

LAUNCH ALTAIR MONARCH COMPLETE

Monarch Complete provides two entry points for working with data:

- Monarch Data Prep Studio provides a fast and easy way to clean and prepare your data. It includes more than 80 pre-built functions designed specifically for data preparation. It even allows easy report discovery via automatic parsing and data extraction.
- Monarch Classic includes the full range of functionalities found in previous versions of Monarch, such as the capability to define advanced data extraction templates, table summaries, and advanced redaction.

To run Altair Monarch Data Prep Studio, go to **Start > All Programs > Altair Monarch 2023 > Monarch Data Prep Studio 2023**. The application displays the *Start Page*, with the Getting Started video automatically running.

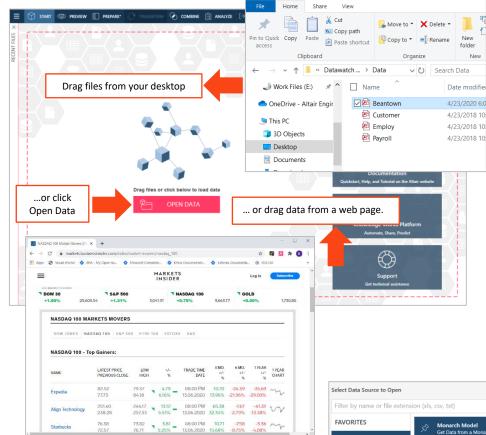
To run Altair Monarch Classic, go to Start > All Programs > Altair Monarch 2023 > Monarch Classic 2023.

NOTE: Starting Monarch Complete usually brings you to Data Prep Studio. However, you can switch from one or the other at any time.

WORKING WITH DATA PREP STUDIO

1 ACQUIRE DATA

Click the **Open Data** button to select a file or connect to a data source. You can also load your data directly by dragging and dropping files into the *Start, Preview, Prepare, or Combine* windows.



Altair Monarch Data Prep Studio was designed for ordinary people to do extraordinary things with data. After simply dropping a file onto the prep canvas, your data become instantly available in the form of rows and columns.

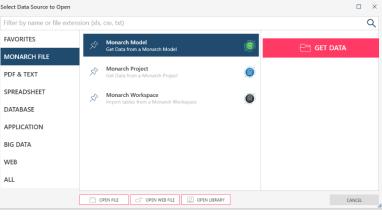
READ MORE

- Adding Data
- Working with Data Sources
- <u>Working with Recent Data</u>
 <u>Sources</u>

SPECIAL DATA SOURCE? NO PROBLEM.

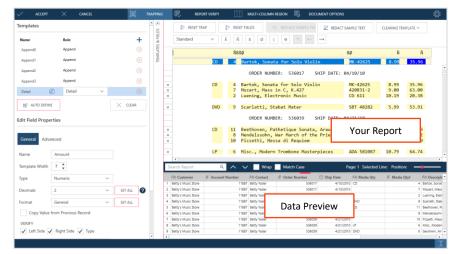
Altair Data Prep Studio allows you to access almost all types of data, including databases, spreadsheets, and even multi-structured data trapped in existing report files, PDFs, web pages, log files, and much more.

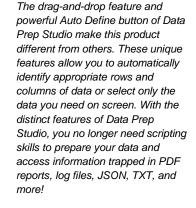
Use any out-of-the-box connectivity tools to connect to all major relational databases, Hadoop, NOSQL, Salesforce, and more.



IS YOUR SOURCE IS A PDF OR PRN DOCUMENT? CREATE A MODEL FOR IT.

If your source is a document or report (e.g., PDF or PRN), you are brought to the Report Design window. Click the **Auto Define** button to automatically identify the columns and rows of your data source and build a table.





READ MORE

- Working with Report Design
- <u>Creating Data Extraction</u>
 <u>Templates</u>
- Working with PDF Files

You can also directly trap the fields you want to include on the screen. Preview your table as it gets defined.

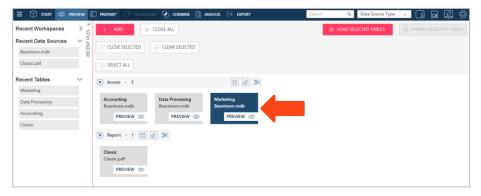
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WATCH Altair Monarch Use Case | JSON

This extremely useful functionality is unique to Data Prep Studio. Now you can access the information trapped in reports in various formats, including PDF, JSON, TXT, and more!

2 PREVIEW DATA

After a data source has been selected or a document has been prepared, you are brought to the *Preview* window.



The Preview function allows you to review the information and check the quality of the data before loading these into the Altair Data Prep Studio workspace.

Quickly determine if:

- your table has enough rows for you to work with,
- the column values are meaningful, or
- there are nulls or blanks.

To preview the data found in a table you want to open, click the **PREVIEW** button below the table name.

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					5 Marke	ting	Carlson	Stephen		1588509	3/4/	1995 12:00:0	м			
					6 Marke	ting	Carpenter	Rae Ann		1598699	6/30	/1995 12:00:	F			
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3 LOAD SELECTED TABLES

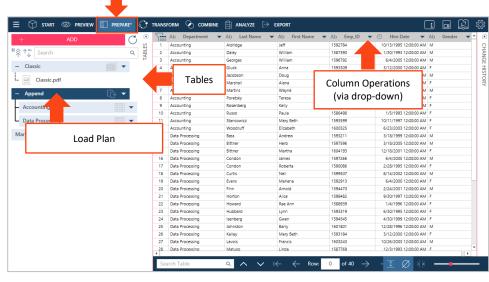
From the Preview window, you can

- **Continue adding data to your workspace**. Click on the Add button found in the Preview and Prepare windows.
- Load your data and perform actual preparation work. Select the tables you want to work with and then click Load Selected Tables.

4 PREP YOUR DATA

START PREPARING DATA

All tables that are loaded, appended, or defined via the Report Design window are made available in the *Prepare* window. This window is where all prep and transformation operations are done.



If your data source is in TXT or PDF format, you can include report metadata when you load your data.

Report metadata refer to information about a report, which includes the following:

- Report File Number
- Report File Name
- Report Page Number
- Report Line Number
- Report Column Number
- PDF Producer
- Report Page Count

Report metadata can help you analyze your data and preserve data lineage.

READ MORE

Previewing Data



In the Preview window, you can:

- show and review statistics
- edit columns (e.g., change name, format, and data type)
- move, rename, delete, hide, or copy columns
- sort and filter column values
- clean up the data (remove spaces, remove blanks or nulls)
- extract strings
 - replace values
- split or combine values

Over 80 pre-built operations and functions are available to transform and manipulate data with mouse clicks. No scripting is needed!

READ MORE

- Preparing Data
- <u>Column Operations</u>

From the *Prepare* window, select a table and then work with the columns to prepare them for visualization or analytics.

TRACK CHANGES SO YOU CAN REVERSE THEM OR APPLY TO OTHER TABLES

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TRANSFORM

button and select a

Sort

Pivot

Unpivot

Transpose

Swap rows and columns

Sort on one or more columns

Pivot row values to new columns

Convert columns to attribute/value pairs

Monarch Data Prep Studio tracks all prep operations you carry out on a table and records these in a Change History. Use Change History to review and audit all operations. You can also use it to undo any operation(s) you have carried out.

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TRANSFORM TO GET A DIFFERENT AND BETTER VIEW.

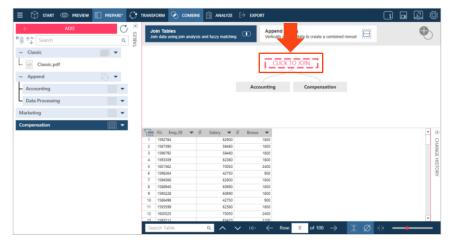
- 1. While in the Prepare window, click the transform.
- 2. Do one of the following:
 - sort one or more columns
 - create summaries by grouping columns
 - determine and remove duplicate records
 - remove all empty rows
 - pivot/unpivot your table to get different summaries
 - transpose rows and columns
 - flag/remove duplicates

The Transform Data feature allows you to create new tables.

COMBINE AND CONSOLIDATE TO ENRICH YOUR DATA.

1. While in the Prepare window, click on the **COMBINE** button to display the Combine data stage.

- 2. Do one of the following:
 - Drag a table from the Table List panel to the Drag a Table box
 - Drop a table from a location on your machine (e.g., from your desktop or local/network drive) to the *Drag a Table* box.
- 3. Select a second table following the same procedure in Step 2.
- 4. Select CLICK TO JOIN to display the Join Configuration dialog.



Join disparate data in multiple ways, including left outer, right outer, full outer, and inner joins.

Group Group and summarize values

Remove, keep or flag duplicate values

Removes rows with nulls, blanks, and whitespace

Duplicates

Extract Rows

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The **Join Analysis** feature suggests the best way to join data by inspecting the data sets and applying powerful algorithms. You don't need to be a data scientist to do this.

Monarch Data Prep Studio also supports fuzzy matching, with which you can match key values that are not 100% identical but are similar. For example, you can set fuzzy matching tolerance levels to match Connecticut and Conecticut or Smith and Smyth.

If tables have an identical structure, you can easily append them to consolidate your data. The **Append Helper** is also available to append records even if they are not 100% identical.

Altair Monarch 2023 QuickStart

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New left key		New right key		×		
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Row Count: 0	RECO	OMMEND KEYS	OK CANC	CEL		

- 5. Select a join type and set join fields to complete the definition.
- 6. Continue to join tables as necessary. You can create multiple join sequences.

 Append 	
Accounting	••••
Data Processing	▼
— Join	• •
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Load Plan Visualization provides you with a hierarchical view of all of the operations performed on a table. You can easily view, for instance, the tables that have been used to produce a join result.

READ MORE

- Joining Tables
- Using Fuzzy Joins
- <u>Appending Tables</u>

WATCH

Load Plan Visualization

5 CREATE SUMMARIES FOR DEEPER ANALYSIS

Summaries provide a broader view of your data.

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		3 Betty's Music St	ore CD	Luening, Electronic Music	20.38			
Append		4 Betty's Music St	ore CD	Mendelssohn, War March of the Priests	71.92			
		5 Betty's Music St	ore CD	Mozart, Mass in C, K.427	63.00			
Data Processing		6 Betty's Music St	ore CD	Pizzetti, Messa di Requiem	95.90			
Marketing	000	7 Betty's Music St	ore DVD	Gershwin, An American in Paris	35.94			
Markeung		8 Betty's Music St	ore DVD	Scarlatti, Stabat Mater	53.91			
Classic	- III	9 Betty's Music St	ore LP	Misc, Modern Trombone Masterpieces	64.74			
	(HEAD)	10 Big Shanty Mus	c CD	Mozart, Symphony No.23 in D	26.97			
Classic.pdf		11 Big Shanty Mus	c CD	Schoenberg, Ode to Napoleon	57.54			
		12 Big Shanty Mus	c CD	Schubert, Sonata in e, D.566	9.00			
ragDropCSV		13 Big Shanty Mus	c CD	Shostakovich, 24 Preludes for piano.	10.78			
		14 Big Shanty Mus	c CD	Stravinsky, Dumbarton Oaks Concerto	53.94			
		15 Big Shanty Mus	c DVD	Hoist, St. Paul's Suite for Orch.	29.95			
		16 Big Shanty Mus	c SACD	Balakirev,Symphony no. 1	86.31			
		17 Notas Musicale	BLU	Liszt, Les Preludes	67.13			
		18 Notas Musicale	BLU	Mozart, Serenata Notturna	17.95			
		19 Notas Musicale	CD	Bizet, Carmen	97.02			
		20 Notas Musicale	CD	Schumann, Sym. Etudes for plano.	71.92			
		21 Notas Musicale	DVD	Bartok, 4 Dirges, plano., Hagoplan	10.78			
		22 Notas Musicale	LP	Greig, Peer Gynt Suites, 1 & 2	62.16			
		23 Grand Total:			1109.09			

A summary tabulates information for selected fields and presents the results in a one- or two-dimensional matrix, thereby allowing deeper analysis of your data.

READ MORE

- <u>Creating Summaries</u>
- Exporting Summaries

Select the table for which you wish to create a summary and then click Analyze.

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6 EXPORT

- 4. Select an export format.

5. Specify the path and file names, define export options, and then click Export.

😑 💮 START 🎯 PREVIEW 📗 PREPARE*	• 🗇 TRANSFORM 📀 COMBINE 🗎 ANALYZE 🗗	EXPORT*	i 🖬 🖾
Only show exports from selected tables	Manage Exports	🖉 Classic - Microsoft Excel	
Classic 1 Epont + Accounting + Data Processing + Marketing + Order_Order_Details5 + Compensation +	Classic - Microsoft Excel X	Table: Classic Export Type: Microsoft Excel Export File System: Local or Mounted Disk ~ Excel Export Format: Excel XLSX (vs.lss) ~ General Advanced Export Location:	
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Once you're done preparing your data, you can easily export to many different formats, including Microsoft Power BI and IBM Cognos Analytics, and other Altair products, such as Altair Knowledge Hub, Altair Knowledge Studio, and Altair Panopticon.

READ MORE

Exporting Data

Your prepped data are exported, ready to be fed into other applications. *Summaries can only be exported to the CSV and Microsoft Excel formats.

WORKING WITH MONARCH CLASSIC

From Data Prep Studio, you can switch to Monarch Classic at any time by selecting Switch to Classic Mode from the Data Prep Studio application menu.

1 OPEN A FILE

Go to File > Open to open a file.

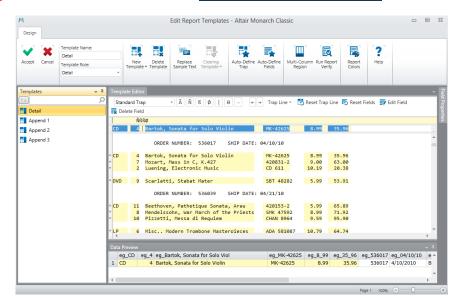
Monarch Complete works with both relational and multi-structured data and provides support for a wide range of formats, such as PDF, XML, HTML, text, spool, and ASCII files. Access data from invoices, sales reports, balance sheets, customer lists, inventory, logs, and more.

The system is easy to use, allowing you to quickly select any data source and automatically convert it into structured data for analysis.

2 DEFINE DATA EXTRACTION TEMPLATES

After opening a report, Monarch Complete brings you to Report View. Switch to Report Design view to define data extraction templates.

Define traps like you do in Data Prep Studio Advanced Mode. When defining traps in Classic Mode, you have better control over trapping specific lines because the Template Editor allows you to define template levels to match your report hierarchy.



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Help

New Workspace Open Workspace

Close Workspace

Save Workspace

Import Workspace Tables

Switch To Classic Mode

Exit Monarch Data Prep Studio

Open Data

You can also use specialized trapping techniques, including the following:

Floating traps

To trap data that do not have a constant position on the page. For instance, the date and time field in the report below do not have a fixed position.

ezvl-30ppp187.epix.net[23/Aug/2010:01:13:430400]."GET./images/find.gif.H.
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AC855931.ipt.aol.com[<mark>23/Aug/2010:01:14:510400</mark>] *"GET //express/125x30_snpc(
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202.112.36.196[<mark>23/Aug/2010:01:18:220400</mark>]."GET./img/anim_thumbtack.gif.HT"

Multi-column regions

To trap and extract data from reports with multiple, adjacent columns of data on each page.

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ORFF, C.	4	MUSSORGSKY, M.	34	BYRD, W.
SCHUMANN, R.	5	RACHMANINOV, S.	35	SWEELINCK, J.P
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BACH, J.S	7	SOR, F.	37	LUZZASCHI, L.
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RIMSKY-KORSAKOV, N	. 13	HINDEMITH, P.	43	ADAMS, J.
BEETHOVEN, L.V	14	SOLER, P.A	44	JANEQUIN, C.
BERNSTEIN, L.	15	CARULLI, F.	45	RAMEAU, J.P
TCHAIKOVSKY, P.I	16	SCELSI, G.	46	VERDI, G.
WAGNER, R.	17	SESSIONS, R.	47	BOCCHERINI, L.
BRAHMS, J.	18	PENDERECKI, K.	48	JOPLIN, S.

Regular expression traps

To trap data using regular expressions.

Regular Expression Trap ▼ Options ▼ ← → Trap Line ▼ 🛃 Reset Trap Line 🖡 Reset F	ields 📝 Edit Field 🔜 Delete
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CUSTOMER: Betty's Music Store 05/01/10 C Create a Field from this Capture Custors 10:17 Delete All Fields Delete All Fields	tomer IGE 01
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You can even use the Redaction Feature to replace, or mask out, field values so that only a	None
representation of the field value is displayed and not the	X-over text
actual value.	X-over non-blanks
For example, a credit card number like 1345-8716-4432-7892	X-over digits
in the original report	X-over digits except last 4
can be displayed as	Replace with blanks
XXXX-XXXX-XXXX-77892.	Consistent alias text
Monarch Complete's advanced redaction capabilities	Consistent alias digits
allow you to easily and reliably remove or obscure confidential data, such as customer information, medical	Pseudo bank card number
records, and employee IDs.	

This feature allows you to safely distribute reports to partners and customers, even in heavily regulated industries, such as healthcare and financial services, without compromising customer

3 TRANSFORM YOUR DATA IN TABLE VIEW

and employee privacy.

Table View displays fields extracted from a report or imported from a database.

Taboma	- 10 -	Select All	Active Filter:		1 mail 1 mail		~		10	1
Tahoma		Copy	Active Filter:	No Filter *	00 Mii	Eq.	C			ð 🖽
bie sign Fit Autosize Columns		Coby	Active Sort:	No Sort *	Search Go to Row	Find in Report	Rebuild Data View	Show Field Contents	Freeze Panes *	Open Table in Data Prep Stud
ne Report View Tabl	le View X									
	- 3		Quantity Descri		Label	Unit Price	Amount	Order No	Ship Date	Contact
	0 1	CD	4 Bartok	, Sonata for Solo Violin	MK-42625	8.99	35.96	536017	4/10/2010	Betty Yoder
Main	- 2		7 Mozar	t, Mass in C, K.427	420831-2	9.00	63.00	536017	4/10/2010	Betty Yoder
Main	3	CD		ig, Electronic Music	CD 611	10.19	20.38	536017	4/10/2010	Betty Yode
	4	DVD	9 Scarla	tti, Stabat Mater	SBT 4828	5.99	53.91	536017	4/10/2010	Betty Yode
	5	CD	11 Beeth	oven, Pathetique Sonata, Arau	420153-2	5.99	65.89	536039	4/21/2010	Betty Yode
	6	CD	8 Mende	Issohn, War March of the Priests	SMK 4759	8.99	71.92	536039	4/21/2010	Betty Yode
	2	CD	10 Pizzett	i, Messa di Requiem	CHAN 896	9.59	95.90	536039	4/21/2010	Betty Yode
	8	LP	6 Misc.,	Modern Trombone Masterpieces	ADA 5810	10.79	64.74	536039	4/21/2010	Betty Yode
	9	DVD	6 Gersh	win, An American in Paris	ACS 8034	5.99	35.94	536039	4/21/2010	Betty Yode
	1	CD CD	6 Stravin	isky, Dumbarton Oaks Concerto	SMCD 512	8.99	53.94	536016	4/5/2010	Marvin Mab
	1	L CD	1 Schub	ert, Sonata in e, D.566	AS-325	9.00	9.00	536016	4/5/2010	Marvin Mat
	1	2 CD	3 Mozar	t, Symphony No.23 in D	CO-77884	8.99	26.97	536016	4/5/2010	Marvin Mat
	1		6 Schoe	nberg, Ode to Napoleon	CHAN 911	9.59	57.54	536016	4/5/2010	Marvin Mab
	1.	CD CD	2 Shosta	kovich, 24 Preludes for piano.	CDA 6662	5.39	10.78	536029	4/14/2010	Marvin Mab
	1	5 SACD	9 Balaki	rev,Symphony no. 1	ENTPD 41	9.59	86.31	536029	4/14/2010	Marvin Mat
	1		5 Holst,	St. Paul's Suite for Orch.	CBT-1020	5.99	29.95	536029	4/14/2010	Marvin Mat
	1		3 Faure,	28 Songs, Stulzmann	RCA 6142	17.98	53.94	536020	4/10/2010	Roberto Gil
	1		3 Taken	nitsu, Music of Takemitsu	SMK 5347	3.60	10.80	536020	4/10/2010	Roberto Gil
	1	CD CD	6 Messia	ien, Quatour pour la fin de temp	CDC 5493	9.60	57.60	536020	4/10/2010	Roberto Gil
	2			s, Ein Heldenleben, Op.40	SMSACD-5	8.99	71.92	536020	4/10/2010	Roberto Gil
	2		9 Schurr	ann, Manfred Overture, Bav SO	SBT 4827	5.99	53.91	536020	4/10/2010	Roberto Gil
	2		10 Milhau	id, 3 Rag Caprices, pn. & orch.	Z-6569	9.60	96.00	536012	4/1/2010	Alain Lebor
	2			s, Le bourgeois gentilhomme	CDD 448	9.60	48.00	536012	4/1/2010	Alain Lebor
	2	t CD	5 Scriab	in, Preludes, Op. 8	CY 1123	7.79	38.95	536012	4/1/2010	Alain Lebon

Just select your new data source, set linking columns, and you're all set.

Define as many lookups as you need to consolidate information and enrich your view.

Easily and reliably remove or obscure confidential data, such as customer information, medical records, and employee IDs, with Monarch Complete's intuitive redaction capabilities. This feature allows you to safely distribute reports to partners and customers, even in heavily regulated industries, such as healthcare and financial services, without compromising customer and employee privacy.

READ MORE

- Creating Data Extraction Templates
- <u>Redacting Field Values</u>

 Table Design and select External

 Select External

 Lookups to combine your data with information from other sources.

 Within Table

You can go to

Within <i>Table</i>		User-defined 🔻					
Design, you	ı	_WorkingDays_ComputeDaysOffInRange(,)	1				
can also		_WorkingDays_ComputeNormalWorkingDaysInRange(,)					
select	F 7	WorkingDays_ComputeWorkingDaysInRange(,)					
Select	1.52	_WorkingDays_DateIsWorkingDayInRange(,,)					
	≡Σ	_WorkingDays_FirstValidDateForWorkingDays()					
	Formula	_WorkingDays_IsValidDateRangeForWorkingDays(,)					
	Fields	_WorkingDays_IsWorkingDay()					
1		J_WorkingDays_LastValidDateForWorkingDays()					
Formula		Char_XL()					
Fields to de	rive	Check_CC()					
values from		Check_NHSNumber()	Ŧ				
existing field							

Monarch Complete has more than 80 pre-built functions that speed up the transformation of your data into consistent, clean analysis-ready information.

Monarch Classic's *Field List* view allows you to easily keep track of fields. You can set the field alignment, hide fields, or even change the data type.

All changes carried out here are automatically cascaded to all summaries that use the table.

De	lign														
Acc	zept	Cancel Add	Duplicate	Delete	Field	Input Fields	Lookup Fields Para	Runtime meter Fields	User Edit Fields	Fiters	F Sorts	Address Blocks	fx Functions	? Help	
	Order	Name		Source	Туре	Format	Display Width	Decimals	Size Alignmen	t Hidden	Table Verify R	esults			
>	1	Media	Detail		Character	General	5		Left						
	2	Quantity	Detail		Numeric	General	8	0	Right						
	3	Description	Detail		Character	General	37		Left						
-	4	Label	Detail		Character	General	11		Left						
-	5	Unit Price	Detail		Numeric	General	9		Right						
-	6	Amount	Detail		Numeric	General	8		Right						
-	7	Order No			Numeric	General	9								
_			Appen						Right						
_	8	Ship Date	Appen		Date/Time	Short Date	11		Left						
	9	Contact	Appen	d 2	Character	General	41		Left						
	10	Customer	Appen	d 3	Character	General	41		Left						
_	Preview			Table Verify	Move Up	Move Down	Print		ve To CSV			_		_	
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1	CD CD		artok, Sonata fo lozart. Mass in O		MK-42 42083		.99 35.96 .00 63.00		4/10/2010		Yoder Yoder				Bet
2	CD		uening, Electron		42083 CD 61				4/10/2010		Yoder				Bet
4	DVD		carlatti, Stabat I		SBT 4		.99 53.91		4/10/2010		Yoder				Bet
5	CD	11 8	eethoven, Pathe	tique Sonata, Arau	42015	3-2 5.	.99 65.89	536039	4/21/2010	Betty	Yoder				Bet
6	CD	8 M	lendelssohn, Wa	ar March of the Priests	SMK 4	759 8.	99 71.92	536039	4/21/2010	Betty	Yoder				Bet

4 CREATE SUMMARIES

A *summary* tabulates information on selected fields and presents the results in a one- or twodimensional matrix. Monarch Complete provides options that let you sort the summary, add subtotals, and format your summary report for easier viewing.

In Summary View, you can even drill-up or drill-down to focus on specific totals.

	Country		Discount		Amount			
1	France		273.64		2736.08			
2	Germany		171.80		1717.86			
3	Ireland		20.90		209.08			
4	Netherlands	Country		Customer	Med	ia	Discount	Amoun
5	Spain	1 France		Chez Rudy	CD		70.68	706.79
6	UK	2			DVD		3.90	38.94
		3			LP		4.50	44.95
7	USA	4		Subtotal Chez			79.08	790.68
	Customer	January-10	Februa	ary-10	March-10	SUM(Amour	it) 9.59	95.90
1	Betty's Music Store	507.64			270.93	778.	57 101.00	1009.97
2	Big Shanty Music			274.49		274.	49 2.52	25.16
3	Bluegrass Records	248.17			140.84	389.	01 4.56	45.54
4	Canciones	379.14				379.	14 117.67	1176.57
5	Chez Rudy	320.46		470.22		790.	68 1.56	15.58
6				209.08		209.	64.43	644.22
7	-	541.14			285.91	827.	05 8.02	80.26
8	Die Harmonie			164.50		164.	2.88	28.77
9	Die Melodie	472.83			253.48		76.89	768.83
10		225.88		105.39	74.93	<u> </u>	2/3.64	2736.08
1	-			661.97		661.	47.00	469.86
12		234.99				234	4.13	41.93
13		360.94		472.81	342.82			

You can create different summaries using the same data to get different views of the information.

READ MORE

- Summary View
- Summary Design

5 EXPORT YOUR DATA

Go to *Export Design* to create and run exports. You can export your report, table, or your summaries (you can export one or all summary levels).

You can export to Excel, Access, DBF, or delimited text.

File Name:		
ClassicReport		F
Source View:	Export File Type:	
٩ 🗤	Auto-detect from file name	
III Table	Microsoft Excel XLS (*.xls)	
E Report	Microsoft Excel XLSX (*.xlsx)	
🖥 Redaction Alias Map	Microsoft Excel XLSM (*.xlsm)	. 1
	Microsoft Access MDB (*.mdb)	
	Microsoft Access ACCDB (*.accdb)	
	dBase (*.dbf)	
	Panopticon Designer Data Source (*.dwx)	

If you have *Altair Panopticon Designer*, you can export your data to a Panopticon Designer data source for easy visualization.

6 SAVE AND REUSE

Once saved, models and projects can be re-used each time a new version of your report or data become available. Just load the new files and then run your exports again to produce fresh versions of your output.

NEXT STEPS

- Use Monarch Complete's comprehensive documentation to help you prep your data. The Help and Learning Guide files are installed with the product and are available online at https://help.altair.com/monarch/current.
- Explore how self-service data prep and visual discovery can bridge the IT and business gap. Visit the <u>Altair website</u> or call Altair for more details.