



Productive
Computing

Core4



Developer's Guide

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Chapter I - Overview

Purpose

Productive Computing, Inc. is proud to provide developers with an “under the hood” overview of the Core4 CRM. The purpose of this document is to not only provide you with a developer overview before you purchase the Core4, but also to provide you with a navigational resource to assist you with your customizations after you purchase Core4. The possibilities to expand the Core4 CRM are nearly endless. We would like to give you a better look at what you will be customizing before and after your purchase. When purchased as an On Premise Site License, the Core4 is provided fully unlocked and can be 100% customizable to fit your specific needs. ****IMPORTANT NOTE:** Core4 purchased as a Software as a Service (SaaS) subscription model is not provided unlocked. SaaS subscribers should contact Productive Computing, Inc. for any questions regarding customization.

Product Version History

http://www.productivecomputing.com/CRM-management-software/version_history

Intended Audience

This Developer’s Guide is intended for FileMaker Developers only. Core4 users should refer to the User Manual and online videos at www.Core4CRM.com. It is recommended that FileMaker Developers be familiar with scripting, calculations, and relationships before making any “under the hood” changes to the Core4 files. We cannot be held liable for any changes made by developers and all customizations are done at your own risk. The Core4 was built around FileMaker’s development conventions found here: www.filemaker.com/downloads/pdf/FMDev_ConvNov05.pdf. It would be wise to familiarize yourself with this document to better understand the methodology and standards we used to develop the Core4.

Requirements

The Core4 CRM is engineered in FileMaker Pro the #1 selling database software for Mac or Windows. Therefore, FileMaker Pro 14 will be installed on each user’s machine in order to run the Core4.

Users will need to meet one for the following requirements:

- Windows 7 or 8
- Mac OS X 10.7 - 10.10

FileMaker Files

The Core4 CRM was written in FileMaker Pro 14, therefore each machine must have FileMaker Pro 14 installed. If you do not already own a copy of FileMaker Pro 14, then Productive Computing, Inc. can provide you with a competitive price for the desired number of FileMaker Pro 14 licenses needed.

The purchased Core4 version comes to you fully unlocked and ready for customizations. The Core4 consists of the following physical file as shown in Figure 1.0:

Figure 1.0 - Example of the Core4 Physical FileMaker File

Name	Type
 Core4.fmp12	FileMaker Pro Database

Core4.fmp12 = primary file that stores all tables, records, value lists and scripts other than documents and attachments. When the Core4 is open the name "Core4" will always appear on the top center of the window regardless of the actual physical file name as this functionality has been hard coded into the Core4.

Recovery

When recovering the Core4 there are five calculated fields that will show up on the recovery log as problems if their respective plugins are not installed. These calculated fields are used to check the status of an installed plug-in.

When recovering the Core4 these fields are detected as problems if the plugin is not installed because their function calls within the calculation show up as "<Function Missing>". These are not signs of corruption in the Core4 as these function calls are necessary, and function perfectly when the plug-in is installed.

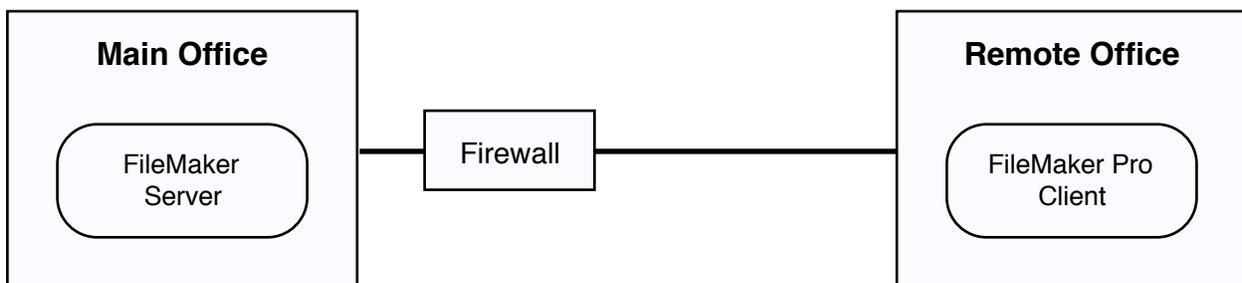
Chapter 2 - Hosting Options

We want to ensure that your clients have the best experience possible when using the Core4 from a remote location. Since sharing the Core4 information could be especially important for remote or traveling employees, we would like to take a moment to visit some of the pros and cons of sharing the Core4.

Direct Access through TCP/IP (“Open Remote”)

Remote office locations that have a computer running FileMaker Pro client can simply connect to the main FileMaker server at the main location.

Figure 2.0 - FileMaker Pro Client to FileMaker Server Using “Open Remote” Option



The above demonstrates a connection directly from FileMaker Pro client in the remote office to FileMaker Server at the main office over the internet using the “open remote” option in FileMaker Pro client. Additional information on this topic and setup can be found in the documentation for FileMaker itself.

Advantages

Most robust user interface: Remote users gain access to the files hosted on FileMaker Server using nothing more than FileMaker Pro on their local computer. By using FileMaker Pro to gain access to the database, users experience the same interface they would while connecting to FileMaker while in the main office. This allows for seamless printing and connectivity to third party applications such as email and Outlook etc.

Easier setup: After you share the Core4 to the internet (preferably through a protection mechanism such as a firewall), all you have to do is use the “Open Remote” option in FileMaker Pro when connecting from the remote office. A license of FileMaker Pro is needed for all remote users in this situation. FileMaker Server is strongly recommended as means to share the Core4 and absolutely required if you are sharing to more than 9 users.

Disadvantages

Speed: Performing some actions in this setup for remote users will typically be slower than that of the experience while in the main office. This is mainly because the data is stored at the main office location and shared over the internet which tends to be a great deal slower than the internet speeds directly over a local area network (LAN).

The most noticeable actions affected by this are: opening the database, performing a sort on a large set of data, navigation from record to record especially if records include a lot of calculated fields, displaying summary field data (reports) and waiting for value lists to draw that contain more than 500 values. Speed improves in these areas once the action is performed the first time. For example, if you have a value list with 4000 values representing a custom list, this may take up to a minute to display the first time it is called, however on subsequent times, this same list may take 10 seconds or less. FileMaker Pro client caches data to the local machine to improve performance.

There are many other variables and factors when considering the best setup and sharing options for your clients.

For additional information please visit the source at www.filemaker.com

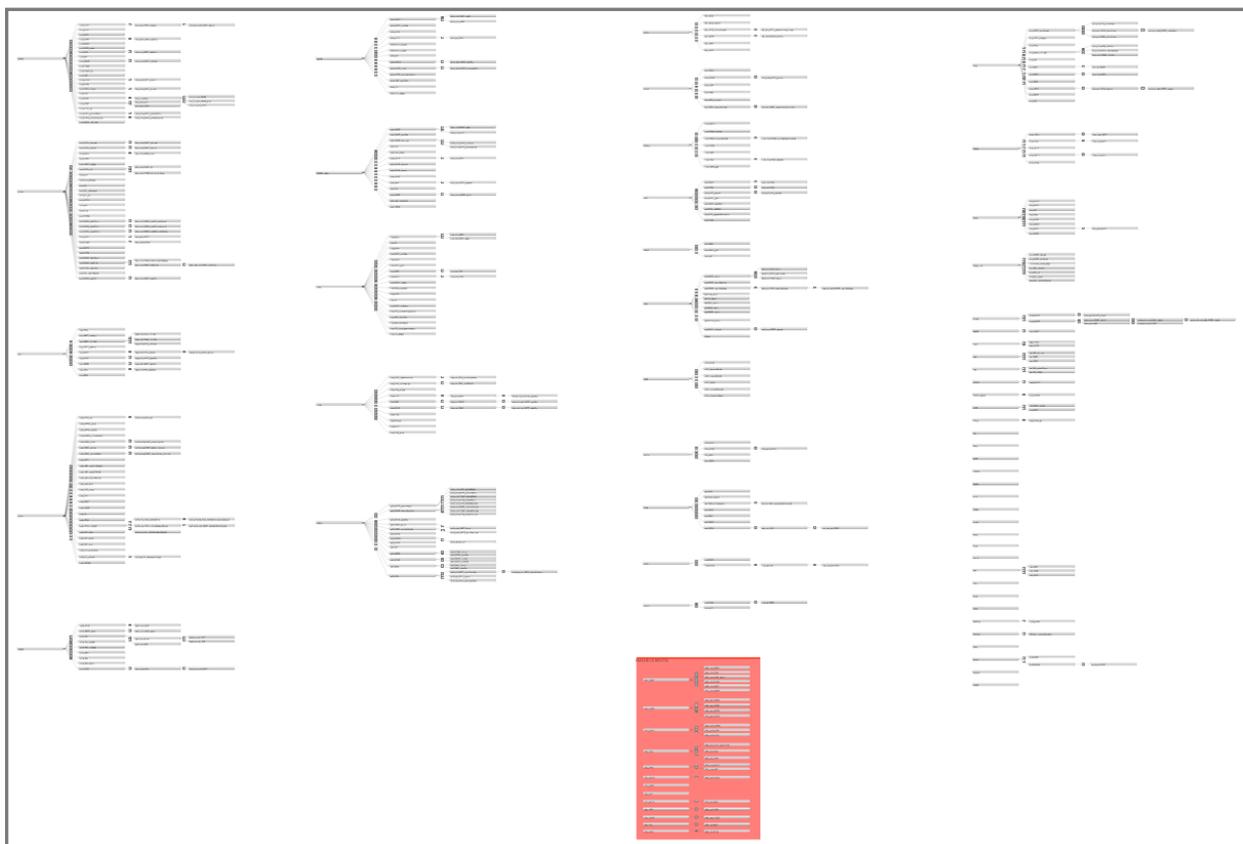
Chapter 3 - Relationships

Relationships

The Core4 file is primarily based on the "anchor/buoy method." In general, the theory is to base each layout of its own table occurrence and build relationships from left to right. Anchor/Buoy also incorporates relationship naming standards. It would take a much longer document to fully explain this method and that goes beyond the scope of this document. For more information, please navigate to this link to read about the anchor/buoy method:

<http://www.kevinfrank.com/anchor-buoy.html> ("Short" PowerPoint presentation recommended)

Anchor/Buoy is used throughout the industry and has been the unofficial standard when working with FileMaker files in a multi-developer environment.



Relationships may be subject to change depending on the version of the Core4. Please note the following about the relationships in the Core4:

- Relationships that have a single predicate have a standard and simple name based on Table Occurrence.
- Relationships that have multiple predicates will have a brief description at the end of the name separated by a double underline.
- Abbreviations are used in the relationship graph.

Chapter 4 - Table Descriptions

Table Descriptions

Since the Core4 contains over 50 tables, we decided to explain each specific table including the table name, abbreviation, description/purpose, notes/exceptions and how the table is linked to other tables.

Table names are spelled out with their full name. Table names are always plural. The names sort alphabetically in a logical order (activities and contacts are in their own area of the table list because they all begin with the single underscore between names).

Figure 4.0 outlines the table descriptions for the Core4.

Figure 4.0 - Table Descriptions for Core4

Table	Abbreviation	Description / Purpose	Notes / Exceptions	Linked to any other table?
Activities	ACTVT	Holds one record for every event, task, letter, email, fax and note		Contacts, Opportunities, and Projects can be linked to Activities
Activities_Attachments	ATTCH	Holds attachments for email-type activities		Related to Activities
Activities_Categories	CAT	Holds one record for every activity category and associated color/ font style defined in preferences		Linked to activities that have a category defined
Activities_Merge_Fields	MFLD	Holds one record for every merge field defined in preferences and their associated formula		
Activities_Merge_Letters	MLTTR	Holds one record for each recipient of an email, letter, or fax activity		Join table between Activities and Activities_Merge_Values
Activities_Merge_Values	MVAL	Resolved values of merge fields stored at the time of mailing		One record for each merge field used in a mailing, for each recipient of the mailing
Activities_Reminders	REMND	A record is created in this table whenever a reminder is defined for an activity, one per reminder recipient		Join table between Activities and Preferences_Users
Activities_Templates	TMPLT	Holds mailing templates defined in preferences and associated details		

Assembly_Builds	BUILD	Holds one record for each item assembly build		Related to Items
Assembly_Builds_Line_Items	BUILDLI	Line item detail for build items		Related to Assembly_Builds
Calendars	CAL	Holds one record for each calendar defined in preferences		Related to "event" activities, and other calendar records (for group calendars)
Calendars_Updates	CALUP	Records identifying calendar views which need to be updated by server trigger	This table exists to prevent record locking issues when marking a calendar session as needing an update.	
Calendars_Views	VIEW	A record is created in this table for each unique user viewing the calendar.	Can be considered that user's calendar "session"	
Contacts	CNTCT	Holds one record for each contact		Related to many tables, see other table notes
Contacts_Addresses	ADDR	Holds one record for each contact address		Related to Contacts
Contacts_Duplicate_Searches	DUPE	Temporary table used by the "remove duplicate contacts" script		
Contacts_Groups	GROUP	Holds records of "groups" of contacts previously defined		Related to Contacts
Contacts_Imports	IMP	Temporary table used by the "batch contact import" script	"Flat" data from a source such as Excel is first imported into this table and then converted to the Core's relational structure.	
Contacts_Internet_Addresses	INADR	Holds one record for each contact internet address	Holds email, web site, Skype, FaceBook, and other internet address types	Related to Contacts
Contacts_Outlook_Mappings	OMMP	Holds Outlook to Core contact field mappings defined in preferences	used by Outlook contact import/export	

Contacts_Outlook_Mac_Mappings	OMMMP	Holds Outlook to Core contact field mappings defined in preferences	used by Outlook contact import/export	
Contacts_Phones	PHONE	Holds one record for each contact phone number		Related to Contacts
Contacts_Phones_Formats	PHFMT	Holds country phone format patterns defined in preferences		
Contacts_Relationships	RLTN	"Self" join table between Contacts and itself, holds information about relationships between two contacts		Related to Contacts
Contacts_vCard_Utility	VCARD	Temporarily stores vCard data for Export vCard functions		
Documents	DOCS	Holds detail for document records, including container field		Related to Contacts, Projects, Opportunities, Estimates and Orders
Estimates	ESTMT	Holds one record for each estimate		Related to Contacts, Opportunities, Orders and Invoices
Estimates_Line_Items	ESTLI	Line item detail for estimates		
Globals	GLBL	Globals that are used throughout the system are created here	There should always be exactly 1 record in this table	
Invoices	INVO	Holds one record for each invoice		Related to Contacts, Opportunities, Estimates and Orders
Invoices_Line_Items	INVOLI	Line item detail for invoices		Related to Invoices
Invoices_Payments	PMT	Holds one record for each payment		
Invoices_Payments_Line_Items	PMTLI	Line item detail for payments		Each line item is related to a specific invoice that is paid by that line item
Items	ITEM	Holds one record for each item		Related to Estimate_, Order_, and Invoice_Line_Items

Items_Inventory_Log	INVTLOG	Holds the log information for simple items inventory system		Related to Items
Items_Line_Items	ITMLI	Line item detail for assembly item components		Related to Items
Lists	LIST	Misc list items defined in preferences are stored here: customer messages, payment methods, shipping methods, payment terms, and classes		Looked up from Opportunities, Estimates, Orders, and Invoices
Module_Navigator	MODNAV	Holds module navigation name, layout and graphics for each tab position		
Opportunities	OPP	Holds one record for each opportunity		Related to Contacts, Estimates, Orders and Invoices
Orders	ORDER	Holds details of orders		Related to Contacts, Opportunities, Estimates and Invoices
Orders_Line_Items	ORDLI	Line item detail for orders		Related to Orders
Outlook_Folders	FOLD	Outlook mail import folders defined in preferences for each user are stored here	Used by outlook mail import script	
Plugin_Integration	PIINT	Holds the plugin id for each corresponding contact or activity	Used by Address Book and Outlook	Related to Contacts
Preferences_System	PREFS	System wide preferences are stored in this table ("global settings" tab in preferences)		
Preferences_Users	PREFU	User accounts and associated preferences are stored in this table ("user settings" tab in preferences)		Related to Contacts

Projects	PROJ	Holds one record for each project		Related to Activities, Timers, and Documents
Projects_Roles	ROLE	Project roles and the contact assigned to that role for a particular project		Join table between Projects and Contacts
Purchase_Orders	PORDR	Holds one record for each purchase order		Related to Contacts and Docs
Purchase_Orders_Line_Items	POLI	Line item detail for purchase order		Related to Purchase Orders
Purchase_Orders_Receipts	RCPT	Holds one record for each receipt		
Purchase_Orders_Receipts_Line_Items	RCPTLI	Line item detail for receipts		Each line item is related to a specific purchase order that is received by that line item
QuickBooks_Accounts	ACCT	Holds one record for each "account" imported from QuickBooks	Read-only, records can be created via QB import only	Related to Items
Resources	RESRC	Images and other resources are stored as globals in this table for system-wide use	There should always be exactly 1 record in this table	
Sample_Data	SMPL	The sample data that the core is populated with when reset is stored here	There should always be exactly 1 record in this table. There is no need to edit this table.	
Taxes	TAX	Holds one record for each tax rate defined in preferences		Looked up from Invoices
Timers	TIMER	Holds one record for each timer		Related to Contacts, Projects, and Preferences_Users

Chapter 5 - Fields

Fields

Since the Core4 contains over 1,000 fields, we find it more beneficial for the developer to understand the field naming conventions rather than explain each individual field in detail. There are two types of fields. which are Key/Match fields and Utility fields.

Fields may consist of three elements, which are the prefix, descriptive field name and suffix. Two underscores are used between each element and single underscores are used between the descriptive field name such as <prefix>__<Descriptive_Field_Name>__<suffix>. Special fields contain a prefix, descriptive field name and/or suffix. Regular data entry fields contain only a descriptive field name and do not contain a prefix or suffix, such as "Organization" or "Name_First."

Key/Match Fields = a field with the initial "_k" identifies the key/match field and must be followed by a **function** identifier (with optional **storage** and **type** identifiers), two underscores and a descriptive field name.

Syntax = _k<function>[<storage><type>]__<Descriptive_Field_Name>

Prefix

Function = Denotes key field category and/or function it will serve.

p = Primary Key

f = Foreign Key

a = Alternative Key

c = Compound/Concatenated/Calculated Key

m = Multi-Value Key

Storage = Denotes field storage.

l = Locally Stored (lower case "L")

g = Globally Stored

Type = Denotes field type.

t = Text

n = Number

d = Date

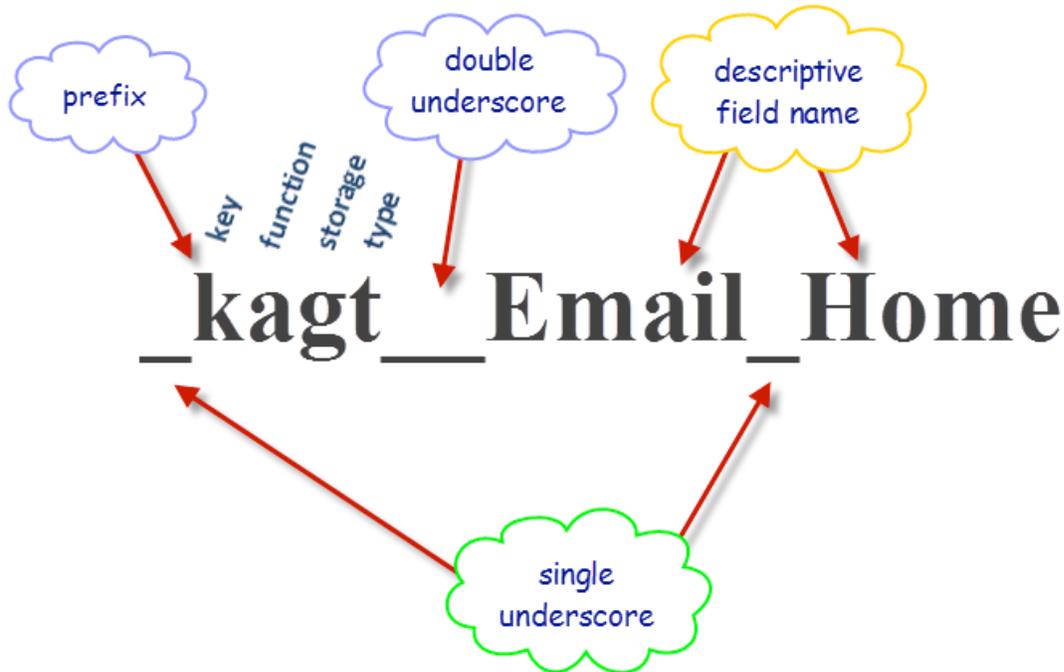
i = Time

m = Timestamp

* add a lowercase "p" to the end of type to denote data stored with repetitions

Descriptive Field Name = chosen name of field in Single Underscore Title Case. For example, "Contact_ID" or "Core_User" or "Picture"

Figure 5.0 - Sample Key/Match Field from the Core4



Utility Fields = a field with the initial "zz" identifies the utility field and must be followed by two underscores, a descriptive field name, two more underscores and a suffix.

Syntax = <prefix>__<Descriptive_Field_Name>__<suffix>

Prefix = "zz" identifies a utility field. Every utility field will begin with "zz" as a prefix.

Descriptive Field Name = chosen name of field in Single Underscore Title Case. For example, "Contact_ID" or "Core_User" or "Picture"

Suffix = <storage><type>

Storage = Denotes field storage.

l = Locally Stored (lower case "L")

g = Globally Stored

Type = Denotes data type used or returned.

Non-Calculated Result Types

xt = Text

xn = Number

xd = Date

xi = Time

xm = Timestamp

xr = Container

Calculated Result Types

ct = Text

cn = Number

cd = Date

ci = Time

cm = Timestamp

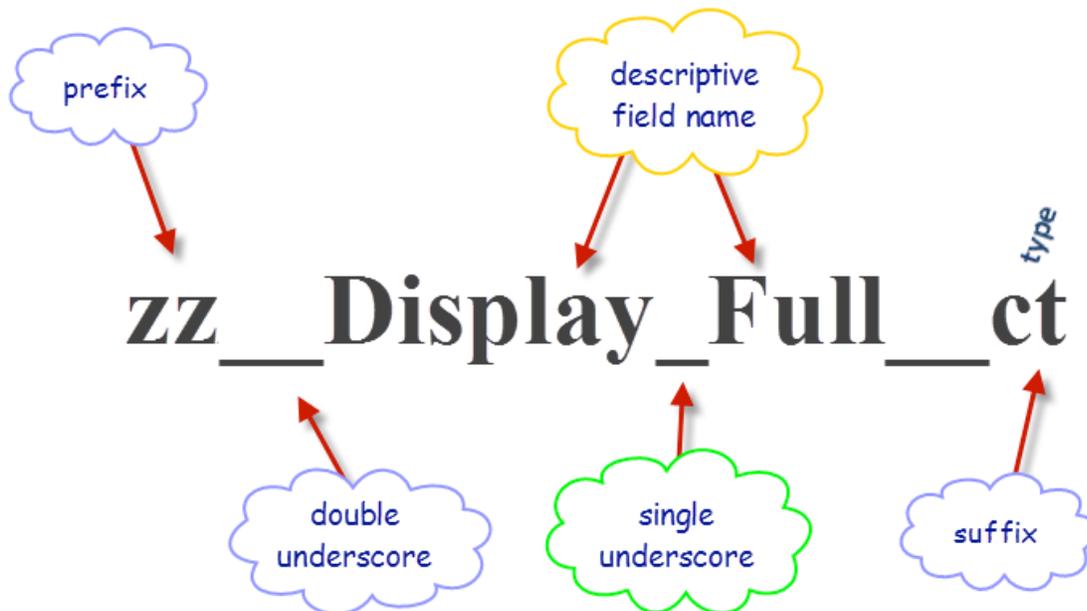
cr = Container

Summary Result Type

xs = Summary

* add a lowercase "p" to the end of type to denote data stored with repetitions

Figure 5.1 - Sample utility field from the Core4 that contains all three elements



TIP: All keys start at 1000. We only use one join table in the system. The majority of the many to many relationships are established by using a multi-key.

Chapter 6 - Layouts

Layouts

All layouts are stretchable (with appropriate anchors) and are organized by folders. The folder list matches the module title. The layWebout name is the base module name and then its purpose. There is a layout for every single base table in the system. There are three layouts not based on the base table for the merge contacts capability. They are: cntct_ADDR, cntct_INADR__email and cntct_Phone__fax. Figures 6.0a - 6.0i display all layouts in the Core4 file.

Layouts may be subject to change depending on the version of the Core4. Please note the following about the layouts in the Core4:

- Layouts must follow a strict naming convention for the module navigation scripts to function properly among the different operating systems.
- **Main Module Layout Syntax** = <Module>_<View>[_<Platform>]
 - Ex: Contacts_Form, Contacts_Form_iPad, or Contacts_Form_WebWeb
- **Other Non-Module Specific Layout Syntax** = <Descriptive_Function_Name>[_<Platform>]
 - Ex: Contacts_Group_Management or Contacts_Group_Management_iPad

Figure 6.0a - Screenshot of Core4 Layouts

Layout Name	Associated Table	Menu Set
Dashboard		
Dashboard	PREFU	Dashboard
Dashboard_iPad	PREFU	Dashboard
Dashboard_Web	PREFU	Dashboard
Contacts		
Contacts_Form	CNTCT	Contacts
Contacts_Duplicate_Merge	PREFU	[File Default]
Contacts_List	CNTCT	Contacts
Contacts_List_Print	CNTCT	[File Default]
Contacts_Report	CNTCT	[File Default]
Contacts_Report_Activities	CNTCT	[File Default]
Contacts_Group_Add_or...	GROUP__groups	[File Default]
Contacts_Group_Manag...	GROUP__groups	[File Default]
Contacts_Import	IMP	[File Default]
Contacts_Label_Avery_...	CNTCT	[File Default]
Contacts_Envelope_#10	CNTCT	[File Default]
Contacts_Dedupe_Grou...	CNTCT	Minimal
Contacts_Dedupe_Cont...	CNTCT	Minimal
_____	ACTVT	[File Default]
Contacts_Form_iPad	CNTCT	Contacts
Contacts_List_iPad	CNTCT	Contacts
Contacts_Group_Add_or...	GROUP__groups	[File Default]
Contacts_Group_Manag...	GROUP__groups	[File Default]
_____	ACTVT	[File Default]
Contacts_Form_Web	CNTCT	Contacts
Contacts_List_Web	CNTCT	Contacts

Figure 6.0b - Screenshot of Core4 Layouts continued

Layout Name	Associated Table	Menu Set
Opportunities		
Opportunities_Form	OPP	Opportunities
Opportunities_List	OPP	Opportunities
Opportunities_List_Print	OPP	[File Default]
Opportunities_Report	OPP	[File Default]
Opportunities_Report_P...	OPP	[File Default]
_____	ACTVT	[File Default]
Opportunities_Form_iPad	OPP	Opportunities
Opportunities_List_iPad	OPP	Opportunities
_____	ACTVT	[File Default]
Opportunities_Form_Web	OPP	Opportunities
Opportunities_List_Web	OPP	Opportunities
Estimates		
Estimates_Form	ESTMT	Estimates
Estimates_Form_Print	ESTLI	[File Default]
Estimates_List	ESTMT	Estimates
Estimates_List_Print	ESTMT	[File Default]
_____	ACTVT	[File Default]
Estimates_Form_iPad	ESTMT	Estimates
Estimates_List_iPad	ESTMT	Estimates
_____	ACTVT	[File Default]
Estimates_Form_Web	ESTMT	Estimates
Estimates_List_Web	ESTMT	Estimates
Orders		
Orders_Form	ORDER__orders	Orders
Orders_Form_Print	ORDLI	[File Default]
Orders_List	ORDER__orders	Orders
Orders_List_Print	ORDER__orders	[File Default]
_____	ACTVT	[File Default]
Orders_Form_iPad	ORDER__orders	Orders
Orders_Form_iPad_Wor...	ORDER__orders	Minimal - Orders
Orders_List_iPad	ORDER__orders	Orders
_____	ACTVT	[File Default]
Orders_Form_Web	ORDER__orders	Orders
Orders_List_Web	ORDER__orders	Orders

Figure 6.0c - Screenshot of Core4 Layouts continued

Icon	Name	Code	Category
Folder icon	Invoices		
Form icon	Invoices_Form	INVO	Invoices
Form icon	Invoices_Form_Print	INVOLI	[File Default]
Form icon	Invoices_List	INVO	Invoices
Form icon	Invoices_List_Print	INVO	[File Default]
Form icon	Invoices_Report_Aging...	INVO	[File Default]
Form icon	Invoices_Report_Aging...	INVO	[File Default]
Form icon	Invoices_Report_Custo...	INVO	[File Default]
<hr/>			
Form icon	Payment_Popup	PMT	[File Default]
Form icon	Payment_Popup_iPad	PMT	[File Default]
Form icon	Payment_Popup_Web	PMT	[File Default]
<hr/>			
Form icon	Invoices_Form_iPad	INVO	Invoices
Form icon	Invoices_List_iPad	INVO	Invoices
<hr/>			
Form icon	Invoices_Form_Web	INVO	Invoices
Form icon	Invoices_List_Web	INVO	Invoices
Folder icon	Purchase Orders		
Form icon	POs_Form	PORDR	Purchase Orders
Form icon	POs_Form_Print	POLI	[File Default]
Form icon	POs_List	PORDR	Purchase Orders
Form icon	POs_List_Print	PORDR	[File Default]
<hr/>			

Figure 6.0d - Screenshot of Core4 Layouts continued

Layout Name	Associated Table	Menu Set
<input type="checkbox"/>  POs_Form_iPad	PORDR	Purchase Orders
<input type="checkbox"/>  POs_List_iPad	PORDR	Purchase Orders
<input type="checkbox"/>  Receipt_Popup_iPad	RCPT	[File Default]
<input type="checkbox"/>  Receipt_Popup_Read_O...	RCPT	[File Default]
<input type="checkbox"/>  Receipt_Popup_Related...	POLI	[File Default]
<input type="checkbox"/>  Receipt_List_iPad	RCPTLI	Minimal - Receipts
<input type="checkbox"/>  _____	ACTVT	[File Default]
<input type="checkbox"/>  POs_Form_Web	PORDR	Purchase Orders
<input type="checkbox"/>  POs_List_Web	PORDR	Purchase Orders
<input type="checkbox"/>  Receipt_Popup_Web	RCPT	[File Default]
<input type="checkbox"/>  Receipt_Popup_Read_O...	RCPT	[File Default]
<input type="checkbox"/>  Receipt_Popup_Related...	POLI	[File Default]
<input type="checkbox"/>  Receipt_List_Web	RCPTLI	Minimal - Receipts
<input type="checkbox"/>  Items		
<input type="checkbox"/>   Items_Form	ITEM	Items
<input type="checkbox"/>  Items_List	ITEM	Items
<input type="checkbox"/>  Items_List_Print	ITEM	[File Default]
<input type="checkbox"/>  Items_Inventory_Log_List	INVTLOG	Minimal
<input type="checkbox"/>  Items_Build_Assembly	BUILD	[File Default]
<input type="checkbox"/>  Items_Build_Assembly_R...	BUILD	[File Default]
<input type="checkbox"/>  Items_Reorder_Reports	ITEM	[File Default]
<input type="checkbox"/>  _____	ACTVT	[File Default]
<input type="checkbox"/>  Items_Form_iPad	ITEM	Items
<input type="checkbox"/>  Items_List_iPad	ITEM	Items
<input type="checkbox"/>  Items_Inventory_Adjust...	ITEM	Minimal - Items
<input type="checkbox"/>  _____	ACTVT	[File Default]
<input type="checkbox"/>  Items_Form_Web	ITEM	Items
<input type="checkbox"/>  Items_List_Web	ITEM	Items
<input type="checkbox"/>  Items_Inventory_Log_Li...	INVTLOG	Minimal

Figure 6.0e - Screenshot of Core4 Layouts continued

Layout Name	Associated Table	Menu Set
Projects		
Projects_Form	PROJ	Projects
Projects_List	PROJ	Projects
Projects_List_Print	PROJ	[File Default]
Projects_Gantt	ACTVT	[File Default]
_____	ACTVT	[File Default]
Projects_Form_iPad	PROJ	Projects
Projects_List_iPad	PROJ	Projects
_____	ACTVT	[File Default]
Projects_Form_Web	PROJ	Projects
Projects_List_Web	PROJ	Projects
Calendar		
Calendar_Month	VIEW__views	Calendar
Calendar_Month_Print	VIEW__views	[File Default]
Calendar_Week	VIEW__views	Calendar
Calendar_Week_Print	VIEW__views	[File Default]
Calendar_Day	VIEW__views	Calendar
Calendar_Day_Print	VIEW__views	[File Default]
_____	ACTVT	[File Default]
Calendar_Month_iPad	VIEW__views	Calendar
Calendar_Week_iPad	VIEW__views	Calendar
Calendar_Day_iPad	VIEW__views	Calendar
_____	ACTVT	[File Default]
Calendar_Month_Web	VIEW__views	Calendar
Calendar_Week_Web	VIEW__views	Calendar
Calendar_Day_Web	VIEW__views	Calendar

Figure 6.0f - Screenshot of Core4 Layouts continued

Layout Name	Associated Table	Menu Set
Activities		
Activities_Detail_Email	ACTVT	Minimal - Activities
Activities_Detail_Email_P...	MLTTR	[File Default]
Activities_Detail_Email_R...	ACTVT	[File Default]
Activities_Detail_Event	ACTVT	Minimal - Activities
Activities_Detail_Event_...	ACTVT	[File Default]
Activities_Detail_Event_...	ACTVT	[File Default]
Activities_Detail_Event_...	ACTVT	[File Default]
Activities_Detail_Call	ACTVT	Minimal - Activities
Activities_Detail_Letter	ACTVT	Minimal - Activities
Activities_Detail_Letter_...	MLTTR	[File Default]
Activities_Detail_Note	ACTVT	Minimal - Activities
Activities_Detail_Task	ACTVT	Minimal - Activities
Activities_Detail_Task_F...	ACTVT	Minimal - Activities
Activities_List	ACTVT	Activities
Activities_List_Print	ACTVT	[File Default]
_____	ACTVT	[File Default]
Activities_Detail_Email_j...	ACTVT	Minimal - Activities
Activities_Detail_Email_R...	ACTVT	[File Default]
Activities_Detail_Event_j...	ACTVT	Minimal - Activities
Activities_Detail_Event_...	ACTVT	[File Default]
Activities_Detail_Event_...	ACTVT	[File Default]
Activities_Detail_Event_...	ACTVT	[File Default]
Activities_Detail_Call_iPad	ACTVT	Minimal - Activities
Activities_Detail_Letter_j...	ACTVT	Minimal - Activities
Activities_Detail_Note_iPad	ACTVT	Minimal - Activities
Activities_Detail_Task_iPad	ACTVT	Minimal - Activities
Activities_Detail_Task_F...	ACTVT	Minimal - Activities
Activities_List_iPad	ACTVT	Activities
_____	ACTVT	[File Default]
Activities_Detail_Email_...	ACTVT	[File Default]
Activities_Detail_Email_R...	ACTVT	[File Default]
Activities_Detail_Event_...	ACTVT	[File Default]
Activities_Detail_Call_Web	ACTVT	[File Default]
Activities_Detail_Letter_...	ACTVT	[File Default]
Activities_Detail_Note_...	ACTVT	[File Default]
Activities_Detail_Task_...	ACTVT	[File Default]
Activities_Detail_Task_F...	ACTVT	[File Default]
Activities_List_Web	ACTVT	Activities

Figure 6.0g - Screenshot of Core4 Layouts continued

Layout Name	Associated Table	Menu Set
Timers		
Timers_Form	TIMER	Timers
Timers_List	TIMER	Timers
Timers_List_Print	TIMER	[File Default]
Timers_Report_by_Project	TIMER	[File Default]
_____	ACTVT	[File Default]
Timers_Form_iPad	TIMER	Timers
Timers_List_iPad	TIMER	Timers
_____	ACTVT	[File Default]
Timers_Form_Web	TIMER	Timers
Timers_List_Web	TIMER	Timers
Documents		
Documents_Form	DOCS	Documents
Documents_List	DOCS	Documents
Documents_List_Print	DOCS	[File Default]
_____	CNTCT	[File Default]
Documents_Form_iPad	DOCS	Documents
Documents_List_iPad	DOCS	Documents
_____	CNTCT	[File Default]
Documents_Form_Web	DOCS	Documents
Documents_List_Web	DOCS	Documents

Figure 6.0h - Screenshot of Core4 Layouts continued

Layout Name	Associated Table	Menu Set
Record Linking		
<input type="checkbox"/> Link_Addresses	GLBL	[File Default]
<input type="checkbox"/> Link_Contact	GLBL	[File Default]
<input type="checkbox"/> Link_Contacts	GLBL	[File Default]
<input type="checkbox"/> Link_Email	GLBL	[File Default]
<input type="checkbox"/> Link_Emails	GLBL	[File Default]
<input type="checkbox"/> Link_Estimate	GLBL	[File Default]
<input type="checkbox"/> Link_Invoice	GLBL	[File Default]
<input type="checkbox"/> Link_Calls	GLBL	[File Default]
<input type="checkbox"/> Link_Opportunity	GLBL	[File Default]
<input type="checkbox"/> Link_Order	GLBL	[File Default]
<input type="checkbox"/> Link_Project	GLBL	[File Default]
<input type="checkbox"/> Link_PO	GLBL	[File Default]
<input type="checkbox"/> Link_Sales_Rep	GLBL	[File Default]
<input type="checkbox"/> Link_Sales_Reps	GLBL	[File Default]
<input type="checkbox"/> Link_User	GLBL	[File Default]
<input type="checkbox"/> Link_Users	GLBL	[File Default]
<input type="checkbox"/> _____	ACTVT	[File Default]
<input type="checkbox"/> Link_Addresses_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Contact_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Contacts_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Email_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Emails_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Estimate_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Invoice_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Calls_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Opportunity_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Order_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Project_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_PO_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Sales_Rep_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Sales_Reps_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_User_iPad	GLBL	[File Default]
<input type="checkbox"/> Link_Users_iPad	GLBL	[File Default]

Figure 6.0i - Screenshot of Core4 Layouts continued

Layout Name	Associated Table	Menu Set
<input type="checkbox"/> _____	ACTVT	[File Default]
<input type="checkbox"/> Link_Addresses_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Contact_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Contacts_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Email_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Emails_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Estimate_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Invoice_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Calls_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Opportunity_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Order_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Project_Web	GLBL	[File Default]
<input type="checkbox"/> Link_PO_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Sales_Rep_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Sales_Reps_Web	GLBL	[File Default]
<input type="checkbox"/> Link_User_Web	GLBL	[File Default]
<input type="checkbox"/> Link_Users_Web	GLBL	[File Default]
<input type="checkbox"/> Preferences		
<input type="checkbox"/> Preferences	PREFS	[File Default]
<input type="checkbox"/> Preferences_iPad_Regis...	PREFU	[File Default]
<input type="checkbox"/> Preferences_iPad_Mult_...	PREFU	[File Default]
<input type="checkbox"/> Preferences_Color_Sele...	RESRC	[File Default]
<input type="checkbox"/> Preferences_QuickBooks...	PREFS	[File Default]
<input type="checkbox"/> Preferences_QuickBooks...	PREFS	[File Default]
<input type="checkbox"/> Preferences_Templates	TMPLT	[File Default]
<input type="checkbox"/> Miscellaneous		
<input type="checkbox"/> Event_Reminder	PREFU	[File Default]
<input type="checkbox"/> Event_Reminder_iPad	PREFU	[File Default]
<input type="checkbox"/> Web_Viewer	RESRC	[File Default]
<input type="checkbox"/> Loading	GLBL	[File Default]
<input type="checkbox"/> QB Results	GLBL	[File Default]
<input type="checkbox"/> About	PREFS	[File Default]
<input type="checkbox"/> QB Data Transfer Matrix	PREFS	[File Default]

Figure 6.0j - Screenshot of Core4 Layouts continued

Layout Name	Associated Table	Menu Set
<input type="checkbox"/> Script_Use		
<input type="checkbox"/> Script_Use__Activities	ACTVT	[File Default]
<input type="checkbox"/> Script_Use__Activities_A...	ATTCH	[File Default]
<input type="checkbox"/> Script_Use__Activities_C...	CAT	[File Default]
<input type="checkbox"/> Script_Use__Activities_...	MFLD	[File Default]
<input type="checkbox"/> Script_Use__Activities_...	MLTTR	[File Default]
<input type="checkbox"/> Script_Use__Activities_...	MVAL	[File Default]
<input type="checkbox"/> Script_Use__Activities_R...	REMND	[File Default]
<input type="checkbox"/> Script_Use__Activities_T...	TMPLT	[File Default]
<input type="checkbox"/> Script_Use__Calendars	CAL	[File Default]
<input type="checkbox"/> Script_Use__Calendars_...	CALUP	[File Default]
<input type="checkbox"/> Script_Use__Calendars_...	VIEW__views	[File Default]
<input type="checkbox"/> Script_Use__Contacts	CNTCT	[File Default]
<input type="checkbox"/> Script_Use__Contacts_A...	ADDR	[File Default]
<input type="checkbox"/> Script_Use__Contacts_G...	GROUP__groups	[File Default]
<input type="checkbox"/> Script_Use__Contacts_I...	IMP	[File Default]
<input type="checkbox"/> Script_Use__Contacts_I...	INADR	[File Default]
<input type="checkbox"/> Script_Use__Contacts_...	OMMMP	[File Default]
<input type="checkbox"/> Script_Use__Contacts_...	OMMP	[File Default]
<input type="checkbox"/> Script_Use__Contacts_P...	PHONE	[File Default]
<input type="checkbox"/> Script_Use__Contacts_P...	PHFMT	[File Default]
<input type="checkbox"/> Script_Use__Contacts_R...	RLTN	[File Default]
<input type="checkbox"/> Script_Use__cntct_ADDR	cntct_ADDR	[File Default]
<input type="checkbox"/> Script_Use__cntct_INAD...	cntct_INADR__e...	[File Default]
<input type="checkbox"/> Script_Use__Documents	DOCS	[File Default]
<input type="checkbox"/> Script_Use__Estimates	ESTMT	[File Default]
<input type="checkbox"/> Script_Use__Estimates_...	ESTLI	[File Default]
<input type="checkbox"/> Script_Use__Globals	GLBL	[File Default]
<input type="checkbox"/> Script_Use__Inventory_...	INVTLOG	[File Default]
<input type="checkbox"/> Script_Use__Invoices	INVO	[File Default]
<input type="checkbox"/> Script_Use__Invoices_Li...	INVOLI	[File Default]
<input type="checkbox"/> Script_Use__Invoices_P...	PMT	[File Default]
<input type="checkbox"/> Script_Use__Invoices_P...	PMTLI	[File Default]
<input type="checkbox"/> Script_Use__Items	ITEM	[File Default]
<input type="checkbox"/> Script_Use__Lists	LIST	[File Default]
<input type="checkbox"/> Script_Use__Module_Na...	MODNAV	[File Default]
<input type="checkbox"/> Script_Use__Opportunities	OPP	[File Default]

Figure 6.0k - Screenshot of Core4 Layouts continued

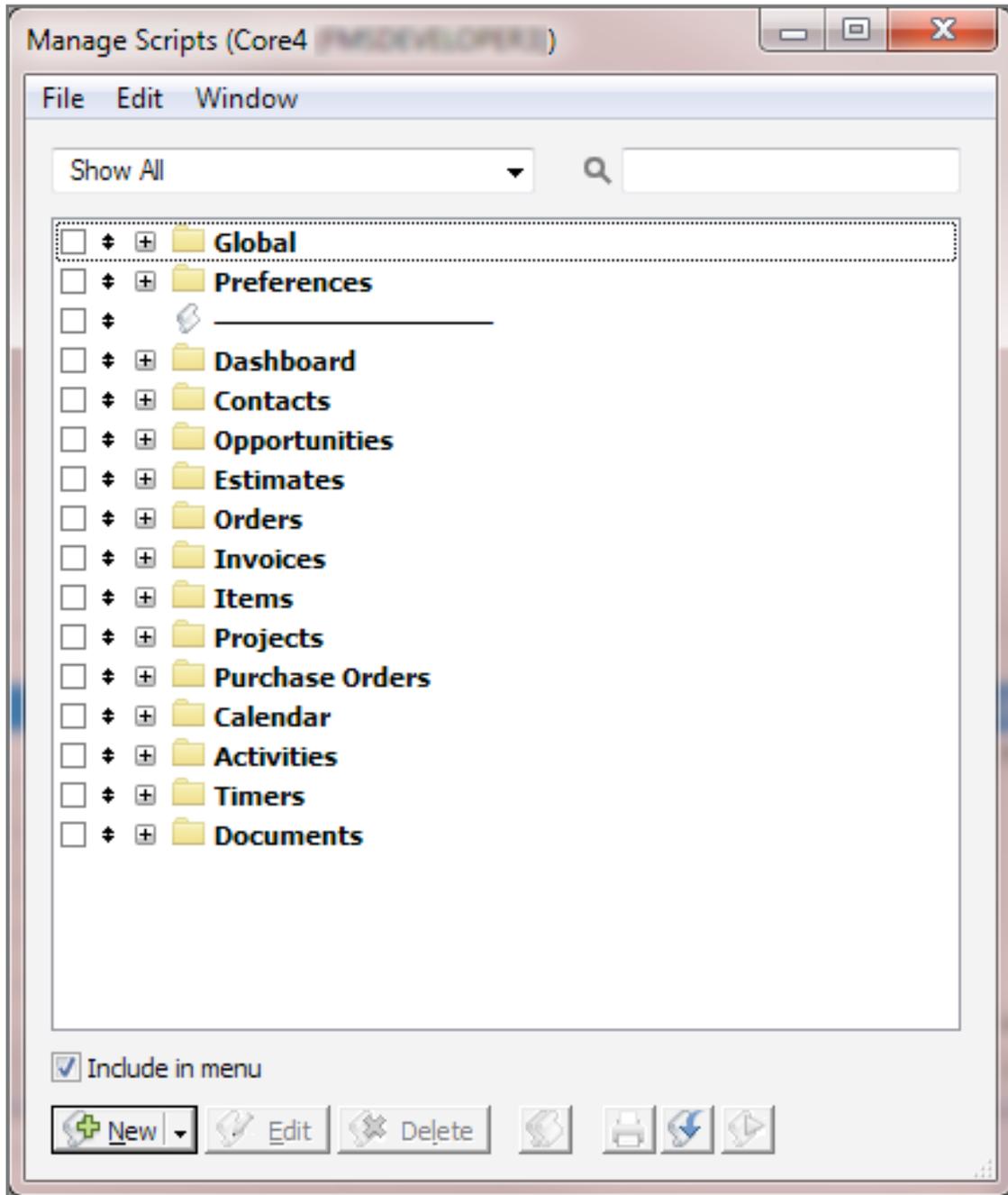
Layout Name	Associated Table	Menu Set
<input type="checkbox"/>  Script_Use__Orders	ORDER__orders	[File Default]
<input type="checkbox"/>  Script_Use__Orders_Lin...	ORDLI	[File Default]
<input type="checkbox"/>  Script_Use__Outlook_Fo...	FOLD	[File Default]
<input type="checkbox"/>  Script_Use__Plugin_Inte...	PIINT	[File Default]
<input type="checkbox"/>  Script_Use__Preference...	PREFS	[File Default]
<input type="checkbox"/>  Script_Use__Preference...	PREFU	[File Default]
<input type="checkbox"/>  Script_Use__Projects	PROJ	[File Default]
<input type="checkbox"/>  Script_Use__Projects_R...	ROLE	[File Default]
<input type="checkbox"/>  Script_Use__POs	PORDR	[File Default]
<input type="checkbox"/>  Script_Use__POs_Line_I...	POLI	[File Default]
<input type="checkbox"/>  Script_Use__POs_Receipts	RCPT	[File Default]
<input type="checkbox"/>  Script_Use__POs_Recei...	RCPTLI	[File Default]
<input type="checkbox"/>  Script_Use__Quickbooks...	ACCT	[File Default]
<input type="checkbox"/>  Script_Use__Resources	RESRC	[File Default]
<input type="checkbox"/>  Script_Use__Sample_Data	SMPL	[File Default]
<input type="checkbox"/>  Script_Use__Taxes	TAX	[File Default]
<input type="checkbox"/>  Script_Use__Timers	TIMER	[File Default]
<input type="checkbox"/>  Script_Use__Assembly_...	BUILDLI	[File Default]
<input type="checkbox"/>  Script_Use__Items_Line...	ITMLI	[File Default]
<input type="checkbox"/>  Script_Use__Assembly_...	BUILD	[File Default]
<input type="checkbox"/>  Script_Use__vCard	VCARD	[File Default]

Chapter 7 - Scripts

Scripts

Scripts are organized into these main groups as shown in Figure 7.0.

Figure 7.0 - Main Script Groups



Please note that other main script groups and/or subgroups not mentioned in this document may exist depending on your Core4 version.

Each main script group may consist of script subgroups. To assist you with understanding the script structure please find a description of each main script and script subgroup below.

Global – Scripts used across all modules in the system, or which affect the system as a whole.

-  Module Control - scripts used for dynamic module navigation.
-  Menu Item Replacements – scripts which replace standard FileMaker menu items with custom functionality.
-  Developer Only – “Reset” script performs a clean install and imports sample data. “Import_Sample_Data,” “Clean_Install” and “Prep_Sample_Data” scripts should NEVER be run, instead run the “Reset” script.
-  Triggers – script triggers used throughout the system.
-  Record Linking – scripts used to generate “record linking” popups.
-  QuickBooks - related to QuickBooks integration using the FM Books Connector plug-in.
-  Outlook - related to Outlook integration using the Outlook Manipulator plug-in.

Preferences – Scripts used by the preferences module.

-  QuickBooks - related to QuickBooks integration using the FM Books Connector plug-in.

Dashboard – Scripts used by the dashboard module.

Contacts – Scripts used by the contacts module.

-  Merge Duplicates - scripts used by the duplicate contact finder.
-  Address Book - related to Address Book integration using the Address Book Manipulator plug-in.
-  Outlook - related to Outlook integration using the Outlook Manipulator plug-in.
-  QuickBooks - related to QuickBooks integration using the FM Books Connector plug-in.
-  Reports - reports related to the contacts module.

Opportunities – Scripts used by the opportunities module.

-  Reports - reports related to the opportunities module.

Estimates – Scripts used by the estimates module.

Orders – Scripts used by the orders module.

Invoices – Scripts used by the invoices module.

-  Payments - scripts related to payment records.
-  QuickBooks - related to QuickBooks integration using the FM Books Connector plug-in.
-  Reports - reports related to the invoices module.

Items – Scripts used by the items module.

-  QuickBooks - related to QuickBooks integration using the FM Books Connector plug-in.
-  Reports - reports related to the items module.
-  Build - scripts related to building inventory assembly items

Projects – Scripts used by the projects module.

Purchase Orders – Scripts used by the purchase order module.

-  Receipts – scripts related to receiving items.
-  Reports - reports related to the purchase orders module.

Calendar – Scripts used by the calendar module.

-  Views – scripts used to generate calendar views.
-  Navigation – scripts that allow for navigation within a calendar view.
-  Calendar_Selection – scripts used to select/deselect calendars.

Activities - Scripts used by the activities module.

-  iCal - related to iCal integration using the iCal Manipulator plug-in
-  Outlook - related to Outlook integration using the Outlook Manipulator plug-in.

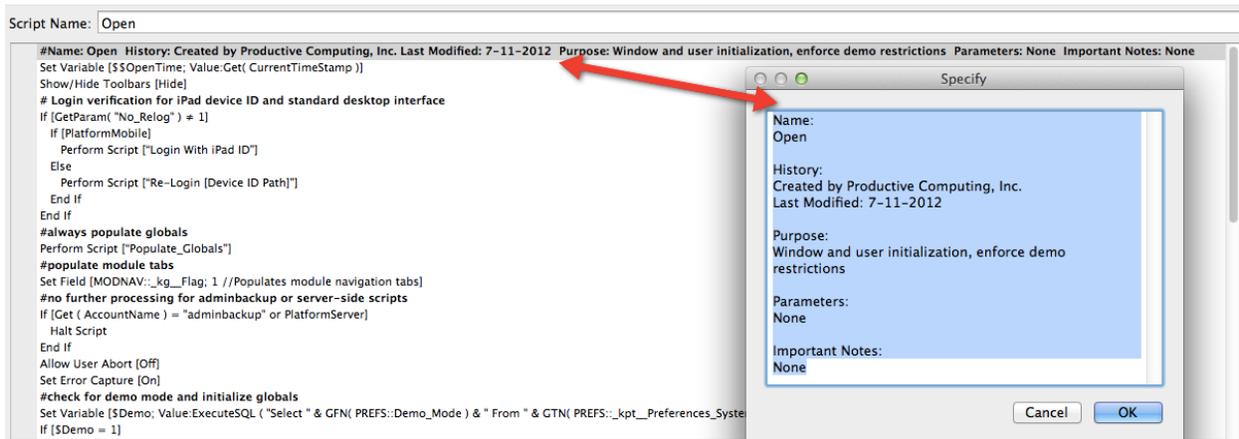
Timers – Scripts used by the timers module.

- Reports - reports related to the timers module.

Documents – Scripts used by the documents module.

We have taken special care to organize and carefully construct each script with a standard comment block at the top. In addition other comments have been added throughout each script where necessary to better assist you. The standard comment block at the top of each script consists of the following: Name, History, Purpose, Parameters and Important Notes as shown in Figure 7.1 below.

Figure 7.1 - Sample Core4 Script



****TIPS****

- Script Parameters when calling a script:
Example: "Module=Contacts" & ¶ & "Target=Contact"
Name of the parameter, then the equals symbol, then the value of the parameter.
We use a custom function: "GetParam" that accepts a script parameter name and returns the value associated with that parameter.
- Triggers are used on several fields to increase the functionality and validation of the data entry experience. We create folders for triggers in each of their own module name. All scripts used as a trigger have the word "trigger" in the script name.

Chapter 8 - Custom Functions and Menus

Custom Functions

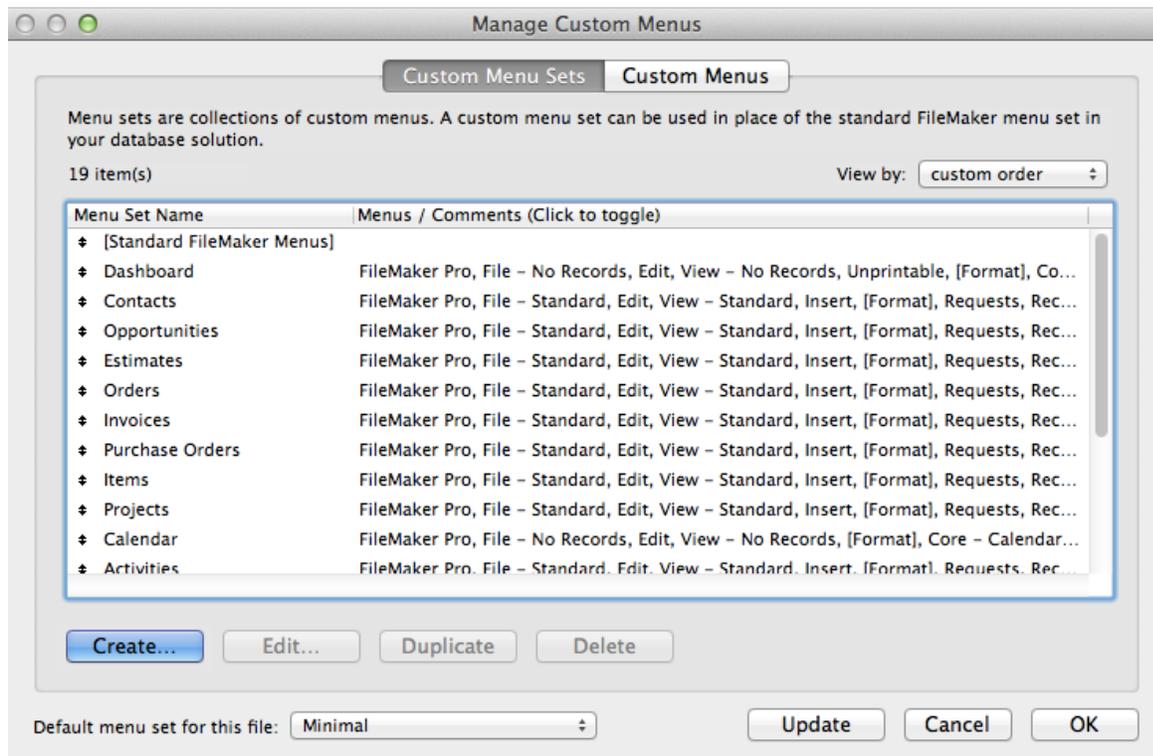
Custom Functions give developers the ability to go beyond the default functions built into FileMaker. There are a little over 100 custom functions in the Core4. They are all sorted by a "Custom Order" and grouped accordingly, therefore we recommend keeping the function ordered where they are. Since we do constantly use a few custom functions to define formulas over and over again, we will outline only these functions below.

- Functions specified with the word "Value" are used to add or remove multi-value keys.
- The ValueDelDupe function keeps only one unique value for a list of values.
- The ValuePatternCount function finds "who value only" when looking for a match.

Custom Menus

We have created a custom menu for each main area in the Core4. Manipulating custom menus is quite simple and can be done by opening the "Manage Custom Menus" window as shown in Figure 8.0.

Figure 8.0 - Custom Menus



**TIP: Certain options such as "delete all records" have been removed. This is primarily for a user's own safety as we did not accommodate for these options throughout the Core4. For example, if you expose "delete all records" in the Contacts area, which we do not recommend, then you will need to protect against the deletion of Core4 Users, allow an interface to delete ALL related QuickBooks contact(s) etc.

Chapter 9 - Execute SQL

Core4 takes advantage of the ExecuteSQL script steps speedy queries and ability to find information without creating unnecessary table occurrences. Each ExecuteSQL calculation is documented extensively to increase readability and understanding of each SQL query.

We have gathered some useful custom functions that ensure the ExecuteSQL script steps will continue to work even after field name and table name modifications. The custom functions listed below also simplify parts of building a complicated SQL query. Look at the comments within each custom function for further details on proper usage.

CurrencyFormat - Formats the currency returned by a SQL query.

DateToSQL - Converts dates to be used in SQL queries.

FMNID_Table - Gets the FileMaker internal ID for a table.

FoundSetToSQL - Gets field data of the found set to be used by the SQL "IN" operator.

* Warning: this function is not fast with large found sets and is subject to the standard 10,000 iteration recursion limit.

GTN - Gets the table occurrence name to be used in SQL queries.

GFN - Gets the field name to be used in SQL queries.

ThisFieldInListSQL - Generates the entire "IN" clause to follow a "WHERE" in a SQL query.

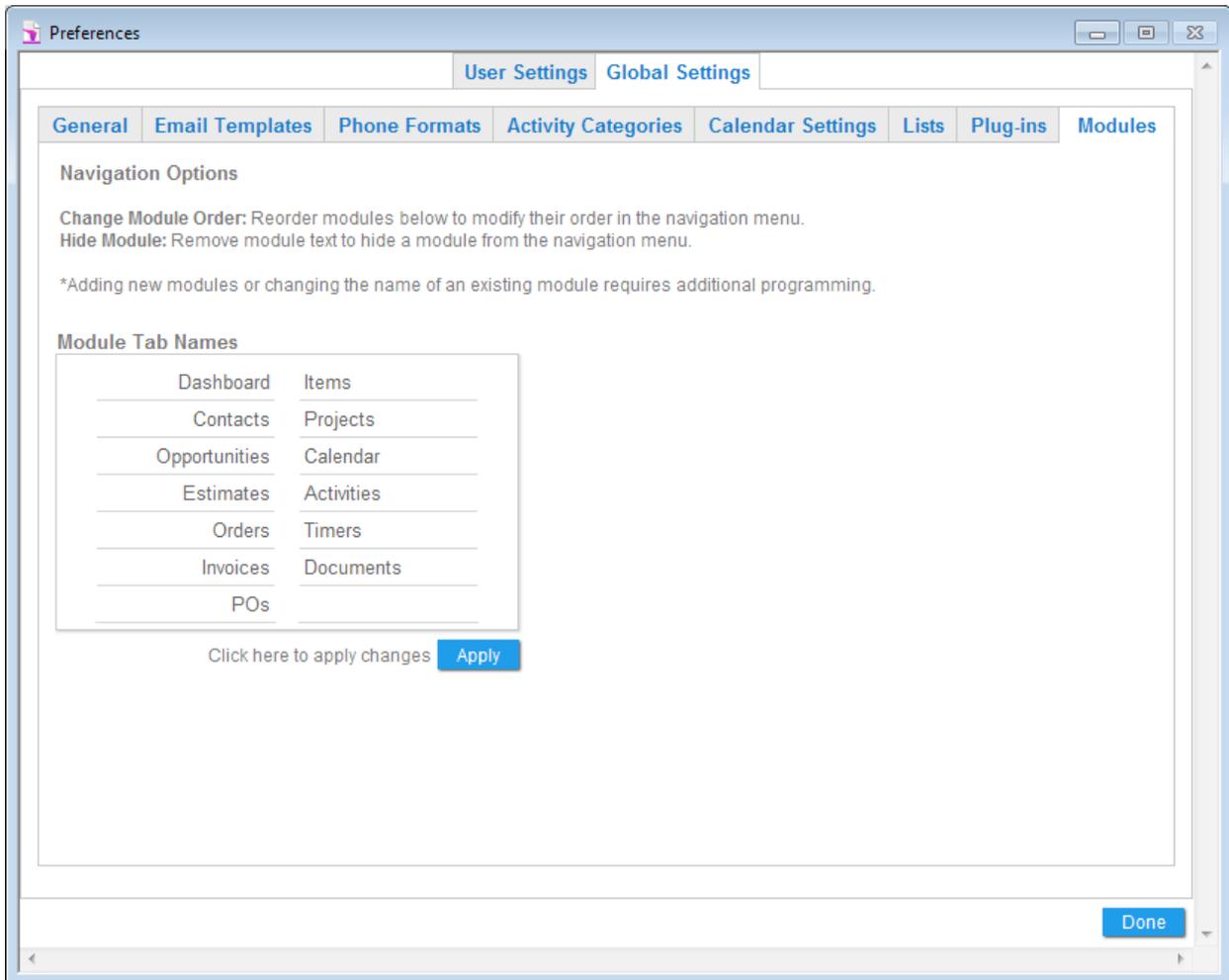
GetValueSQL - Gets field data from a SQL query result list with special field separators.

Chapter 10 - Customizing Modules

Core4 modules can now be easily rearranged, renamed and changed in the Core > Preferences > Global Settings > Modules tab.

We have separated the modules tab into two sections as shown in Figure 10.0 below. The “Modify Module Names” section (outlined in blue below) allows you to adjust the location of the module names and default layout names.

Figure 10.0 - Module Modification Interface



1. Module tab names are changed by adjusting the module name in the field boxes/sections. Changes applied will display the new module name on the layout. This area contains the text that will be displayed as the module tabs for the Core4. Changing the text in these fields will change the name associated with that tab and its destination.
2. Click the “Apply” button to apply all changes made.

Moving Modules

Modules are moved by rearranging both the "Module Tab Names" and "Module Default Layout Names" as shown in Figure 10.1a - 10.1c below. Place the desired module name in their corresponding tables and press "Apply" to save changes.

Figure 10.1a - Before Moving Modules.

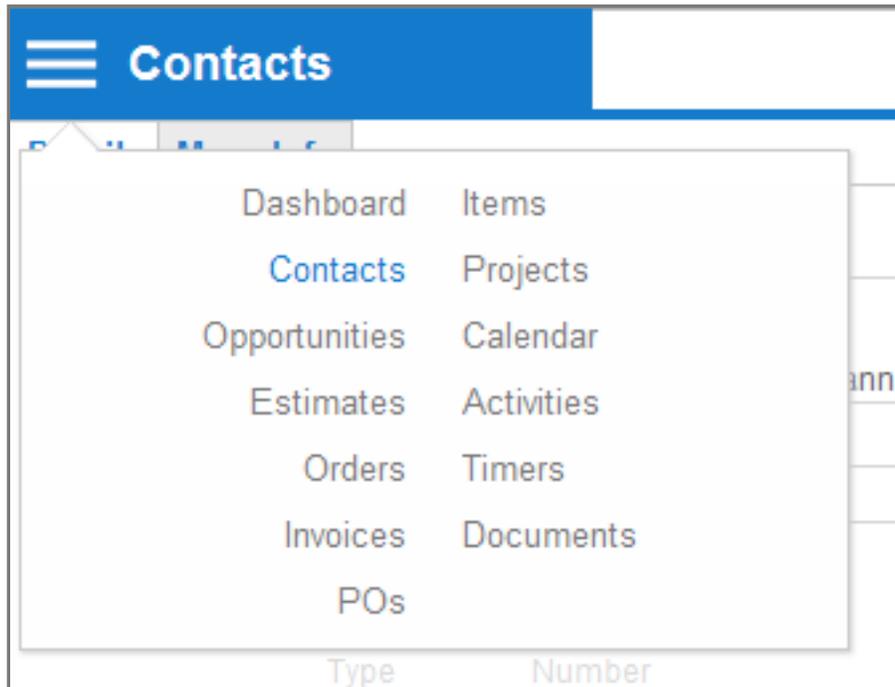


Figure 10.1b - In the preference screen, move both the module name and the module default layout name to the correct table.

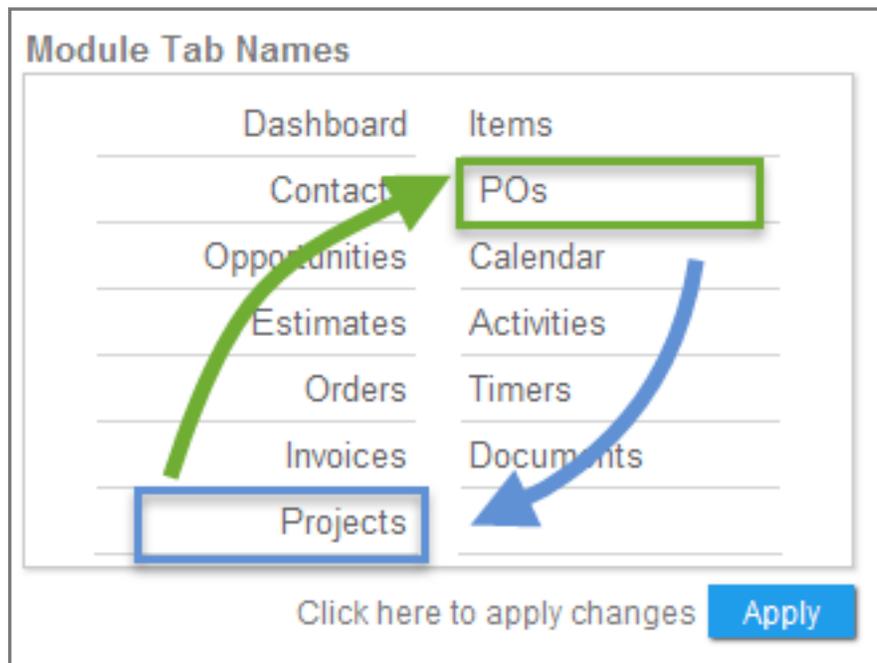
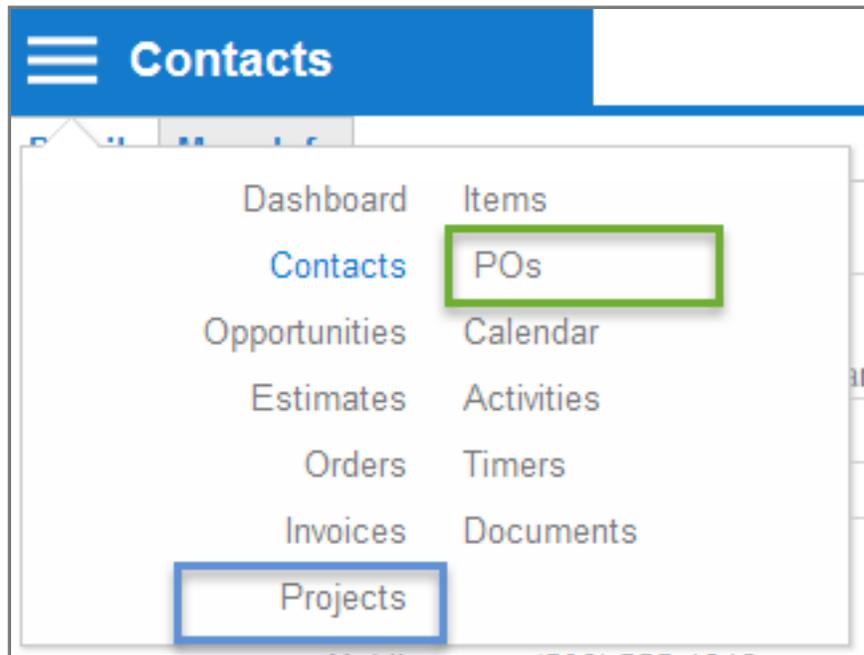


Figure 10.1c - Result after changes have been applied.



Adding/Removing Modules

Modules can be added by modifying an existing module tab field or by specifying a name and a layout in an empty module tab field. Remember to place the display name for the module under "Module Tab Names" and place the layout name under "Module Default Layout Name." A module can easily be removed by deleting the text in both fields for the module to be deleted. Once changes have been made press "Apply" to save changes.

Creating Custom Modules

The Core4 is scripted in a way to dynamically handle custom modules with minimal script modifications. Basic implementation of custom modules can be done by following the steps below:

1. Create the module tables and fields. The table name should be the same as the desired module name. Field names should follow the field naming convention discussed in Chapter 5.
2. Create the main layouts to be used for this module. Create as least one layout for both Form and List view.
 - a. As discussed in Chapter 6 layouts must follow a strict naming convention for the module navigation scripts to function properly
 - b. **Syntax** = <Module_Name>_<View>[_<Platform>]
ex. Contacts_List_Web
 - c. Only create layouts with "_Web" and "_iPad" if you intend to use that layout through Web browser or an iPad device
3. Insert the new module name in the Core > Preferences area stated above and click "Apply"

TIPS

-  Module tabs should only be modified by an admin. It is not recommended for general users to make module changes. You may want to create special security permissions for general users to prevent modification of this data.
-  A module tab will not work if the module's default layout name is not constructed correctly it is in the Core4 layouts. This function is not case sensitive.
-  Abbreviate longer module names. Module names that do not fit will wrap within the given text area. For example: Opportunities = Opps
-  It is preferred to leave empty modules to the right as opposed to leaving gaps in between modules. This will provide a more visually appealing look to the module tabs.
-  The \$\$Module global variable is automatically populated with the current layouts module name when the custom function GetActiveModuleTab("") is called on a layout following the naming conventions.

Chapter 11 - Working with Plug-ins

Overview

Integration with Outlook, QuickBooks, Apple's Address Book, and iCal can be an extremely powerful when you think that one of the primary goals for integration is to avoid double entry and increase accuracy and efficiency. Avoiding duplicate data entry is what most organizations strive for and is the primary purpose for creating these integration strategies. Integration requires that a plug-in be installed and registered in each machine using the plug-in functions. The use of plug-ins in general introduces additional variables and complexities that demand additional attention to detail upon setup and implementation. The scripts used to integrate with these third-party applications are of an advanced nature and tampering with them (even at their most basic level) requires an experienced FileMaker developer and a professional test environment.

Plug-in and Third Party compatibility

As a developer you want to ensure compatibility with your Core4 version, plug-in version, OS version, FileMaker version, Outlook version or QuickBooks version installed on your client's machine. As a general rule, we do our best to have full compatibility between the Core4 versions and the plug-ins versions we sell. We take careful consideration of the various versions of your OS, FileMaker, Outlook and QuickBooks that are available.

It is best to purchase the plug-in at the same time you purchase the Core4 as this safeguards you against running into a plug-in with an older Core or vice versa. However, you can always purchase plug-ins at a later time. We do our best to maintain backwards compatibility in all our plug-ins and if you ever have any compatibility questions please contact us.

Security and Test before you go live

If you choose to incorporate record level security, security on layouts, fields, or value lists, etc. and a user does not have the proper access expected by the plug-in integration scripts, then you may receive errors or worse, have something go terribly wrong to the point where you may have compromised the integrity of the data itself. We have created all the plug-in integration scripts with the idea that the end-user running them has at least data entry level access to the tables, fields and layouts required by the routine. If you are incorporating any custom security of any kind, then we encourage you to first test the integration as the end-user before rolling out your security changes to a live production system.

We always recommend you first install and test a given plug-in integration with your version of the Core4 before incorporating it in a live production environment. There are several moving parts in these processes and you want to ensure compatibility and connectivity before releasing it to your user base. Like any major data integration process, the best practice is to always test before going live!

Synchronization and record deletion

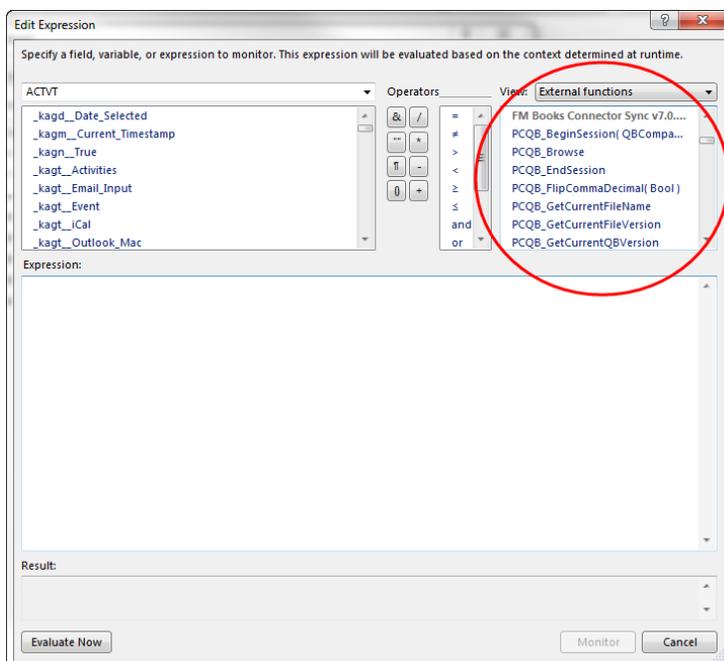
Due to the complex nature of integrating between a robust FileMaker system and a complex third-party application, we have taken specific strides to thoroughly explain the plug-in integration functionality in the Core4 User Manual. Please refer to this document for the exact data exchange functionality and rules. We adapt a “one way push” and “one way pull” scenario versus a true synchronization method. When these routines run, they push or pull in a single direction at a time and overwrite data rather than merge it.

Warning: Attempts to manipulate any of the integration scrips with the intention to perform specific deletions or true synchronization either in FileMaker or the third-party application should be done so at your own risk and peril. Synchronization and record deletion is an extremely dangerous proposition and should be done so using the highest set of standards, precautions, expertise and testing. A controlled environment, high level of data integration skills, FileMaker expertise and attention to detail are highly recommended. True synchronization using the existing integration scripts as a starting point will require a truly significant enhancement and is a very serious undertaking. In fact, it is unwise to use the existing scripts as a starting point however they can be a good reference as a demonstration on how data is exchanged between FileMaker and a given third party application.

Plug-in Functions

Once you install a plug-in, then additional plug-in functions become available in FileMaker as shown in Figure 11.0. Each Core4 script using a plug-in function is clearly categorized and labeled. For a full description of each plug-in function please refer to the plug-in documentation (specifically the Functions Guide and Developers Guide).

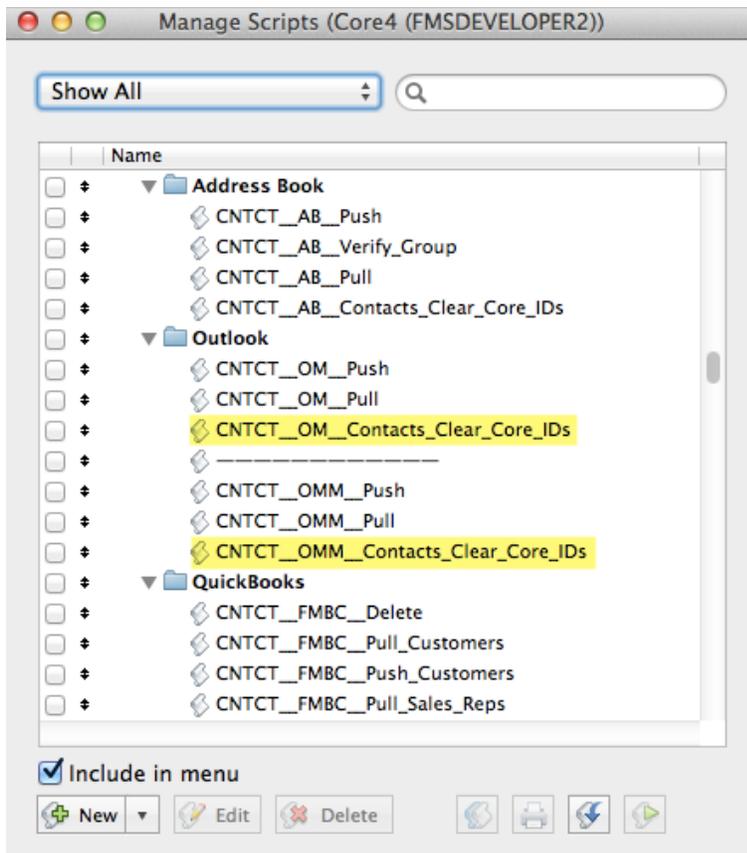
Figure 11.0 - FM Books Connector Plug-in Functions Available



Outlook Integration Tip

Once a contact, task, event or mail record have been pushed to Outlook or pulled from Outlook, then we assign that record a unique CoreID and set this CoreID to a custom field in Outlook. This allows the Core4 to know whether to create a new record, update the existing record or in the case of email, import a new email (as the Core4 will never import the same email twice or in other words will never import an email with a CoreID). There may be a need to reset the CoreIDs, which is why we have created scripts to reset the CoreIDs as shown in Figure 10.1 below.

Figure 11.1 - Clear Core IDs Scripts Found in Manage Scripts

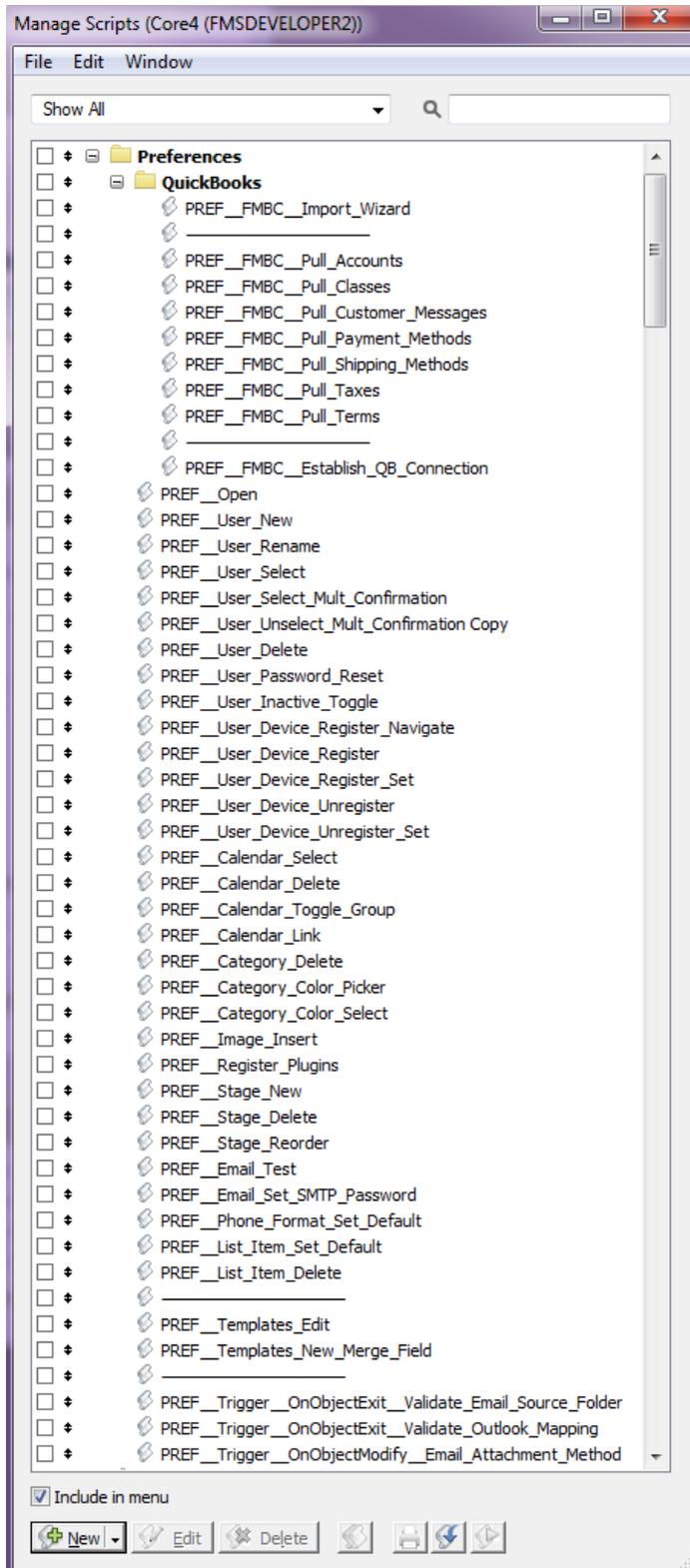


For example, the "CNTCT_OM_Mail_Contacts_Core_IDs" script will clear Core IDs of all necessary records in Outlook. Records are NOT deleted from the Core4 and Outlook, but rather only the CoreIDs are cleared. The same rules apply when clearing the CoreIDs for contacts, tasks and events. Please use these scripts with caution when you want to reset the Core IDs in Outlook and start fresh.

QuickBooks Integration Tip

Once an item has been pushed or pulled from QuickBooks, then we assign that record a unique QuickBooks ID in Core4. This ID is used to identify the item in QuickBooks to further modify or delete an item.

Figure 11.2 - FMBooks Connector Script Steps Found in Manage Scripts



- Contacts**
- Merge Duplicates**
- Address Book**
- Outlook**
- QuickBooks**
- CNTCT_FMBC_Delete
- CNTCT_FMBC_Pull_Customers
- CNTCT_FMBC_Push_Customers
- CNTCT_FMBC_Pull_Sales_Reps

- Invoices**
- Payments**
- PMT_CC_Payment_Dialog
- PMT_CC_Process Payment
- QuickBooks**
- PMT_FMBC_Delete
- PMT_FMBC_Pull
- PMT_FMBC_Push

- PMT_New_or_Edit
- PMT_Refresh_Line_Items
- PMT_Select_Invoice
- PMT_Clear
- PMT_Delete_or_Cancel
- PMT_Save

- Trigger_PMT_Input_Amount
- Trigger_PMT_Enter_Field_Line_Item_Amount
- Trigger_PMT_Input_Line_Item_Amount
- QuickBooks**
- INVO_FMBC_Delete
- INVO_FMBC_Void

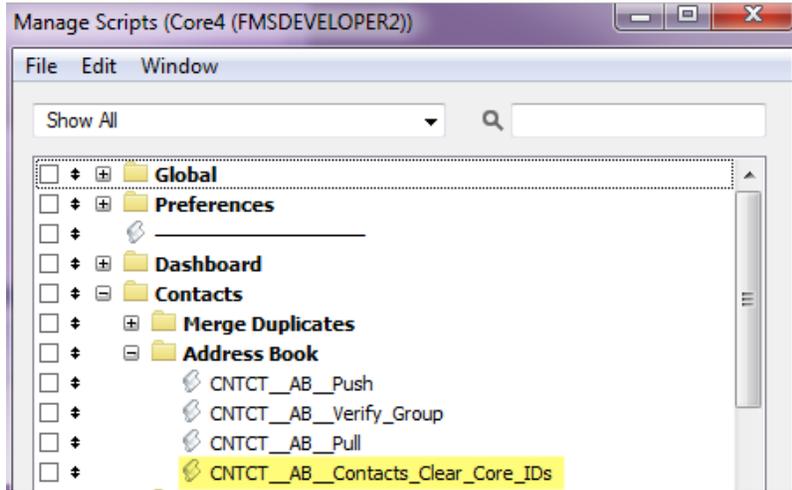
- INVO_FMBC_Pull
- INVO_FMBC_Pull_invoice
- INVO_FMBC_Pull_lineItem (Invoice_ID)

- Items**
- QuickBooks**
- ITEM_FMBC_Delete
- ITEM_FMBC_Pull_Items
- ITEM_FMBC_Push_Items

Address Book Integration Tip

Once a contact has been pushed to Address Book or pulled from Address Book, then we assign that record a unique CoreID and set this CoreID to a hidden custom field in Address Book. This allows the Core4 to know whether to create a new record or update the existing record. There may be a need to reset the CoreIDs, which is why we have created a script to reset the CoreIDs for all contact records as shown in Figure 11.3 below.

Figure 11.3 - Contacts Clear CoreIDs Scripts Found in Manage Scripts



For example, the “CNTCT_AB_Contacts_Clear_Core_IDs” script will clear Core IDs of all contacts in Address Book. Records are NOT deleted from the Core4 and Address Book, but rather only the CoreIDs are cleared. This must be done before installing a fresh Core4 solution to avoid overwriting existing contacts in the Core4 or Address Book.

Please note that we only push and pull with the specific Address Book Group outlined in Core > Preferences > User Preferences.

iCal Integration Tip

A user's events and tasks will be pushed to the specific iCal calendar specified in the Core > Preferences > User Settings. Recurrence or repeating events are NOT supported at this time. Recurrence and repeating events will only show up in iCal on the beginning date specified.

Figure 11.4 - iCal Scripts Found in Manage Scripts



The iCal integration is only one way. Each time you push from the Core4 to iCal the existing calendar in iCal is deleted and repopulated with a new iCal Calendar. Please ensure that the iCal title specified for each user is accurate.

Chapter 12 - Contact Us

This Developer's Guide was created specifically for you, the Developer. If you feel there are areas that you would like covered in detail, please let us know. For users of the Core4 we have created a User Manual and online video tutorials. The documentation and videos can be found at www.Core4CRM.com. They provide the end user with basic training and user functionality.

The Core comes fully unlocked allowing you to customize the solution according to your needs. Implementing customizations require knowledge of FileMaker scripting, relationships and calculations.

If you need additional support for scripting, customization or setup, then please contact Productive Computing, Inc. via the avenues listed below.

Website: www.productivecomputing.com

Phone: (760) 510-1200

Email: support@productivecomputing.com

Forum: www.productivecomputing.com/forum

Please note assisting you with customizations and set up is billable at our standard hourly rate. We bill on a time and materials basis billing only for the time in minutes it takes to assist you.

We will be happy to provide you with a free estimate if you fill out a Request For Quote (RFQ) at www.productivecomputing.com/rfq. We are ready to assist and look forward to hearing from you!