE Modeling P CP Plug-in Development P CP Plug-in Development P CP Veb E Team C CVS CVS CVS CVS CVS CVS CVS CVS | |
| Rext > Finish | Cancel |

6. Click Browse and select "c:\student\MessageModelling\data". In the right side of the window, select "employees.csv" and click Finish.

| 🜔 Import | | | | <u>- 0 ×</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|-----------------------------------------------------------|--------------|
| File system Import resources from the local file system | ۱. | | | |
| From directory: C:\student\MessageMod Image: C:\student\MessageMod Filter Types Select All Des Into folder: MessageModellingLibrary Options Overwrite existing resources without Create complete folder structure Advanced >> | elect All | 🛾 🧾 employeesN | kt ichases.dat icount.xml csv WithoutCRLF.csv | |
| ? | < Back | Next > | Finish | Cancel |

7. Your project should now look like this:



8. Double-click on "employees.csv" to open it, and take a quick look at it:

| 🖡 employees.csv - Notepad | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| File Edit Format View Help | |
| <pre>Longary1, 42, 123 street, Winchester, UK "000010", "CHRISTINE", "I", "HAAS", "A00", "3978", "1995-01-01", "PRES ", 18, "F", "1963-08-24", 152750.00 "000030", "SALLY , "A", "KWAN", "CO1, "4738", "2005-04-05", "MANAGER ", 16, "M", "1975-07-02", 94250.00 "000030", "SALLY , "A", "KWAN", "CO1, "4738", "2005-04-05", "MANAGER , "16, "M", "1975-09-15", 80175.00 "000006", "IRVING", F", "STERN", "D11, "6423", "2005-09-81-7", "MANAGER ", 16, "M", "1975-09-15", 80175.00 "000000", "IRVING", F", "STERN", "D11, "6423", "2005-09-81-7", "MANAGER ", 16, "M", "1975-09-15", 80175.00 "000000", "IRVING", F", "STERN", "D11, "6423", "2003-09-31", "MANAGER ", 16, "F", "2003-05-26", 06170.00 "000000", "IRUENCE", "Q", "SPENSER", "E21", "0972", "2000-06-19", "MANAGER ", 16, "F", "1971-05-15", 80750.00 "000100", "ITHEODRES", "Q", "SPENSER", "E21", "0972", "2000-06-19", "MANAGER ", 16, "F", "1975-09-15", 66500.00 "000110", "ITHEODRES", "G", "SPENSER", "E21", "0972", "2000-06-19", "MANAGER ", 16, "F", "1975-09-15", "66500.00 "000130", "DELORES", "M", "QUINTANA, "CO1", "14578", "2006-12-5", "ALLERKE ", 14, "M", "1972-10-18", 48250.00 "000140", "HEATHER", "A", "INTCHOLLS", "A00", "1993-12-05", "CLERK ", 14, "M", "1972-10-19", 68420.00 "000150", "BELIZABET", "A", "NACHOLLS", "2001", "2022-02-12", "DESIGNER", 16, "F", "1976-01-19", 68420.00 "000150", "BELIZABET", "A", "NACHOLLS", "2001", "2022-02-12", "DESIGNER", 16, "M", "1977-05-17", 55280.00 "000150", "MASATOSHI", "S", "SCUTTEN", "011", "4510", "2002-02-12", "DESIGNER", 16, "M", "1977-05-17", 55280.00 "000150", "MARILYN", S", "SCUTTEN", "011", "4510", "2002-03", "DESIGNER", 16, "M", "1970-02-21", 57380.00 "000160", "AMASATOSHI", "S", "SCUTTEN", "1142", "1986-01-11", "DESIGNER", 16, "M", "1981-01-05", 44680.00 "000200", "DANEST, "M", WALKER", D11", "4500", "2004-07-25", "DESIGNER", 16, "M", "1971-05-21", 57280.00 "000200", "AMASATOSHI", "S", "SCUTTEN", "111", "1682", "2004-07-25", "DESIGNER", 16, "M", "1971-05-31", 52880, 00 "000200", "AMASATOSHI", "SUTTEN, "D11", "1682</pre> | |
| | > |

It has a header record, and 42 detail records. Each detail record has 12 fields.

- 🛃 Patterns Explor - -🔚 Application Dev 🛛 🗙 $\overline{\nabla}$ ð Quick Sta Start building y Application Development New... New Artifact 🖃 🛋 MessageModellingLibrary Other Resources Message Flow employees.csv ■ Subflow Message Model ... 😂 Message Map ESQL File Decision Service MQ Service Database Service Quick Start Start by creating an application Start by creating an integration service 🛋 Start by creating a library Start from WSDL and/or XSD files Start by discovering a service 🔀 Integration Nod 🕱 🛛 🏙 Data Source Exp 📃 🗖 🔲 Properties 🕱 🛛 🖹 Problems 🗮 C
- 9. Now we are going to create the message model. Click New... and select Message Model.

10. This will open up the Message Model creation wizard.

Select "CSV text", and click Next.

| 🜔 New Message Model | | | | | |
|--------------------------|------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| 3 | Create a new message model file Select the message model type or format | | | | |
| | | | | | |
| XML | | | | | |
| SOAP XML | XML data for use in Web Services. | | | | |
| 🔿 Other XML | All other XML data. | | | | |
| Text and binary | | | | | |
| C CSV text | Comma Separated Values data, a delimited text format commonly used as an expor by spreadsheets and databases. | | | | |
| C Record-oriented text | Text data formats where delimited fields are grouped into records. | | | | |
| O COBOL | Data for COBOL programs | | | | |
| Ос | Data for C programs | | | | |
| O Other text or binary | All other text or binary data formats. | | | | |
| | | | | | |
| Enterprise Information S | | | | | |
| ○ SAP | Data from SAP systems including IDoc and BAPI | | | | |
| O Siebel | Data from Siebel systems | | | | |
| O PeopleSoft | Data from PeopleSoft | | | | |
| 🔿 JD Edwards | Data from JD Edwards systems | | | | |
| Other | | | | | |
| C CORBA IDL | Data from CORBA | | | | |
| O Database record | Records from relational databases | | | | |
| | Data for extended email format | | | | |
| O IBM supplied | Data for extended email format Predefined data format | | | | |
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11. Then you can choose to use the CSV Message Model Creation wizard or use the DFDL editor. Select "Create a DFDL Schema file using the wizard to guide you" and click Next.

| 🜔 Ne | w M | essage M | 1odel | | | | | | <u>- 0 ×</u> |
|----------------------|-------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------|-----------------|--------------|
| | CSV text Choose how you would like to create your CSV message model. | | | | | | | | |
| also Corr fron | spee nma S n the Creat Creat | ds up devi eparated 1 Open Grid e a DFDL 9 e an empt | elopment of Values data Forum for d schema file u y DFDL sche | your messa is modeled t lescribing all using this wi: ema file, I wi | ge broker applica | tions by enab escription Lar I binary data. using the DFE |)L schema editor | assist and grap | phical maps. |
| | | A | в | с | D | E | 1 | | |
| | 1 | Year | Make | Model | Description | Price | Export | | |
| | 2 | 2009 | SK Inc | MBTk7 | 4293cc, V8 | 53880.00 | | | |
| | 3 | 2010 | Hans On | DFDL | 3000cc straight | 6 31395.00 | | | |
| | 4 | 2010 | AOD corp | MB8 | 4163cc, V8 | 51435.00 | \wedge | | |
| | | ٢ | Yest 200 21 | , Nake, No 18, SK Inc 2010, Hans 2010, A00 | del.Descript .NBTK1 * 429 On.DFDL 300 corp.NB8 * 4 | tion, Price Bace, V8", r Occ strai 163cc, V8 | 24 53880.004 53880.004 9ht 6.31395.0 7,51435.004 | | |
| ? |) | | | | | < Back | Next > | Finish | Cancel |

12. The Project name will have already been filled in for you. (If it hasn't, click browse, and select the MessageModellingLibrary).

Enter "Employee" as the name for the DFDL Schema file and click Next.

| 🚺 New Message Mode | 2 | | | |
|------------------------------------------------------------------------------|--------------------------|--------|--------|---------------|
| Create a Data Forn | nat Description Language | | | S |
| Application or Library: Folder: DFDL schema file name Message name: | MessageModellingLibrary | | | Browse New |
| ? | | < Back | Next > | Finish Cancel |

13. In the next screen the wizard lets us choose some settings about the CSV format, like the End of Record character, Blank Records treatment, Number of fields, Encoding and Escape Scheme.

Leave the End of Record character as "Carriage Return & Line Feed". Check "The first record is a header". Set the number of fields to 12.

Click Finish to complete the wizard.

| 🚺 New Message Model | | | | |
|------------------------------------------------------------|----------------|-------------------|--------|--------|
| Configure schema for CSV data | | | | |
| Provide settings for a new schema that will model CSV data | i. | | | S |
| Record settings | | | | |
| End of record character: Carriage Return & Line Feed - 9 | %CR;%LF; | | | • |
| (Blank records will be skipped) | | | | |
| | | | | |
| Field settings | | | | |
| Number of fields: 12 | | | | |
| Encoding code page options: | | | | |
| Dynamic (provided to the pr | ocessor by the | application at ru | ntime) | |
| O Fixed UTF-8 | | | | 7 |
| Global settings | | | | |
| Escape scheme: CSV Escape Scheme | | | | • |
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| ? | < Back | Next > | Finish | Cancel |

| D Employee.xsd | X | | | | | | | - [|
|------------------|-----------------------|-----------------------------------------|-----------------|------------------------|----------------------------------------------------------------------------|--------------------------|-------------------------------------------------------|---------------|
| Test Parse Model | Filest Serialize Mode | el Hide properties | Show advanced | A Show all sections | Focus on selected | ti Show quick outline | Create logical instance | |
| ▼Messages | |) | 6 | | 📥 🔲 Represen | tation Properties | (x)= Variables (not supported in current IBM DFDL imp | plementation) |
| | lobal element that r | - | | | F 1 1 1 1 | N | | ? |
| A message is a g | jiobal element chach | | uniencior data. | | Employee (I | lement) | | |
| Name | - | Type 2/in Occurs | Max Occurs | | <type filter<="" td=""><td>:ext></td><td></td><td>× 🔆 🖪 🖻 🖻</td></type> | :ext> | | × 🔆 🖪 🖻 🖻 |
| | mployee | .,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | Property | | Value | (2) |
| | sequence | 1 | 1 | | Commer | t | | |
| | E header | 1 | 1 | | 🖃 Genera | 1 | | |
| | ± e record | 1 | unbounded | | Enco | iding (code page) | 🔜 <dynamically set=""></dynamically> | |
| Add a Local | | | | | Byte | Order | 晃 bigEndian | |
| | | | | | 🖃 Conten | t | | |
| | | | | | Lenç | jth Kind | 🛃 delimited | |
| | | | | | E Occurre | ences | | |
| | | | | | Min | Occurs | 暑 1 | |
| | | | | | Max | Occurs | | |
| | | | | | 🖃 Delimit | ers | | |
| | | | | | Initia | ator | 🛃 <no initiator=""></no> | |
| | | | | | Tern | ninator | 🛃 <no terminator=""></no> | |
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14. Now the DFDL editor should show the CSV message model.

Notice that there's a new folder in our project in the default namespace, called "Schema definitions" with an XSD file called Employee.xsd (under the default namespace). This is the message model we've just created.

Note that this is a standard DFDL XSD, with no specific annotations for Integration Bus.

| 🐻 Broker Development 🖾 🖧 Patterns Explorer | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|
| | ë (|] 🔹 ▽ |
| Application Development | | New |
| MessageModellingLibrary Schema Definitions Genut namespace) Employee.xsd Genut http://www.ibm.com/dfdl/CommaSeparal Genut CommaSeparatedFormat.xsd Genut CommaSeparatedFormat.xsd Genut CommaSeparatedFormat.xsd Genut CommaSeparatedFormat.xsd Genut CommaSeparatedFormat.xsd | tedForm | at |

You'll also notice that there is another XSD file under Schema Definitions called "CommaSeparatedformat.xsd". This "Helper schema file" was automatically added by the CSV wizard and contains CSV-specific defaults for all the DFDL properties. This is required because DFDL doesn't have built-in defaults, so if an object needs a property, a value must be supplied. To ease this task, the wizard creates a helper DFDL schema for each kind of data (COBOL, CSV, etc.)

These files are related by an import statement in the schema references section of the Employee.xsd file.

15. You can differentiate which properties have an "inherited" value that came from the Helper schema from those defined by you, by detecting the presence of the "inheritance" icon.

In the Message Roots view (the left-hand side of the Message Model editor) click on the Employee element.

| | E E | | | | A | |
|--------|------------------------------|------------|-----------------|-----------------|-------------------|----|
| Test P | arse Model – Test Serialize | Model Hi | ide properties | Show advanced | Show all sections | Fo |
| ₹M | essages 🛛 😹 🛛 🙀 | 0 0 U | × E | 6 | | - |
| Am | essage is a global element t | hat models | s an entire doo | cument of data. | | |
| | | | | | | |
| [| Name | Туре | Min Occurs | Max Occurs | | |
| | 🖃 🖻 Employee | | | | | |
| | | | 1 | 1 | | |
| | : 💿 header | | 1 | 1 | | |
| | : 🛨 🖻 record | | 1 | unbounded | | |
| | Add a Local Element | | | | | |
| | | | | | | |

16. Take a look at the Representation Properties view on the right hand side. Notice the "inheritance" icon to the left of the "Length Kind" property.

Hover over the Inheritance icon to discover its origin.

In this case, the "Length Kind" property was inherited from the "CommaSeparatedFormat" Helper schema that the wizard automatically imported.

| Representation Properties 🛛 🕬= Variables (not supported in current IBM DFDL implementation) | | | | |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Employee (Element) | 0 | | | |
| text> | × 🔆 🖪 🗉 🖬 | | | |
| Property | Value (?) | | | |
| Comment | | | | |
| 🖃 General | | | | |
| Encoding (code page) | 昂 <dynamically set=""></dynamically> | | | |
| Byte Order | 🗏 bigEndian 🛛 | | | |
| Content | | | | |
| Length Kind | Dura autoria da suite d'Arana alabad arana d'Arana d | | | |
| Occurrences | Property inherited from global named format {http://www.ibm.com/dfdl/CommaSeparatedFormat}CommaSeparatedFormat | | | |
| Min Occurs | | | | |
| Max Occurs | The current IBM DFDL implementation does not support this property being set to the following values: endOfParent, pattern | | | |
| Delimiters | | | | |
| Initiator | The current IBM DFDL implementation does not support this property being set to delimited if the representation property is set to binary. | | | |
| Terminator | Press "F2" for focus | | | |

17. Click on the "Show Local Properties" icon.

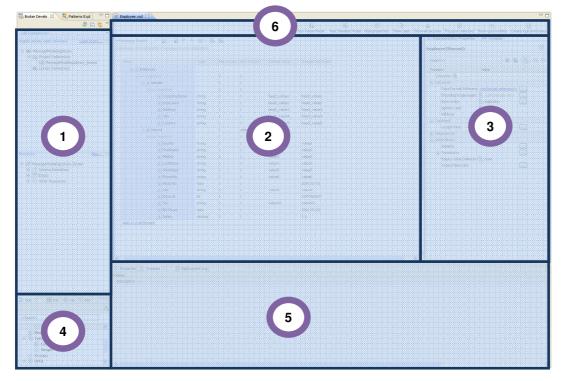
| 🔲 Representation Properties 🛛 🔎= Variables (not supported in current IBM DFDL implementation) | | | | | |
|-----------------------------------------------------------------------------------------------|---------------------------------------|----|--|--|--|
| Employee (Element) | | ? | | | |
| <pre><type filter="" text=""></type></pre> | ————————————————————————————————————— | ĒĒ | | | |
| Property | Value | ? | | | |
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| Max Occurs | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | | |
| 🖃 Delimiters | | | | | |
| Initiator | 🛃 <no initiator=""></no> | | | | |
| Terminator | 🛃 <no terminator=""></no> | | | | |

18. Notice that now all the inherited properties are hidden. Only the locally defined properties are shown. (in this case there are none)

| Representation Properties 🛛 🔎= Variables (not supported in current IBM DFDL implementation) | | | | | | |
|---------------------------------------------------------------------------------------------|-------------|--|--|--|--|--|
| Employee (Element) | 0 | | | | | |
| <type filter="" text=""></type> | 🔲 🗶 💥 🗄 🗉 🖻 | | | | | |
| Property | Value (?) | | | | | |
| Comment | | | | | | |
| General | | | | | | |
| Content | | | | | | |
| Occurrences | | | | | | |
| Delimiters | | | | | | |
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19. The other two icons to the left of the "Show Local Properties"/ "Show Inherited Properties" icon, allow you to clear a selected local property or all of them and replace them with the inherited value.

| 🔲 Representation Properties 🛛 🗱 Variables (not | Representation Properties 🛛 🔎= Variables (not supported in current IBM DFDL implementation) | | | | | |
|------------------------------------------------|---------------------------------------------------------------------------------------------|--|--|--|--|--|
| Employee (Element) | 0 | | | | | |
| <type filter="" text=""></type> | 🗙 💥 🔒 🖽 🖻 | | | | | |
| Property | Value (?) | | | | | |
| Comment | | | | | | |
| General | | | | | | |
| Content | | | | | | |
| Occurrences | | | | | | |
| Delimiters | | | | | | |
| | | | | | | |



20. Take a look at the different parts of the DFDL Editor:

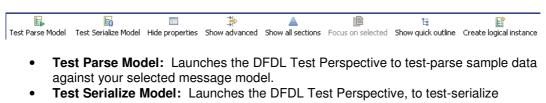
1) Applications and Libraries / **Projects view:** In the top of this view you'll find the Applications/Libraries, and in the bottom the projects. All the DFDL XSD files will be located under the "Schema Files" folder inside of a project.

2) Logical structure view: This is the core of the DFDL Editor. Here you will work with the Message Models.

3) **DFDL properties:** Shows the DFDL properties of the selected elements in the editor view. These were moved from the traditional properties window to provide better viewing.

4) Outline view: Shows the complete outline of the current DFDL Message Model.
5) Problems view: In this view you will be able to see all the warning and errors of your project.

6) **Icon Bar:** Several actions can be started from the icons in this bar:



- sample data by using the selected DFDL schema.
- Hide properties: Hides the Representation Properties view.
- Show advanced: Shows the advanced Representation Properties.
- Show all sections: Shows all the available sections of the DFDL Message Model in the Editor.
- Focus on selected: Shows only the selected element in the Editor.
- Show quick outline: Shows a hanging outline view of the message model in the Editor.

Create logical instance: using default values and sample test data, specified in this DFDL file

| Name | • | Туре | Min Occurs | Max Occurs | Default Value | Sample Value |
|-------|-----------------|--------|------------|------------|---------------|--------------|
| G | 3 e Employee | | | | | |
| | 🖃 🚥 sequence | | 1 | 1 | | |
| 10 | 🕀 💽 header | | 1 | 1 | | |
| 10 | 🖃 🖻 record | | 1 | unbounded | | |
| | 🖃 🚥 sequence | | 1 | 1 | | |
| 10 | e field1 | string | 1 | 1 | | value1 |
| 10 | e field2 | string | 1 | 1 | | value2 |
| 10 | e field3 | string | 1 | 1 | | value3 |
| 1.0 | e field4 | string | 1 | 1 | | value4 |
| 1.0 | e field5 | string | 1 | 1 | | value5 |
| 10 | e field6 | string | 1 | 1 | | value6 |
| 1 | e field7 | string | 1 | 1 | | value7 |
| 1 | e field8 | string | 1 | 1 | | value8 |
| 1 | e field9 | string | 1 | 1 | | value9 |
| 10 | e field10 | string | 1 | 1 | | value10 |
| 1 | e field11 | string | 1 | 1 | | value11 |
| 1 | e field12 | string | 1 | 1 | | value12 |
| Add a | a Local Element | | | | | |

21. The DFDL Editor in the center of the screen describes data elements.

Take a look at the columns:

- Name: name of the data element
- Type: data type (string, int, boolean, decimal, date, etc)
- Min Occurs: minimum amount of occurrences expected (0 or greater)
- Max Occurs: maximum amount of occurrences expected (from 1 to unbounded)
- Default value: you can specify a default value for each field
- Sample value: The wizard has created a sample value based on the element type

3. Refine the Generated Message Model

A number of refinements need to be made to the model that the wizard has created:

- 1. Adjust the number of elements in the header.
- 2. Change the names of the field elements to reflect the field usage, and adjust the data types of some the elements.
- 3. Remove the generated value of the Separator field for the Employee sequence.
- 4. On the header definition, set the Terminator property to CRLF.
- 5. On the record definition, set the Terminator property to CRLF.
- 6. Remove all default values created by the wizard (a current limitation for CSV message models).
- 7. Configure the model to permit the final character to be missing.

The change from the use of Separators to Terminators is necessary because the CSV wizard generates the model with Separator 'CR/LF' and Separator Position 'Infix'. This models data where there is no final trailing CR/LF. If there is always a final trailing CR/LF then changing the Separator Position to 'Postfix' is needed.

If you are modelling a case where some instances of the data have no final trailing CR/LF, but other instances do (as we assume in this case), then the delimiter needs to modelled as a Terminator, with the special property Document Final Terminator Can Be Missing set to 'Yes'.

1. Delete fields 6 to 12 from the "header" element. Select all of them and right-click -> delete (or press the Delete key).

To select the elements, you can either select the range (select field 6, then hold the uppercase key and select element 12), or you can select multiple individual elements by using the Ctrl key to select multiple elements.

Select the elements by placing the mouse on the left side of the element, not the element name.

| Name | | | Туре | Min Occurs | Max Occurs | Default Value | Sample Value |
|-----------|-------------|----------|--------|------------|------------|---------------|--------------|
| 🖃 🖻 Emplo | yee | | | | | | |
| 🖃 🚥 S6 | quence | | | 1 | 1 | | |
| : 🗆 🖻 | header | | | 1 | 1 | | |
| G | - 👓 sequenc | e | | 1 | 1 | | |
| 1 | e head | l_field1 | string | 1 | 1 | | head_value1 |
| 1 | e head | l_field2 | string | 1 | 1 | | head_value2 |
| | e head | l_field3 | string | 1 | 1 | | head_value3 |
| 1 | e head | l_field4 | string | 1 | 1 | | head_value4 |
| | e head | l_field5 | string | 1 | 1 | | head_value5 |
| : | e head | l_field6 | string | 1 | 1 | | head_value6 |
| 1 | e head | l_field7 | string | 1 | 1 | | head_value7 |
| 1 | e head | l_field8 | string | 1 | 1 | | head_value8 |
| 1 | e head | l_field9 | string | 1 | 1 | | head_value9 |
| | | A RELIAN | string | 1 | 1 | | head_value10 |
| | of Cut | Ctrl+X | string | 1 | 1 | | head_value11 |
| | Copy | Ctrl+C | string | 1 | 1 | | head_value12 |
| ÷ | 💢 Delete | Delete | | 1 | unbounded | | |

- Name Туре Min Occurs Max Occurs 😑 💽 Employee 🖃 🚥 sequence 1 1 1 🖃 💽 header 1 🖃 🚥 sequence 1 1 e CompanyName string 1 1 e EmpCount string 1 1 e Address 1 1 string e City string 1 1 e Country string 1 1 표 🖻 record 1 unbounded Add a Local Element
- 2. Change the names of the remaining 5 header fields by clicking on their names to these. Use the down-arrow key to move to the element below.

3. Expand the "record" element to show the 12 fields created by the wizard. Change their names, to reflect the CSV field names.

| ы est Parse Model 🛛 Te | 5 Serialize Model | Hide prop | erties S | ⇒ ©how advanced | ≜ d Show all sections | Focus on sel |
|---------------------------|----------------------|----------------|------------------|--------------------|--------------------------|--------------|
| ★Messages | | ф X | E | E 0 | | |
| A message is a globa | - 1 | dels an ent | - | | | |
| | | | | | | |
| Name | | | Туре | Min Occur | s Max Occurs | |
| 🖃 🖻 Emple | yee | | | | | |
| 🖃 🚥 St | equence | | | 1 | 1 | |
| : 🗉 🛛 | e header | | | 1 | 1 | |
| : = • | e record | | | 1 | unbounded | |
| G | sequence | | | 1 | 1 | |
| 1 | e field1 | | string | 1 | 1 | |
| | e field2 | | string | 1 | 1 | |
| | e field3 | | string | 1 | 1 | |
| | e field4 | | string | 1 | 1 | |
| | e field5 | | string | 1 | 1 | |
| - : | e field6 | | string | 1 | 1 | |
| | e field7 e field8 | | string string | 1 | 1 | |
| | e field9 | | string | 1 | 1 | |
| | e field10 | | string | 1 | 1 | |
| | e field11 | | string | 1 | 1 | |
| | e field12 | | string | 1 | 1 | |
| | C HOULZ | | | | | |

- 4. Change the field names to the following:

 - EmpNo
 FirstName
 MidInit

 - 4) LastName5) WorkDept

 - 6) PhoneNo
 - 7) HireDate
 - 8) Job
 - 9) EdLevel
 - 10) Sex
 - 11) BirthDate
 - 12) Salary

It should look like this:

| Name | | | Туре | Min Occurs | Max Occurs |
|---------------------|--------------|--|--------|------------|------------|
| 🖃 🖻 Employee | 🖃 🖻 Employee | | | | |
| 🖃 🚥 seque | nce | | | 1 | 1 |
| | ader | | | 1 | 1 |
| : 😑 e rec | cord | | | 1 | unbounded |
| | sequence | | | 1 | 1 |
| ÷ | e EmpNo | | string | 1 | 1 |
| ÷ | e Firstname | | string | 1 | 1 |
| 1 | e MidInit | | string | 1 | 1 |
| 4 | e LastName | | string | 1 | 1 |
| ÷ | e WorkDept | | string | 1 | 1 |
| ÷ | e PhoneNo | | string | 1 | 1 |
| 4 | e HireDate | | string | 1 | 1 |
| 4 | e Job | | string | 1 | 1 |
| 4 | e EdLevel | | string | 1 | 1 |
| 1 | e sex | | string | 1 | 1 |
| 1 | e BirthDate | | string | 1 | 1 |
| 1 | e salary | | string | 1 | 1 |
| Add a Local Element | | | | | |

| Name | Туре | Min Occurs | Max Occurs |
|---------------------|----------------------------------------|------------|------------|
| 🖃 🖻 Employee | | | |
| sequence | | 1 | 1 |
| 🕀 🗈 header | | 1 | 1 |
| : e record | | 1 | unbounded |
| see sequence | | 1 | 1 |
| e EmpNo | string | 1 | 1 |
| e Firstname | string | 1 | 1 |
| e MidInit | string | 1 | 1 |
| e LastName | string | 1 | 1 |
| e WorkDept | string | 1 | 1 |
| e PhoneNo | string | 1 | 1 |
| e HireDate | string | 1 | 1 |
| e Job | Brows | æ | <u> </u> |
| EdLevel | <ano< td=""><td>•</td><td></td></ano<> | • | |
| e sex | 📃 🖃 boole | an | |
| e BirthDate | date | | |
| e salary | date1 | ime | |
| Add a Local Element | 📃 decim | al | |
| | 📃 doubl | е | |
| | 📃 float | | |
| | 📄 hexBi | nary | |
| | 🖃 int | | • |

5. Now change the data type for some fields. Click in the Type column of the HireDate field and select "date" as the data type.

6. Repeat this step for BirthDate, setting type to "date".

Change EdLevel's data type to "int".

| Name | | Туре | Min Occurs | Max Occurs |
|---------------------|-------------------|------------|----------------|------------|
| 🖃 🖻 Employee | • | | | |
| 🖃 🚥 seque | ence | | 1 | 1 |
| : 🗉 🖻 he | ader | | 1 | 1 |
| : 😑 e re | cord | | 1 | unbounded |
| | sequence | | 1 | 1 |
| 1 | e EmpNo | string | 1 | 1 |
| 1 | e Firstname | string | 1 | 1 |
| 1 | e MidInit | string | 1 | 1 |
| 1 | e LastName | string | 1 | 1 |
| 1 | e WorkDept | string | 1 | 1 |
| 1 | e PhoneNo | string | 1 | 1 |
| 1 | e HireDate | date | 1 | 1 |
| 1 | e Job | string | 1 | 1 |
| 1 | e EdLevel | string | 1 | 1 |
| 1 | e sex | 📃 📃 float | | _ |
| 1 | e BirthDate | | Pinary | |
| 1 | e salary | int 🖃 inte | 104 | |
| Add a Local Element | | - E long | jei | |
| | | - | VegativeIntege | er |
| | | shor | | - |
| | | 📃 strin | g | |
| | | 📃 🖃 time | _ | |
| | | 📃 🖃 unsig | gnedByte | |
| poerties 🕅 🖳 | Problems 🕮 Deploy | 📃 🖃 unsig | gnedInt | - |

| lame | Туре | Min Occurs | Max Occurs | Default Value | Sample Value |
|---------------|---------|------------|------------|---------------|--------------|
| 🖃 e Employee | | | | | |
| 🖃 🚥 sequence | | 1 | 1 | | |
| 😑 🖻 header | | 1 | 1 | | |
| 🖃 🚥 sequence | | 1 | 1 | | |
| e CompanyName | string | 1 | 1 | | head_value1 |
| e EmpCount | string | 1 | 1 | | head_value2 |
| e Address | string | 1 | 1 | | head_value3 |
| e City | string | 1 | 1 | | head_value4 |
| e Country | string | 1 | 1 | | head_value5 |
| 🖃 🖻 record | | 1 | unbounded | | |
| 🖃 🚥 sequence | | 1 | 1 | | |
| e EmpNo | string | 1 | 1 | | value1 |
| e Firstname | string | 1 | 1 | | value2 |
| e MidInit | string | 1 | 1 | | value3 |
| e LastName | string | 1 | 1 | | value4 |
| e WorkDept | string | 1 | 1 | | value5 |
| e PhoneNo | string | 1 | 1 | | value6 |
| e HireDate | date | 1 | 1 | | 2010-12-31 |
| e Job | string | 1 | 1 | | value8 |
| e EdLevel | int | 1 | 1 | | 1 |
| e Sex | string | 1 | 1 | | value10 |
| e BirthDate | date | 1 | 1 | | 2010-12-31 |
| e Salary | decimal | 1 | 1 | | 1.0 |

7. Finally, change Salary field data type to decimal. Your message model should now look like this:

8. IMPORTANT NOTE – WebSphere Message Broker V8 Fixpack 2 (also referred to as

using V8.0.0.2 or IBM Integration Bus V9.0, you may now skip to step 16. If you are using V8.0 or V8.0.0.1, you should perform steps 9 through 16.

V8.0.0.2) has changed some default values generated by the CSV wizard. If you are

9. In the Employee sequence, reset the generated value for the Separator.

In the DFDL editor, click on the <sequence> content of the Employee element.

| E Test Parse Model | 🔓 Test Serialize Model | Hide prop | erties S | ihow advanced | A Show all sections | Focus on selected |
|-----------------------|---------------------------|-----------|----------|--------------------|------------------------|-------------------|
| ▼Messages | | ÷ 🗙 | E, E | 0 | | |
| A message is a (| global element that mod | | re docum | nent of data. | | |
| | | | | | | |
| | | | | | | |
| Name | | | Туре | Min Occurs | Max Occurs | |
| | Imployee | | Туре | Min Occurs | Max Occurs |] |
| - e e | Employee | | Туре | Min Occurs | Max Occurs | |
| | |] | Туре | Min Occurs | Max Occurs | |
| | sequence | | Туре | Min Occurs 1 1 1 1 | Max Occurs 1 1 1 1 1 | |

The Separator between records is set to the default value of "Carriage Return/Line Feed". Notice that there is a third Separator "%WSP*" which was added by the wizard because it automatically skips blank records.

However, in this case, we are going to use Terminators to indicate a new record or row, so we need to remove this value.

Highlight the word "Separator", and click the single grey cross to remove the value. The new value will show as <no separator>.

(You may find that the editor initially replaces the generated value with a ",". Ensure this is completely removed).

| 🔲 Representation Properti | Les Asserts and Discrimina | 🗱= Variables (not supporte |
|---------------------------|----------------------------|------------------------------|
| sequence | | (?) |
| text> | | _ <mark>× ¾</mark> 昂 ⊡ ⊡ |
| Property | Value | 0 |
| General | | |
| Delimiters | - | |
| Separator | %CR;%LF;%WSP* | ^k ; |
| | | |
| | | |
| | | |
| | | |
| | | |

10. On the "header" element, we need to specify a Terminator with value CR-LF.

Click the "header" element. In the Property pane, under Delimiters; the Terminator field will have a value of <no terminator>. Click in this field, and then use the Content Assist feature to set it to the value %CR;%LF;

Note that this lab does not need to include the %WSP value, because the test data does not have any blank lines. However, in the more general case, it is a good idea to include %WSP as well, which will mean that blank lines in the data are handled (excluded).

Content Assist is started by the key combination Ctrl-Space. Then use the down-arrow to position to the required value; select the value with the Return key.

When the field has been populated correctly, click Return to make sure the field is updated.

| Name | | Туре | Min Occurs | Max Occurs |
|---------------|--------------|---------|------------|------------|
| 🖃 e Ei | imployee | | | |
| | sequence | | 1 | 1 |
| : 6 | e header | | 1 | 1 |
| : e | | | 1 | unbounded |
| | 🖃 🚥 sequence | | 1 | 1 |
| | e EmpNo | string | 1 | 1 |
| | e Firstname | string | 1 | 1 |
| | e MidInit | string | 1 | 1 |
| | e LastName | string | 1 | 1 |
| | e WorkDept | string | 1 | 1 |
| | e PhoneNo | string | 1 | 1 |
| | e HireDate | date | 1 | 1 |
| | e Job | string | 1 | 1 |
| | e EdLevel | int | 1 | 1 |
| | e sex | string | 1 | 1 |
| | e BirthDate | date | 1 | 1 |
| | e salary | decimal | 1 | 1 |
| Add a Local I | | | | |

When complete the Terminator for the "header" element should look like this:

| Delimiters | |
|--------------------------------|--------------------------|
| Initiator | 🛃 <no initiator=""></no> |
| Terminator | %CR;%LF; |
| | |

11. Repeat the above step for the "record" element.

When complete, the Terminator for the "record" element should look like this:

| Delimiters | |
|------------|--------------------------|
| Initiator | 暑 <no initiator=""></no> |
| Terminator | %CR;%LF; |
| | |

12. Check the values for the <sequence> content of the header element and the <sequence> content of the record element to check that the field separator is set to ",".

The Initiator and Terminator values should be <no initiator> and <no terminator>.

No changes should be necessary here.

| 🔲 Representation Properties 🛛 📙 Asserts and Discriminators 🗱 Variables (not supported in curren | | | | | |
|-------------------------------------------------------------------------------------------------|--------------------------------------|--|--|--|--|
| sequence | 0 | | | | |
| <type filter="" text=""></type> | 🗶 💥 📓 🗉 🖻 | | | | |
| Property | Value 🕜 | | | | |
| 🖃 General | | | | | |
| Encoding (code page) | 🛃 <dynamically set=""></dynamically> | | | | |
| Byte Order | 🛃 bigEndian 🛛 📖 | | | | |
| Delimiters | | | | | |
| Separator | 昂, | | | | |
| Initiator | 🛼 <no initiator=""></no> | | | | |
| Terminator | 🛼 <no terminator=""></no> | | | | |
| | | | | | |

13. Finally, a CSV file may, or may not, have a Carriage Return Line Feed as the last character. In some cases, the last record may be missing the final "new line" character.

To handle this situation, we will change the default values for this model so that it will be able to handle both scenarios (ie. it will parse successfully, irrespective of whether the final character is present or not).

IN the editor, collapse the Employee model, and then click "Show all sections".

| 0 Em | ployee.xsd | x | | | | | | | |
|--------|-----------------------------------|---------------------|------------------|--------------------------|--------|----------|--------------|------------------|--------|
| Test F | 👪 Parse Model | Final Test Serializ | e Model | Hide proper | ties | Show a | H dvanced | ≜ 5how all se | ctions |
| | lessages nessage is a g | global element | よう 合 :that mo | 🕂 🗶 Idels an entire | e doci | ument of | data. | | |
| | Name | | Туре | Min Occurs | Max | Occurs |] | | |
| | 🛨 🖻 E | imployee | | | | |] | | |
| | Add a Local | Element | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

14. To make the display a little less busy, click "Hide empty sections".

| D Employee.xsd | × | | | | | | | |
|-----------------------|--------------------------------------------------|--------------------|-----------------|-----------------------|-------------------|--|--|--|
| E Test Parse Model | 6 Test Serialize Model | Hide properties | show basic | Arride empty sections | Focus on selected | | | |
| ▶Schema | | | | | | | | |
| ▶Messages (1 | 1 message) | | | | | | | |
| A message is a g | global element that mo | dels an entire doc | ument of data | а, | | | | |
| ▶Global Eleme | ents (0 elements) | | | | | | | |
| A global element | represents a named i | nstance of a comp | plex or simple | type. | | | | |
| Complex Typ | oes (O complex typ | es) | | | | | | |
| A complex type | defines the elements a | nd groups that re | epresent a stri | ucture. | | | | |
| ▶Simple Type | s (O simple types) | | | | | | | |
| A simple type de | fines the allowed value | es for one or mor | e simple eleme | ents. | | | | |
| ⊁Groups (0 g | roups) | | | | | | | |
| A group defines | a group of elements to | be used in comp | lex type defin | itions. | | | | |
| ▶Data Format | s (1 format) | | | | | | | |
| A data format is | A data format is a container of DFDL properties. | | | | | | | |
| ⊁ ¥ariables (4 | variables) | | | | | | | |
| | a value that can be us | ed in DFDL expre | ssions. | | | | | |
| | | | | | | | | |

15. Expand the Data Formats section.

Highlight the <default format> field. This is where you can define many default values for the message model.

In the Representation Properties, expand the Delimiters section, and locate the property DocumentFinalTerminatorCanBeMissing. Set this property to "yes". Ensure you press the Return key to ensure the property is correctly updated.

| Test Parse Model Test Serialize Model Hide properties Show advanced State | *Employee.xsd | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------|
| Schema Image is in the same namespace> Image is in the same namespace uses an include. A schema file in a different namespace uses Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models an entire document of data. Image is a global element that models and is a superset of the | | in selected Show quick outline Create logical inst | ance |
| A schema file in the same namespace uses an include. A schema file in a different namespace uses Messages (1 message) Comment A message is a global element that models an entire document of data. General • Data Formats Image: Content • Data Formats Image: Content • Message is a global element that models an entire document of data. • Data Formats Image: Content • Maname Type • Variables (4 variables) Content A variable holds a value that can be used in DFDL expressions. Image: Content Final Terminator • Nariable holds a value that can be used in DFDL expressions. Image: Content Final Terminator Can Be Miss (Pes) • Nariable holds a value that can be used in DFDL expressions. Image: Content Final Terminator Can Be Miss (Pes) • Nil Value Delimiter Policy Image: none • Nil Value Delimiter Policy | | | |
| Messages (1 message) Comment A message is a global element that models an entire document of data. General • Data Formats • Content • Data Formats • Content • Mame • Type • Binary Content • Variables (4 variables) • Content final Terminator • Variable holds a value that can be used in DFDL expressions. • Initiator • Name • Type • Initiator • Name • Type • Content • Name • Type • Structural Content • Occurrences • Alignment • Delimiters • Separator Policy • Separator Policy • suppressed • Separator Policy • superessed • Document Final Terminator Can Be Miss • Nil Value Delimiter Policy • none • Nil Value Delimiter Policy • none • Nil Value Delimiter Policy | ▶Schema References (0 includes, 1 import) | <type filter="" text=""></type> | × |
| >Messages (1 message) A message is a global element that models an entire document of data. > Data Formats Image: Structural Content Image: | A schema file in the same namespace uses an include. A schema file in a different namespace uses | Property | Value |
| Pressages (I message) A message is a global element that models an entire document of data. • Data Formats • Data Formats • Data Formats • Definition Format • Variables (4 variables) A variable holds a value that can be used in DFDL expressions. • Variable holds a value that can be used in DFDL expressions. • Content • Content • Entry Voltation • Initiator • Content inal Terminator • Content inal Terminator • Content inal Terminator • Document Final Terminator Can Be Missions • Document Final Terminator Can Be Missions • Document Final Terminator Policy • None • Output New Line • %CR;%LF; | | Comment | |
| A message is a global element that models an entire document of data. | Messages (1 message) | | |
| Text Content | | Content | |
| *Oata Formats *O all ** Name Type CodeBable format> Definition Format *Variables (4 variables) A variable holds a value that can be used in DFDL expressions. A variable holds a value that can be used in DFDL expressions. Initiator Initiator Constrained on the miniator in the miniato | A message is a giobal element that models an entire document or data. | Text Content | |
| A data formation sector as a DEFL growthing Name Type ✓ data format> Definition Format > Variables (4 variables) Separator A variable holds a value that can be used in DFDL expressions. Separator Initiator Initiator> Document Final Terminator Multi Delimiter Policy Initiator> Document Final Terminator Can Be Miss ves Mil Value Delimiter Policy Inone Empty Value Delimiter Policy Inone Output New Line % 0CR;%LF; | *Data Formate | Binary Content | |
| Name Type <default format=""> Definition Format > Variables (4 variables) Separator Policy A variable holds a value that can be used in DFDL expressions. Separator Policy Initiator , <no initiator=""> Document Final Terminator Can Be Miss yes Nu Value Delimiter Policy none Empty Value Delimiter Policy none Output New Line % CR;%LF;</no></default> | | Structural Content | |
| Name Type Kdefault format> Definition Format > Variables (4 variables) Separator Policy A variable holds a value that can be used in DFDL expressions. Separator Position Initiator Terminator Initiator Note thinator Note thinator Initiator | A data termatus a costaner et UEUL proportios | Occurrences | |
| Koterault format> Definition Format P Variables (4 variables) Separator Policy A variable holds a value that can be used in DFDL expressions. Separator Position Initiator , <no initiator=""> Decument Final Terminator Can Be Miss yes Nil Value Delimiter Policy none Empty Value Delimiter Policy none Output New Line % CR;%LF;</no> | Name | Alignment | |
| >Variables (4 variables) Separator Policy suppressed A variable holds a value that can be used in DFDL expressions. Separator Policy suppressed Initiator Document Final Terminator Can Be Missives Nil Value Delimiter Policy suppressed Nil Value Delimiter Policy none Output New Line % 0CR;%LF; | ······ | Delimiters | |
| Y arrables (4 variables) Separator Position Initiator A variable holds a value that can be used in DFDL expressions. Initiator Initiator Terminator Initiator Initiator Document Final Terminator Can Be Miss ves Document Final Terminator Can Be Miss ves Nil Value Delimiter Policy Initiator Empty Value Delimiter Policy Initiator Output New Line % CR;%LF; | <pre>cdefault format > Definition Format</pre> | Separator | 昆, |
| A variable holds a value that can be used in DFDL expressions. A variable holds a value that can be used in DFDL expressions. Ferminator Ferminator | Nuvishlar (4 usvishlar) | Separator Policy | 뿸 suppressed |
| Initiator Con initiator> Terminator Con initiator> Document Final Terminator Can Be Miss Ves Nil Value Delimiter Policy Enone Empty Value Delimiter Policy None Output New Line Scr;%LF; | | Separator Position | 🛃 infix |
| Document Final Terminator Can Be Missi ves Nil Value Delimiter Policy Empty Value Delimiter Policy Empty Value Delimiter Policy Output New Line | A variable holds a value that can be used in DFDL expressions. | Initiator | 🖳 <no initiator=""></no> |
| Nil Value Delimiter Policy Ranone Empty Value Delimiter Policy Ranone Output New Line Ranoe(Scritcher) | | Terminator | 🛃 <no terminator=""></no> |
| Empty Value Delimiter Policy 🛃 none Output New Line 🛃 %CR;%LF; | | Document Final Terminator Can Be Mis | s yes |
| Output New Line 🛃 %CR;%LF; | | Nil Value Delimiter Policy | 🛃 none |
| | | Empty Value Delimiter Policy | a none |
| Calculated Values | | Output New Line | |
| | | | |

16. Save the Employee message model.

4. Test the Message Model

1. Now test the message model to validate that it parses the CSV data file correctly.

Click the "Test Parse Model" icon.

| 🛈 Em | ployee.xsd | × | | | | | | | |
|------------|-----------------------------------|-------------------------------|-------------------|----------------|--------------------|------------------------|----|--|--|
| Test I | 🚯 Parse Model | G Test Serialize Mo | idel Hi | ide properties | ⇒ Show advanced | A Show all sections | Fo | | |
| } 5 | chema | | | | | | | | |
| | lessages nessage is a (| global element that | 仓 - ٿ : model: | | ument of data. | | | | |
| | Name | | Туре | Min Occurs | Max Occurs | | | | |
| | 🖃 🖻 E | imployee | | | | | | | |
| | | •• sequence | | 1 | 1 | | | | |
| | E header 1 1 | | | | | | | | |
| | 1 | 표 🖻 record | | 1 | unbounded | | | | |
| | Add a Local | Element | | | | | | | |
| | | | | | | | | | |

2. In the "Parse Input" section of the new window select the "Content from a data file" option and click the browse button to select the employees.csv file under MessageModellingLibrary.

(Your window may show different items to those shown in the screen capture below).

| 🜔 Test Parse Model | | | | <u>_ 🗆 ×</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----|--------------|--------------|
| Message Select message for testing. <u>More</u> Message name:* Employee | File Selection Select an input file: | | _ _ X | T |
| Select content to be parsed against Content from 'DFDL Test - Seriali Content from a data file Input file name:* Specify runtime configuration. Runtime encoding options Provide runtime values for propertie: Encoding (code page): UTF-8 Floating point format: IEEE Non-Es Byte order: C Little endian C Bi | MessageModellingLibrar IBMdefined Iefficient Iefficient Iefficient Iefficient Iefficient Iefficient | ✓ | - | Browse |
| Runtime validation | Select an input file from the | Br | owse,,, | |
| | | | ОК | Cancel |

Then click OK in both windows.

3. Confirm the popup by clicking yes, which will take you to the DFDL Test perspective

| 🜔 Conf | ìrm Perspective Switch | | × |
|--------|-------------------------------------------------------------------------------------------------------------------------------|---------|---|
| ? | The DFDL Test perspective sets up the views schemas. Testing can be done in other perspe be optimally setup by default. | | |
| | Do you want to open the DFDL Test perspecti | ve now? | |
| 🗌 Rem | nember my decision | | |
| | | Yes No | |

- 4. The DFDL Test perspective has several views:
 - DFDL Test Parse: Allows you to parse a file using the message model in the editor
 - DFDL Test Trace: Has a detailed trace log of the testing activities. Very helpful to find the cause of errors.
 - DFDL Test Logical Instance: Gives you a view of the parsed message tree
 - DFDL Test Serialize: Allows you to generate a file from the message model

When the perspective opens, you see a popup message with the parsing result, in this case successful. Close it by clicking in the "X".

| 🚺 Employee.xs | d X | | | | | - D | 🗳 DFDL Test - Logical Inst | ance 🛙 |
|---------------------------------|-----------------------------------------------------------------|----------------------------|------------------------------------------------|------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------|
| Test Parse Mod | el Test Serialize Model Show pr | | ihow advanced | A Show all section | | i F skoutline Create logical instance | Data source: <from 'df<="" th=""><th></th></from> | |
| ▶Schema | | | | | | | Message: Employee (/w | orkspaces/1/i |
| | | | _ | | | | Tree View XML View | |
| Messages | | | | | | | Name | Type |
| A message is | a global element that models an er | itire docum | ent of data. | | | | Employee | |
| | 8 | | | | | | ⊕ header | |
| Name | | Туре | Min Occurs | Max Occurs | | | record if record | |
| | Employee | | | | | | record record | |
| | sequence | | 1 | 1 | | | record record | |
| 1 | 😑 🖻 header | | 1 | 1 | | | record record | |
| | = sequence | | 1 | 1 | | | record | |
| 1 | CompanyName | string | 1 | 1 | | | record record record | |
| - | e EmpCount | string | 1 | 1 | | | record F record | - |
| | | | | - | | | record record | |
| 1 | e Address | string | 1 | 1 | | | record record | |
| 1 | e City | string | 1 | 1 | | | record record | |
| 1 | Country | string | 1 | 1 | | | record | |
| 1 | 🗄 🖻 record | | 1 | unbounded | | (| record record | |
| Add a Lo | cal Element | | | | | ③ Parsing completed successfully. | | |
| | | | | | | | | |
| | | | | 20 | 7 | | | |
| 🍄 Navigator [| 🖞 Problems 🖺 DFDL Test - Pars | | 0 DFDL Test - | Serialize 🗈 🗈 DFD | DL Test - Trace | Tips: | | |
| DFDL Test - Pa | arse: Runs the DFDL parser with t | he provided | d physical input | data and selecter | d message, and updates the logic | Selecting an element in the DFDL editor will cause the parsed input I | | |
| Status: Parsin | g completed: Tue May 22 14:23:43 | BST 2012 | | | | The view menu on the view toolbar provides options to control how | | |
| -Input | | | | | | To view the logical instance that was created by the DFDL parser, o To view the trace captured while running the DFDL parser, click the | | |
| Data: /Messa | geModellingLibrary/employees.csv | | | | | To view the trace captured while running the orbit parser, tick the | Open DPDC Trace view could | ar button, or |
| Parsed Input - | | | | | | Do not display this message again | | |
| Characters - | | | | | | | | |
| 1 Compa 2 "0000 3 "0000 | ny1,42,123 Street, 100","CHRISTINE","I 20","MICHAEL","L", | Winche ","HAA "THOMP | ster <mark>.</mark> UK S","AOO" SON","BO | ."3978"." 1"."3476" | 1995-01-01" <mark>,</mark> "PRES ,"2003-10-10","MAN | ",18,"F","1963-08-24",152750.00 IAGER ",18,"M","1978-02-02",94250.00 | | |
| Selection in D Selected: Emp | FDL Editor loyee : <anonymous> (complex)</anonymous> | Repeating | index: 1 | Range in pars | sed input: 0 - 4171 | Input Jumn: 99 Offset: 136 Length: 0 | | |

5. Notice that the input text has been highlighted to differentiate the separators (",") that the parser has detected.

| ed Input aracters | |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| aracters | |
| | 42,123 Street_Winchester_UK "CHRISTINE"_"I"_"HAAS"_"A00"_"3978"_"1995-01-01"_"PRES "_18_"F"_"1963-08-24"_152750.00 |
| "000020", | "MICHAEL","L","THOMPSON","B01","3476","2003-10-10","MANAGER ",18,"M","1978-02-02",94250.0 |
| | "SALLY","A","KWAN","C01","4738","2005-04-05","MANAGER ",20,"F","1971-05-11",98250.00 "JOHN","B","GEYER","E01","6789","1979-08-17","MANAGER ",16,"M","1955-09-15",80175.00 |
| | JOHN 5 GEIER 201 6763 1979-06-17 MANAGER 16 M 1955-09-15 00175.00 "IRVING" "F" "STERN" 1911 "6423" 2003-09-14" "MANAGER "16 M" 1975-07-07" 72250.00 |

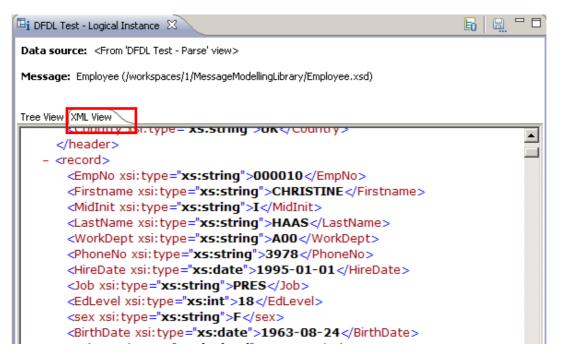
6. Look at the Logical instance view in the top right corner. This shows the parsed message tree for the employees.csv file.

| 📴 DFDL Test - Logical Instance | e 23 | | 🖥 📓 🗖 🗗 |
|--------------------------------------------------------------------------------------------------|---------------------|-----------------------|----------|
| Data source: <from 'dfdl="" 1<="" td=""><td>Test - Parse' view></td><td></td><td></td></from> | Test - Parse' view> | | |
| Message: Employee (/works | paces/1/MessageMo | dellingLibrary/Employ | ee.xsd) |
| Tree View XML View | | | |
| Name | Туре | Value | ▲ |
| 🖃 Employee | | | |
| the ader | | | |
| | | | |
| record | | | |
| record | | | |
| + record | | | |
| + record | | | |
| record | | | |
| record | | | |
| record | | | |
| record | | | |
| record | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| I I∓I record | | | |

Expand a few records to check that the parsing was correct.

| 🗉 DFDL Test - Logical Insta | ince 🛛 | | E 🗒 | - 0 |
|--------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|--------------|-----|
| Data source: <from 'dfc<="" td=""><td>)L Test - Parse' view</td><td>></td><td></td><td></td></from> |)L Test - Parse' view | > | | |
| Message: Employee (/wo | rkspaces/1/Message | :ModellingLibrary/Emp | loyee.xsd) | |
| Name | Туре | Value | | |
| 🖃 Employee | | | | |
| 🛨 header | | | | |
| 🖃 record | | | | |
| EmpNo | xs:string | 000010 | | |
| Firstname | xs:string | CHRISTINE | | |
| MidInit | xs:string | I | | |
| LastName | xs:string | HAAS | | |
| WorkDept | xs:string | A00 | | |
| PhoneNo | xs:string | 3978 | | |
| HireDate | xs:date | 1995-01-01 | | |
| Job | xs:string | PRES | | |
| EdLevel | xs:int | 18 | | |
| sex | xs:string | F | | |
| BirthDate | xs:date | 1963-08-24 | | |
| salary | xs:decimal | 152750 | | |
| + record | | | | |
| I I∓I record | | | | |

7. Click on XML View to show the same parsed records in XML format.



8. In the Employee message model, click on the record element. The first record in the input text will be underlined

| Di Employee.xs | I X | | | | | | | - 8 |
|-----------------|-------------------------------------|-----------------------------------------|---------------------------|---------------------|---------------------|----------------------|----------------------|-------------------------------------------------------|
| E | 6 | | 静 | A | | E . | | F |
| Test Parse Mode | el Test Serialize Model | Show properties | Show advanced | Show all sections | Focus on selected | Show quick outli | ne Createlo | gical instance |
| ▶Schema | | | | | | | | |
| · senema | | | | | | | | |
| ▼Messages | | + X E | H | | | | | |
| | 💷 / 🕶 🦉 a global element that mo | | -0 | | | | | |
| A message is | a giobal element that mo | dels an endre docu | ment or data. | | | | | |
| Name | | Туре | Mip Occurs | Max Occurs | 1 | | | |
| | | Type | Minoccurs | Max Occurs | | | | |
| | Employee | | | | | | | |
| G | en sequence | | 1 | 1 | | | | |
| | | | 1 | 1 | | | | |
| 1 | + e record | | 1 | unbounded | 1 | | | |
| Add all or | al Element | | | | | | | |
| | | | | | | | | |
| | ats (1 format) | | | | | | | |
| A data format | is a container of DFDL p | roperties. | | | | | | |
| | | | | | | | | |
| | (4 variables) | | | | | | | |
| A variable hol | ds a value that can be u | sed in DFDL expres | sions. | | | | | |
| | | | | | | | | - |
| • | | | | | | | | ► F |
| - (T | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | 10 | | | | |
| 🖏 Navigator 🔡 | Problems 🕒 DFDL T | est - Parse 🛛 🔪 | Ei DFDL Test - S | erialize 🕞 🕞 DFDL | Test - Trace | | | |
| DFDL Test - Pa | rse: Runs the DFDL pa | rser with the provid | led physical input o | lata and selected r | message, and update | es the logical insta | nce view with | n the result of the parse. |
| Status: Parsine | g completed: Tue May 22 | 2 14:23:43 BST 201 | 2 | | | | | |
| Input | | | | | | | | |
| Data: /Messag | jeModellingLibrary/emplo | yees.csv | | | | • | Browse | Message: Employee (/MessageModelling |
| Parsed Input - | | | | | | | | |
| Characters - | | | | | | | | |
| | ny1,42,123 St | reet Winch | ester IK | | | | | |
| 2 <u>"0000</u> | 10"."CHRISTIN | E"."I"."HA | AS" <mark>.</mark> "AOO". | | | | <mark>.18.</mark> "F | " <mark>,</mark> "1963-08-24" <mark>,</mark> 152750.0 |
| з "0000 | 20","MICHAEL" | ,"L","THOM | PSON","BO1 | ","3476"," | 2003-10-10' | ',"MANAGER | ",18,"] | M","1978-02-02",94250.0 |
| 4 | | | | | | | | |
| Selection in D | FDL Editor | | | | | ection in Input — | | |
| Selected: reco | rd : <anonymous> (com</anonymous> | plex) Repeating | index: 1 | Range in parsed in | put: 38 - 138 Row | | Offset: 13 | 36 Length: 0 |

To go to another record in the input text, just change the "Repeating Index" number, and it will display the selected record.

| Γ | Parsed Input |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Characters |
| | 20 "000210","WILLIAM","T","JONES","D11","0942","1998-04-11","DESIGNER",17,"M","2003-02-23",68270.00 21 <u>"000220","JENNIFER","K","LUTZ","D11","0672","1998-08-29","DESIGNER",18,"F","1978-03-19",49840.00</u> |
| | 22 "000230", "JAMES", "J", "JEFFERSON", "D21", "2094", "1996-11-21", "CLERK ",14, "M", "1980-05-30", 42180.00 23 "000240", "SALVATORE", "M", "MARINO", "D21", "3780", "2004-12-05", "CLERK ",17, "M", "2002-03-31", 48760.00 24 "D00250", "DANTEL", "S", "SMITH", "D21", "0961", "1999-10-30", "CLERK ",15, "M", "1969-11-12", 49180.00 |
| | Selection in DFDL Editor Selected: record : <anonymous> (complex) Repeating inde: 20 Range in parsed input: 1923 - 2021 Row: 2 Column: 99 Offset: 136 Length: 0</anonymous> |

9. You can also click on any element in the message model to see where it's located in the input text.

| Fext Parse Model Text Serialize Model Show advanced Show all sections Focus on selected Show quick outline Create logical instance Schema Messages Image: Image: Image | st Serialize Model | Show properties Show | 화 advanced Show (| A E | selected Show auick outline | Create logical instance |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|----------------------|------------------------|--------------------------------|------------------------------------|
| •Messages • • • • • • • • • • • • • • • • • • • | | | | | | |
| A message is a global element that models an entire document of data. Name Type Min Occurs Max Occurs Image: Employee 1 1 Image: Employee Image: Employee 1 Image: Employee Image: Employee Image: Employee Image: Employee Image: Employee Image: Employee Image: Employee Image: Employee Image: Employee | | | | | | |
| A message is a global element that models an entire document of data. A message is a global element that models an entire document of data. Name Type Min Occurs Max Occurs Image: I | | ↓ ★ ■ ■ | | | | |
| Name Type Min Occurs Max Occurs Image: Employee 1 1 Image: Employee String 1 1 Image: Employee Image: Employee Image: Employee Image: Employee | | | f data. | | | |
| Image: Sequence 1 Image: String 1 Image: String 1 Image: Sequence 1 Image: Se | | | | | | |
| Image: Sequence 1 1 Image: Sequence string | | Туре | Min Occurs Max (| Docurs | | |
| Image: Sequence 1 1 Image: Sequence Image: Sequence 1 Image: Sequence Image: Sequence 1 Image: Sequence Image: Sequence Image: Sequence Image: Sequence Image: Sequence Image: Sequence Image: Sequence Image: Sequence Image: Sequence Image: Sequence Image: Sequence | iyee | | | | | |
| Image: Sequence 1 unbounded Image: Sequence 1 1 Image: Sequence string 1 Image: Sequence | quence | | 1 1 | | | |
| Image: Sequence 1 1 Image: | header | | 1 1 | | | |
| EmpNo string 1 1 EmpNo string 1 EmpNo st | record | | 1 unbou | unded | | |
| Constrained and and and and and and and and and an | and sequence | | 1 1 | | | |
| Characters C | e EmpNo | string | 1 1 | | | |
| i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i | e Firstnan | string | 1 1 | | | |
| Image: String 1 1 Image: String 1 1 <t< td=""><td>e MidInit</td><td>string</td><td>1 1</td><td></td><td></td><td></td></t<> | e MidInit | string | 1 1 | | | |
| Image: String 1 1 Image: String 1 1 <t< td=""><td></td><td>-</td><td></td><td></td><td></td><td></td></t<> | | - | | | | |
| Image: Problems | | - | | | | |
| Navigator Problems DFDL Test - Parse DFDL Test - Serialize DFDL Test - Trace DC Test - Parse: Runs une und parser with the provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical mistance view with the result of tables provided physical imput data and selected message, and opdates the logical imput data and selected message provided physical imput data and selected message. ata: [MessageModellingLibrary/employees.csv Imput data and selected message provided physical imput data and selected message. arsed Input [MessageModellingLibrary/employees.csv Imput data and selected message. <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td></t<> | | | | | | |
| Dr. Test - Parse: Kuns the DFDL parser with the provided physicaninput data and selected message; and opdates the logical instance view with the result of the test of the test of the test of the test of test | e HireDati | date | 1 1 | | | |
| Dr resc - Parse: Runs the brock parser with the provided physical input data and selected message, and updates the logical instance view with the result of the selected message, and updates the logical instance view with the result of the selected message, and updates the logical instance view with the result of the selected message, and updates the logical instance view with the result of the selected message, and updates the logical instance view with the result of the selected message, and updates the logical instance view with the result of the selected message, and updates the logical instance view with the result of the selected message, and updates the logical instance view with the result of the selected message. uput | | | | | | |
| atus: Parsing completed: Tue May 22 14:23:43 BST 2012 aput | | | | | | |
| Imput Browse Message: E arsed Input | | | sicarinpucuaca ani | i selecceu message, al | iu upuates the logicarinstance | e view with the result of the pars |
| Asta: //MessageModellingLibrary/employees.csv Browse Message: E arsed Input | eted: Tue May 2 | 14:23:43 BST 2012 | | | | |
| arsed Input Characters 3 "000020", "MICHAEL", "L", "THOMPSON" "B01", '3476", "2003-10-10", "MANAGER ",18, "M", "1978 4 "000030", "SALLY", "A", "KWAN", "C01" "4728" "2005-04-05", "MANAGER ",20, "F", "1971-05-11 | linet ihnen deren | | | | Pro- | Massage Frieldung |
| Characters 3 "000020","MICHAEL","L","THOMPSON" <u>"B01"</u> ,"3476","2003-10-10","MANAGER ",18,"M","1978 4 "000030"."SALLY","A","KWAN","C01" "4728" "2005-04-05","MANAGER ",20,"F","1971-05-11 | illi iyubrary)enipi | rees.csv | | | | Message: Employee |
| 3 "000020", "MICHAEL", "L", "THOMPSON" "B01", 3476", "2003-10-10", "MANAGER ",18,"M", "1978 4 "000030", "SALLY", "A", "KWAN", "C01" "4728" "2005-04-05", "MANAGER ",20,"F", "1971-05-11 | | | | | | |
| 4 "000030"."SALLY"."A"."KWAN"."C01" 4728"."2005-04-05"."MANAGER ".20."F"."1971-05-11 | | | | | | |
| 4 000030 , SALLY, A , KWAN , COI , 2005-04-05 , MARAGER ,20, F , 19/1-05-11 5 "000050", "JOHN", "B", "GEYER", "EO1", "6789", "1979-08-17", "MANAGER ",16, "M", "1955-09-15 4 | "MICHAEL' | ,"L","THOMPSON | " <u>"B01"</u> ,'3 | 476","2003-1 | 0-10", "MANAGER ' | ',18,"M","1978-02- |
| | " TOHN" "F | '."GEYER"."EO1 | ","6789"," | 1979-08-17". | "MANAGER ",20,"F | ("."1955-09-15".80 |
| | | ,, | | | | |
| Selection in DFDL Editor | | | | | | |

10. You could run the parser against other input text, by clicking the Browse button in the input section, selecting the file and clicking the Run Parser button.

| 🕾 Navigator 🔝 Problems 🕒 DFDL Test - Parse 🖾 🕞 DFDL Test - Serialize 🗓 DFDL Test - Trace | 0 | 1 📭 🜔 🔍 🤣 🔢 🛛 🖓 🗖 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------|
| IDENCE TESC - Parse: Kurs de Debu parse war die provided pryskam put data and seetded message, and dpodes die logical instance view with the result of the parse. | | |
| Status: Parsing completed: Tue May 22 14:23:43 BST 2012 | | - |
| Eput Data: [MessageNobiling.kranylerployees.csv] [Browse] Message: Employee (MessageModeling.kranyEmployee.usd) | | |
| Parsed Input | | |
| C ^C avates 3 "000020","MICHAEL","L","THOMPSON"," <u>B01"</u> ,"3476","2003-10-10","MANAGER ",18,"M","1978-02-02",94250.00 4 "000030","SALLY","A","KWAN","C01","4738","2005-04-05","MANAGER ",20,"F","1971-05-11",98250.00 5 "000050","JOHN","B","GEYER","E01","6789","1979-08-17","MANAGER ",16,"M","1955-09-15",80175.00 ≤ | | × |
| Selection in DPDL Editor Selection in DPDL Editor Selection in DPDL Editor Selection in DPDL (Editor Selection in Input Selecti | | |

11. Now click on the "DFDL Test - Serialize" tab, next to the DFDL Test - Parse tab.



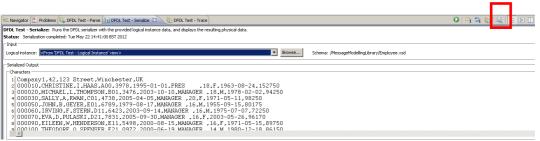
12. In the Input section, click on the combo box and select "<From 'DFDL Test - Logical Instance' view" and click the "Run Serializer" button (the icon on the top right of this view, as highlighted before).

| 😪 Navigator 🔝 Problems 🕒 DFDL Test - Parse 🕞 DFDL Test - Serialize 🕴 🕼 DFDL Test - Trace | 0 | ² i 🖬 🕅 |
|----------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------|
| DFDL Test - Serialize: Runs the DFDL serializer with the provided logical instance data, and displays the resulting physical data. | | |
| Status: Ready | | |
| | | |
| Log al instance: <from -="" dfdl="" instance'="" logical="" test="" view=""> Browse Encode (code page): UTF-8 Schema: <none></none></from> | | |
| Serialized Output | | |
| - Characters | | |
| 1 | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Character Selection In Output FByte Selection In Output | | |

13. The Serializer has just created a text file from the message tree (previously parsed) using the current CSV message model:

| 😪 Navigator 🔝 Problems 🕒 DFDL Test - Parse 🕼 DFDL Test - Service 🛛 🕼 DFDL Test - Trace | ③ Serialization completed successfully. | - 8 |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| DFDL Test - Serialize: Runs the DFDL serializer with the provided logical instance data, and displays the resulting p | | - |
| Status: Serialization completed: Tue May 22 14:41:00 BST 2012 | | |
| ⊢ Input | Tips: | |
| Logical instance: <pre><from 'dfdl="" -="" instance'="" logical="" test="" view=""></from></pre> | The view menu on the view toolbar provides options to control how the data is displayed in the view. Click the arrow icon on the toolbar or bere to open the menu. To view the trace captured while running the DFDL serializer, dick the Open DFDL Trace View toobar button, or click <u>here</u> . | |
| - Serialized Output | | 5 |
| Characters | Do not display this message again | |
| 1 Company1,42,123 Street,Winchester,UK | | |
| | | |
| 3 000020,MICHAEL,L,THOMPSON,B01,3476,2003-10-10,MANAGER ,18,M | ,1978-02-02,94250 | |
| T | F | |
| where the first sector | Servite: Now the DFCL services with the provide logical instance data, and displays the resulting abadian completed. Ture May 22 14-41:00 DET 2012 Ter: Ter: Ter: Ter: Ter: Ter: Ter: Ter: | |
| Selection in Input | | |
| Row: 0 Column: 0 Offset: 0 Length: 0 | | - |

14. To save the generated output to a text file, click on the "Save to File" button (the diskette icon).



15. In the "Save as" window, select the "MessageModellingLibrary" folder, specify a name for the file (for example: "employee_output.csv") and click OK.



16. Now you are going to create a message tree using the "Sample Test Data" values and then serialize it to a file.

Click on the "Create Logical Instance" icon. (You may need to move the slide-bar to the right to expose this icon).

| E | Eŭ | | | A | | ä | Ē |
|------------------|------------------------|---------------------|----------------|-------------------|-------------------|--------------------|------------------------|
| est Parse Model | Test Serialize Model | Show properties | Show advanced | Show all sections | Focus on selected | Show quick outline | Create logical instanc |
| ▶Schema | | | | | | | |
| | | | | | | | |
| ▼Messages | 🗐 🗐 🕯 | 🕂 🗶 🖡 | E | | | | |
| A message is a g | global element that mo | dels an entire docu | iment of data. | | | | |
| | | | | | | | |
| Name | | Туре | Min Occurs | Max Occurs | | | |
| 🖃 e E | Imployee | | | | | | |
| | ••• sequence | | 1 | 1 | | | |
| 1 | 🗉 🖻 header | | 1 | 1 | | | |
| 1 | 🖃 🖻 record | | 1 | unbounded | | | |
| | 🖃 🚥 sequence | | 1 | 1 | | | |
| 1 | e EmpNo | string | 1 | 1 | | | |
| 11 | e Firstname | e string | 1 | 1 | | | |
| 11 | e MidInit | string | 1 | 1 | | | |
| - : | e LastName | e string | 1 | 1 | | | |
| - : | e WorkDep | t string | 1 | 1 | | | |
| 1 | e PhoneNo | string | 1 | 1 | | | |
| 1 | e HireDate | date | 1 | 1 | | | |
| 1 | e Job | string | 1 | 1 | | | |
| | e EdLevel | int | 1 | 1 | | | |

17. In the popup, check that "Employee:" is selected and click OK.

| 🜔 Create a Logi | cal Instance | | |
|--------------------|--------------|----|--------|
| Select an element: | Employee : | | Browse |
| | | | |
| | | | |
| | | ОК | Cancel |
| | | | |

18. Look at the "DFDL Test - Logical Instance" view (in the right-hand pane), and inspect the message tree.

| ployee.x | isd X | - | → | A | • • | □ DFDL Test - Logical Instan | | |
|-----------|---------------------------------------|--------------|-------------|-------------------|----------------------------------------|------------------------------|----------------------|-----------------------|
| Parse Mo | | | | Show all sections | Focus on selected Show quick outline 1 | Message: Employee (/work | | |
| lessage | is a global element that models an er | | | | | Tree View XML View | 1- | |
| nessage i | s a global element that models an er | ntire accume | nt or data. | | | Name | Туре | Value |
| | | | | | | Employee | | |
| Name | | Туре | Min Occurs | Max Occurs | | CompanyName | xs:string | head value1 |
| | e Employee | | | | | EmpCount | xsistring | head_value2 |
| | sequence | | 1 | 1 | | Address | xsistring | head_value3 |
| | e header | | 1 | 1 | | City | xs:string | head_value4 |
| 1 | | | 1 | | | Country | xs:string | head values |
| 1 | e record | | 1 | unbounded | | ⊡ record | | |
| | sequence | | 1 | 1 | | EmpNo | xs:string | value1 |
| 4.000 | e EmpNo | string | 1 | 1 | | Firstname | xs:string | value2 |
| 1 | e Firstname | string | 1 | 1 | | MidInit | ×s:string | value3 |
| 1 | e MidInit | string | 1 | 1 | | LastName | xs:string | value4 |
| 1 | U | - | 1 | 1 | | WorkDept | xs:string | value5 |
| | e LastName | string | - | - | | PhoneNo | xs:string | value6 |
| 1 | e WorkDept | string | 1 | 1 | | HireDate | xs:date | 2001-01-01 |
| 1.0 | e PhoneNo | string | 1 | 1 | | Job EdLevel | xs:string xs:int | value8 2147483647 |
| 1.0 | e HireDate | date | 1 | 1 | | sex | xs:int xs:string | 2147483647 value10 |
| 1 | e Job | string | 1 | 1 | | BirthDate | xs:scring xs:date | 2001-01-01 |
| 1 | e EdLevel | int | 1 | 1 | | salary | xs:decimal | 1.0 |
| 1.1 | e sex | string | 1 | 1 | | Jaiary | Ashaodina | 1.0 |
| 1.1 | | | | | | | | |

19. In the "DFDL Test - Serialize" view, make sure the Logical instance is set to "<From 'DFDL Test - Logical Instance' view>". Click on the Run Serializer button.

| 🕾 Navigator 🕼 Problems 🗊 DFOL Test - Parse 🗟 DFOL Test - Serialce 🕄 🐻 DFOL Test - Trace | 0 | 1 B. C. M. H. B. T. T. |
|------------------------------------------------------------------------------------------------------------|---|------------------------|
| DFDL Test - Serialize: Runs the DFDL serializer with the provide togical instance on taking physical data. | | |
| Status: Serialization completed: Tue May 22 14:41:00 BST 2012 | | |
| Input | | |
| Logical instance: d=from DFEL Test - Logical Instance' view> Shema: /MessageModeling.tbrary/Employeesd | | |
| Serialized Output | | |
| Characters | | |
| 1 Company1,42,123 Street,Winchester,UK | | - |
| 2 000010.CHRISTINE,I,HAAS,A00,3978,1995-01-01.PRES ,18,F,1963-08-24,152750 | | |
| 3 000020.MICHAEL.L.THOMPSON,B01.3476.2003-10-10.MANAGER ,18.M.1978-02-02.94250 | | ▼ ▶ |
| | | |
| □ Selection in Irput | | |
| Row: 0 Column: 0 Offset: 0 Length: 0 | | - |

20. The Serializer has created a text file from the message tree generated using the Sample Test Data.

| 😒 😵 Navigator 🔀 Problems 🕒 DFDL Test - Parse 🔓 DFDL Test - Serialize 🗙 🚯 DFDL Test - Trace | ③ Serialization completed successfully. | : |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DFDL Test-Serialize: Runs the DFDL on-later with the provided logical instance data, and displays the resulting physical d Status: Serialization completed. The May 22 14:46:43 BST 2012 - Diput Logical instance: [-Chrom DFDL Test - Logical Instance' view> | Tips: | I how the data is displayed in the view. Click the arrow icon on the toobar or <u>farm</u> to open the menu Lick the Open DFCK Trace View toobar button, or click <u>here</u> . |
| Convectes 1 head_value1,head_value2,head_value3,head_value4,head_value5 2 value1,value2,value3,value4,value5,value6,2001-01-01,value8,2147 section h hput | 483647,value10,2001-01-01,1 | ۲ ۲ |
| Row: 0 Column: 0 Offset: 0 Length: 0 | | |

21. Finally, you can configure the DFDL Editor to change the Test Parse configuration properties.

Click Window, Preferences, and from the tree in the left of the window, select DFDL->Testing.

| D Preferences | | <u>_ ×</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| type filter text | Testing | ← • ⇒ • ▼ |
| General Ant General Ant General Ant Backward Compatibility Broker Development Data Management Debu <u>Editor Testing Trace View Second View Java Java Java Java Java EE Java Persistence Java Script JET Transformations Jython LPEX Editor Modeling Plug-in Development Provisioning Admin Report Design Samyles and Tutorials Setting: Service Testing Team Validation Web Web Web Web Web Services Websphere Application Server XML </u> | Switch to Data Format Description Test perspective when testing: Always Never Prompt Display Properties for the DFDL Test Parse and Serialize Views Data Terminators Processing Errors Validation Errors Validation Errors Validation Errors Restore Detection | faults Apply |
| ? | ОК | Cancel |
| | | |

Change the colour for "Separators" to any colour you want, and click OK.

22. Return to the "DFDL Test - Parse" view and click "Run Parser" again:

| 5: Navigator 🖭 Problems 🔍 DFDL Test - Parse 🕴 💫 🖶 DFDL Test - Serialze 🔞 DFDL Test - Trace | 🚺 📴 🖬 🐘 📓 🤣 🐄 🗖 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| FDL Test - Parse: Runs the DFDL parser with the provided physical input data and selected message root, and updates the logical instance view with the result of the parse. | |
| Status: Parsing completed: Thu Jun 02 11:48:48 CDT 2011 | |
| Irput Data: MessageModelingukrary_broker/employees.cov 🛛 🛛 Browse Message root: Employee (MessageModelingukrary_broker/Employee.xod) | |
| Parsed Input | |
| Characters | |
| 1 Company1,42,123 Street winchester UK 2 "000010" "CHRISTINE" I" "HAAS" "A00" "3978" "1995-01-01" "PRES "18 "F" "1963-08-24" 152750.00 | <u>^</u> |
| 2 "UUUUIU"""THRISIINE "I"""TAAS" 400""3978" 1995-UI-UI""""""""""""""""""""""""""""""""" | |
| 4 "000030", "SALLY", "A", "KWAN", "C01", "4738", "2005-04-05", "MANAGER ", 20, "F", "1971-05-11", 98250.00 | |
| s'"000050" "JOHN" "PD" "GEYER" "EDIT" "6789" "1979-08-17" "MANAGER "16" "1955-09-15" 80175.00 4 "000050" "IVEVING "YE" "STERN" "DIT" 6423" "2003-09-14" "MANAGER "16" M"" 1955-07-17" 22250.00 | ~ |
| 6 "UUUU6U" "IRVING" "F" "SIERN" "DII" "6423" "2UU3-U9-14" "MANAGER "165" M" "1975-U7-U7" 72250.UU | |
| | |
| 1:1 Offset: 0 Repeating index: 1 Show line numbers Show hex Selection in DFDL Editor = WorkDept : string Range of selection: 0 - 4171 | |

Notice that now the separators are highlighted with a different colour.

This concludes the CSV Message Modelling lab.