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Mertech[®] DocuMentor

From DataFlex Source to Documentation

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Overview of Mertech DocuMentor

Mertech DocuMentor helps companies create software architecture documentation from their DataFlex application, quickly and affordably.

It is an accepted fact that proper design documentation is very important for software development. Properly structure design documentation is important for implementing development processes and crucial for ongoing changes to an application. Moreover, good documentation makes it easier for companies to train new developers or contractors as well as reduces the impact of losing key personnel. **DocuMentor addresses these critical needs of companies developing applications in DataFlex.**

Mertech DocuMentor generates application architecture documentation by parsing the entire project source and analyzing the interaction of various program elements and data structures. DocuMentor outputs a detailed HTML-based report that allows jumping between various program modules and system libraries. The “matrix” approach taken by DocuMentor for grouping relevant information helps developers understand the source architecture more quickly than just browsing the source or reading manually-written documents which are linear and typically are not cross-referenced.

Target Audience

DocuMentor benefits corporate users, ISVs and consultants. For example:

- Corporate customers running mission-critical application developed in DataFlex or Visual DataFlex, especially character mode DataFlex running on Linux/Unix or Windows console mode.
- Independent software vendors (ISVs) with large vertical market applications, developing applications in DataFlex or Visual DataFlex.
- Consultants participating in DataFlex re-engineering projects.

How Can DocuMentor Help You?

As the Core of Software Development Processes

DocuMentor aims to make implementation and execution of a software development process easier. Adopting a software development process places the control of the software development process in a well thought out development workflow which streamlines development and boosts productivity.

One of the most popular methodologies for software development is Agile. *“Agile methods generally promote a disciplined project management process that encourages frequent inspection and adaptation, a leadership philosophy that encourages teamwork, self-organization and accountability, a set of engineering best practices that allow for rapid delivery of high-*

*quality software, and a business approach that aligns development with customer needs and company goals”.*¹

A recent survey conducted by Agile Journal, an online community of agile practitioners concluded that one of the biggest barriers to adoption of Agile is lack of documentation². Proper design documentation is at the heart of any software development process. It is impossible to implement a software development process without good documentation practice at every level; from business requirements to technical design details. By using DocuMentor, companies can build an effective software development process which requires minimal programmer time to keep the design documentation updated.

As a Developer Training Tool

DocuMentor is a great tool for getting new developer up to speed on the architecture and design of the application. DocuMentor breaks down the complexity of the application and presents a high level picture of how the various program elements interact with each other and the database. This approach makes it very easy for new developers to understand the entire system or follow the behavior of individual modules.

As a Project Planning Tool

DocuMentor will give project managers a very detailed overview of the complexity of the application, helping them allocate resources optimally and create accurate project timelines.

As an Application Re-engineering Tool

DocuMentor can serve as a quick reference for developers who have to make changes to the applications source on a regular basis. For example, knowing where and how many times a particular field is used in the application ensures that changes to that particular field (say changing the name or how it is used a calculation) is done accurately for all instances throughout the source.

Companies looking to re-engineer their Character Mode DataFlex into Visual DataFlex or into another language will also benefit by having the entire application architecture available at their finger tips.

Edition Differences

DocuMentor is available in three editions: Free, Basic and Pro. The Free edition provides a summary overview of the entire application with a listing of all program elements.

The Basic Report is targeted at consultants and contractors who develop custom apps for their customers. A consultant can use DocuMentor to provide details of their implementation thus addressing customer apprehensions about who will maintain a DataFlex-based application if the developer were not around.

¹ *Wikipedia*

² *<http://www.agilejournal.com/content/view/93/111/>*.

The Pro edition generates a comprehensive report which includes profiling of all program elements along with DataFlex system libraries. The Pro version is targeted at ISVs and Corporate IT users of DataFlex who have to maintain large complex applications.

The following table lists differences between editions.

| Features | Free | Basic | Pro |
|---------------------------------|------|-------|-----|
| Systems Statistics | X | X | X |
| List of Data Files | X | X | X |
| List of UI Elements | X | X | X |
| List of Classes | X | X | X |
| List of Modules | X | X | X |
| List of Global Functions | X | X | X |
| Module Source outline | | X | X |
| Data File References in Modules | | X | X |
| GUI Rendering | | X | X |
| Cross Reference Links | | | X |
| Database Field References | | | X |
| Database File References | | | X |
| DataFlex Library Profiling | | | X |

Table 1 Edition Comparison

Installing and Running DocuMentor

DocuMentor is a wizard-based Java application that uses the Java webstart technology to deliver, install and update the product. Users click on a “Launch” link available through their account. This begins the download and installation process. In cases where users do not have Java installed, the right version of the Java runtime will be downloaded and installed automatically. Once the installation process is complete, the application will launch itself. The application itself is a set of wizard dialogs that guides the user through every step of the documentation creation process. The first dialog the users see is the Welcome Screen shown below.

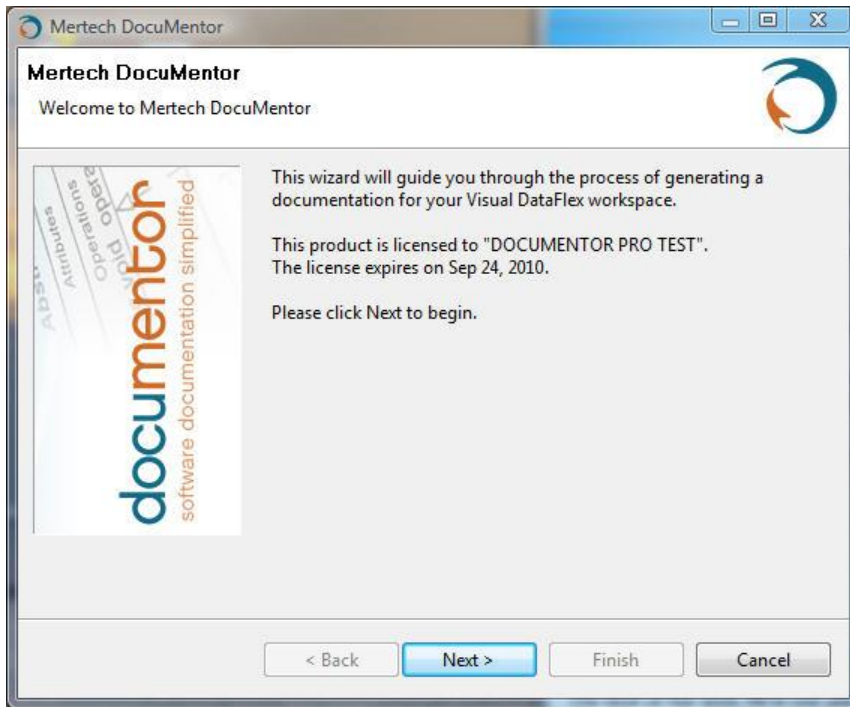


Figure 1 Welcome Screen

Workspace Selection

Next, the user is prompted to select their Visual DataFlex version and application workspace. DocuMentor can work with any version of Visual DataFlex (see Figure 2 Workspace Selection.) For any version of Visual DataFlex installed on the user's system, all related workspaces will be shown. The user also has the option of picking a custom workspace and selecting the appropriate config.ws file.

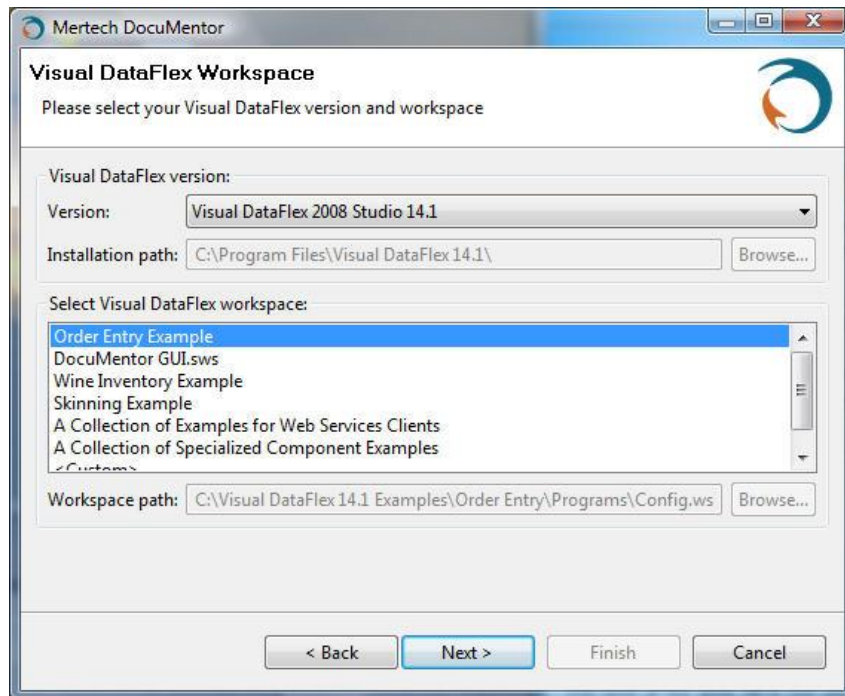


Figure 2 Workspace Selection

Output Selection

In this step (see Figure 3 Output Selection), the user identifies which application source will be profiled and where to put the output files. Depending on the size of the user's applications, a large number of .html and .gif files will be created. We recommended that users create a new folder dedicated to DocuMentor output.

The user can also add custom copyright notices to that will be put as footer item on every page. The default company name will be picked up from the license information.

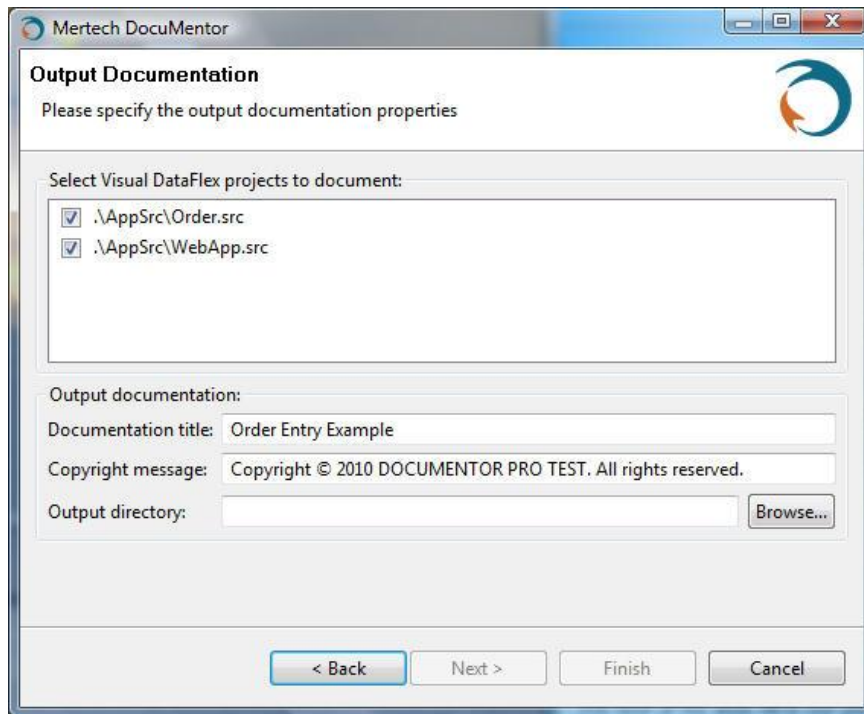


Figure 3 Output Selection

Viewing DocuMentor Output

To represent the output in an easy to ready format, DocuMentor utilizes HTML format. At the end of the report generation process, the user's default browser will automatically be launched. If for some reason the browser is not launched, users can open Windows Explorer, and double-click on the index.html file located in their DocuMentor output directory.. DocuMentor reports can be hosted on a web server to deliver the output via http and has been tested on IE, Firefox, Safari and Chrome browsers.

| Profiled Components | Details |
|---------------------|--|
| Summary | Gives a summary application size in terms of lines of code, number of UI elements, number of data files, number of |

| | |
|--------------------------------------|--|
| | fields and global variables. |
| List all tables | Table definitions, where the files are used |
| List of all fields | Detail of where the fields are used in the source with cross reference to the modules |
| List of all classes | Details of class hierarchy, class definition, sub-classes, instances, comments in the code and the modules where they are used |
| List of all functions and procedures | All global functions and procedures and where they are used in the source |
| List of Global variables | All global variables and their location in the source |
| List of GUI elements / Images | Images in character mode screen shots |
| Macros | System and user defined macros with the location of occurrences in the source |

Using DocuMentor in the Software Development Process

DocuMentor fits into an existing software development process by automating software documentation tasks or helps jump start a process to streamline software development.

Most design documentations are linear and limited in scope. So even if documentation is maintained manually, it takes a lot of extra effort to create a cross-referenced documentation like a Wiki. It is almost impossible to start a documentation process for legacy application. DocuMentor addresses both challenges of a) keeping documentation as accurate as possible to the actual source base with minimal intrusion on productive programmer time and b) of fitting legacy code into the software development process.

Development teams can make DocuMentor even more effective by putting useful comments in the code. DocuMentor highlights the comments clearly, separating comments from code, making comments easily readable in DocuMentor reports(Figure 4).

| Class Definition | |
|--------------------------|--|
| Functions and Procedures | |
| ▲ | Adjust_Balances(Number qty Number amt) Called by Backout and Update passing the quantity and the extended price. Subtract quantity from Invt on-hand and add extended amnt to order total. |
| ▲ | Adjust_Display_total(Integer ifield String svalue) This updates the extended price field, which will update any display balances. This is only done for display purposes. The actual amount is updated to the field during the save. |
| ▲ | Backout() |
| ▲ | Construct_Object() Inherited from DataDictionary |
| ▲ | Entering_Price(Integer field# Number namnt) when entering the price field we may wish to update the current field value with the standard unit price from the Invt file. Only do this if the current amount is zero. If non zero we assume the field is being edited (and we make no assumptions). |
| ▲ | Field_Defaults() |

Figure 4 Example showing how Documentor highlights comments

Understanding DocuMentor Output

DocuMentor groups information based on various programming elements. Each of this grouping represents a tab in the DocuMentor report. The user is able to browse through elements of their application source, click on an item to see details - such as definition and references to that element in the source - all without going through the actual source code. It should be pointed out that DocuMentor does not include links to the actual source code.

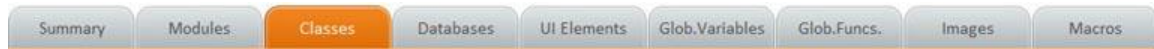


Figure 5 DocuMentor Navigation Tabs

Summary

The summary page provides an overview of the size of the application, list errors generated during profiling and provides explanation of the various icons used in the report. The icons follow the guidelines used in Eclipse IDE for Java development.

Modules

The Modules report provides an outline of the main program module along with program components such as Selections List, Dialogs, Views, Reports and Data Dictionaries. The user can jump to other program elements (only in Pro edition) actual UI element (visually rendered in UI Elements tab) from a selection list module. The objective is to give the user a complete overview of the module, database usage and UI components without the need to pull up the actual program in the Visual DataFlex studio.

Every interface element (buttons, text boxes, radio button etc) is represented visually within each module by a distinct icon.

Classes

DocuMentor generates complete class information, including both user-created classes as well as those classes within the DataFlex libraries (in professional version only). DocuMentor generates a class hierarchy diagram showing all parent classes as well any sub-classes of a



Figure 6 Class Hierarchy

given class. Details of every class is provides in easy to follow format with icons identifying methods and properties. Perhaps the most powerful aspect of DocuMentor class information is that it also provides all references of the class in the application, listing all modules where the class is used

Database

The database information provides detail usage of all data files used in the application. It does not pick up the file names in filelist but the ones actually used. One very powerful feature of DocuMentor is the ability to identify where in the entire application a data field is used along with line number. This is a very helpful feature, specially if frequent changes are made to programs or table structures. Using DocuMentor reports, a developer can analyze the impact of his or her change far more quickly than going through each application module.

| Field: CUSTOMER.COMMENTS | | |
|------------------------------|----------------------------------|------|
| Module location: Customer.FD | | |
| Status Help: | "Additional Comments and Notes." | |
| Data Type: | Integer | |
| Length: | 0.0 | |
| Offset: | 0 | |
| Index: | | |
| References (6): | | |
| Module | Containing Symbol | Line |
| Customer.DD | Construct_Object | 95 |
| Customer.vw | oCustomer_Comments | 157 |
| CustomerAndOrderInfo.wo | CreateNewCustomer | 238 |
| CustomerAndOrderInfo.wo | GetCustomerInfo | 280 |
| CustomerAndOrderInfo.wo | GetCustomerInfoList | 324 |
| CustomerListWP.rv | Body | 247 |

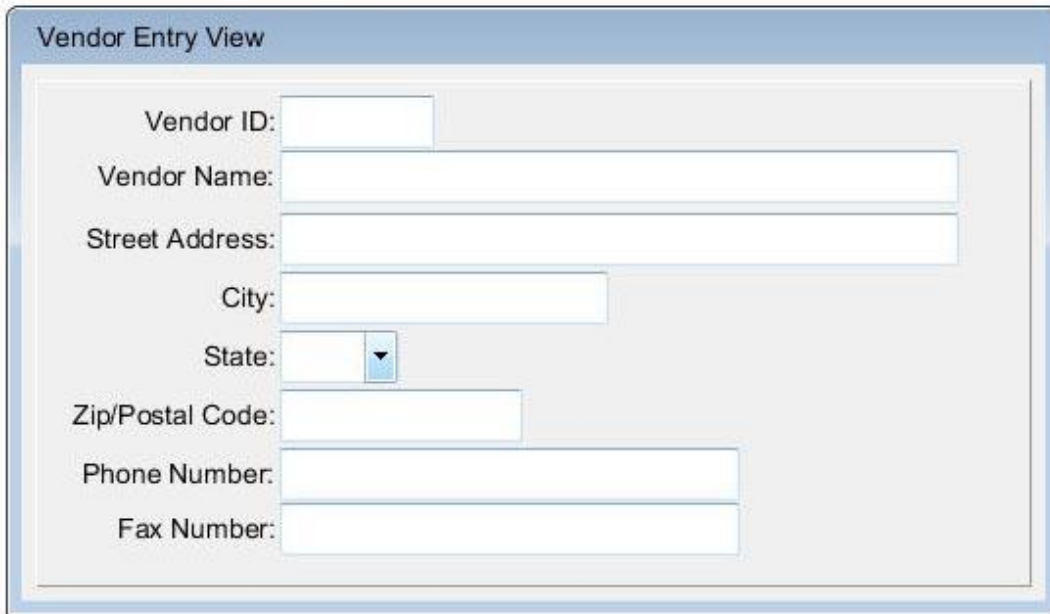
Figure 7 Field References

UI Elements

DocuMentor generates a complete list of all application UI elements and renders them visually along with references. This means that developers can see various application screens as they appear in the source without needing to run the application.

View: oVendorView

Module location: Vendor.vw line 7



The screenshot shows a window titled "Vendor Entry View" with a light blue border. Inside the window, there is a form with the following fields:

- Vendor ID:
- Vendor Name:
- Street Address:
- City:
- State:
- Zip/Postal Code:
- Phone Number:
- Fax Number:

Figure 8 Visual Redering of VDF View

Global Variables / Functions / Procedures

This contains list of all global variables, functions and procedures along with their references.

Macros

All user defined macros are listed with their details and references of where they are used.

Online Sample Reports

Detailed Reports are available at <http://www.mertechdata.com/home/products/documentor>