How to SQL (Sierra)

Part 1

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Overview

- Intro
- Getting started
  - Getting set up to use SQL
  - How to use the software
- SQL basics
  - SELECT, FROM, WHERE, ORDER BY, GROUP BY, HAVING, JOIN, subqueries

Introduction: SQL

- Comes with every Sierra system
- Read-only access
- Access to most but not all data
- Can access in lots of different ways
- Sierra uses PostgreSQL

Official Resources, Innovative

- Manual: Sierra Direct SQL Access
  - Getting Started
  - Sierra DNA
  - Query Examples
  - Troubleshooting
- Sierra DNA: http://techdocs.iii.com/sierradna/
- Innovative Developer Network: https://developer.iii.com/

Official Resources, PostgreSQL

- PostgreSQL
  https://www.postgresql.org/docs/10/static/queries.html

IUG Resources

- IUG Forum – Sierra SQL category
- IUG Clearinghouse
- Past conference presentations

- All at http://innovativeusers.org/

Resources from Other Customers

- Public Library of Cincinnati & Hamilton County
  - https://github.com/plch/sierra-sql/wiki
- Jeremy Goldstein
  - https://github.com/jmgold/SQL-Queries
- Joe Montibello
  - https://github.com/joemontibello/iii-sql-queries
- UNC-Libraries
  - https://github.com/UNC-Libraries/III-Sierra-SQL/wiki

Other Resources

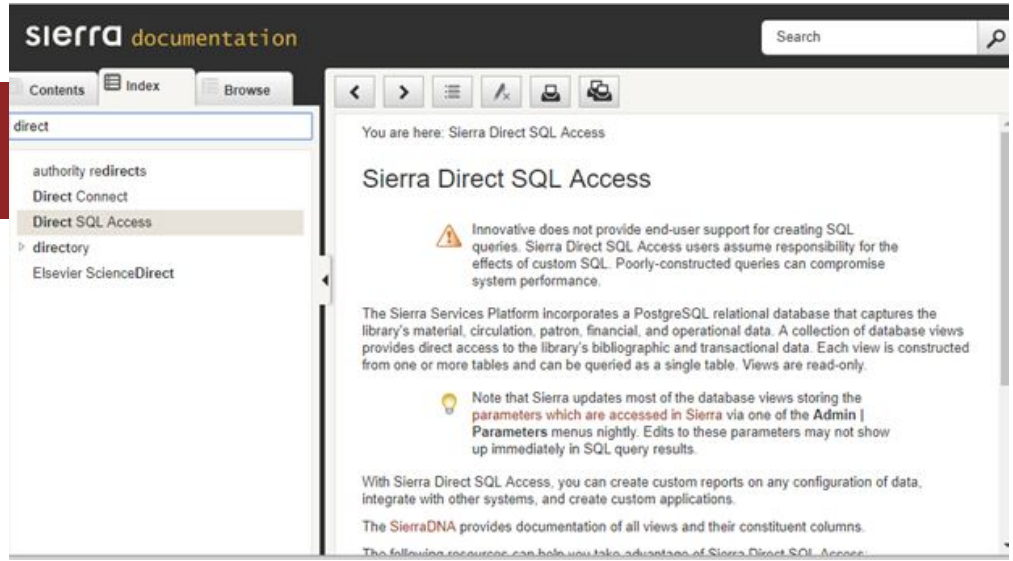
- Stanford free online mini-courses in SQL
  - https://lagunita.stanford.edu/courses/DB/2014/SelfPaced/about
- WiseOwl Training Videos
  - https://www.wiseowl.co.uk/sql/videos/sql-selecting-data/
- Codecademy
  - https://www.codecademy.com/catalog/language/sql
- SQL Cookbook by Anthony Molinaro

Getting Set Up

Sierra Documentation

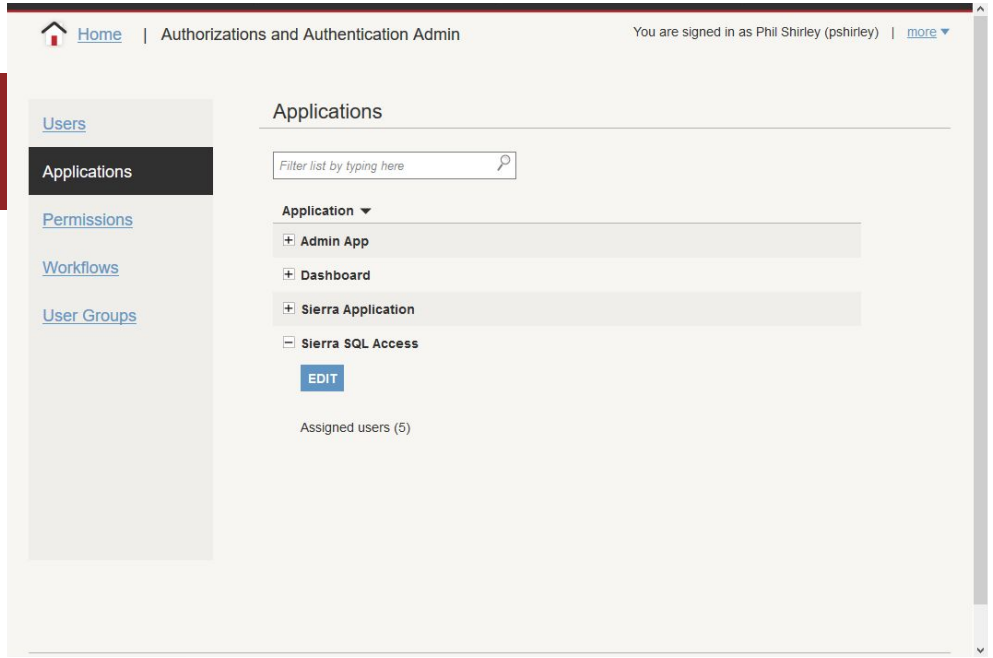
Sierra Direct SQL Access >

Getting Started

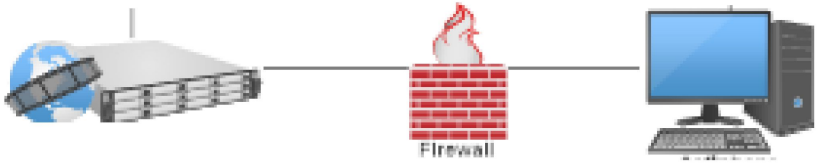


Getting Set Up

1. Set up user



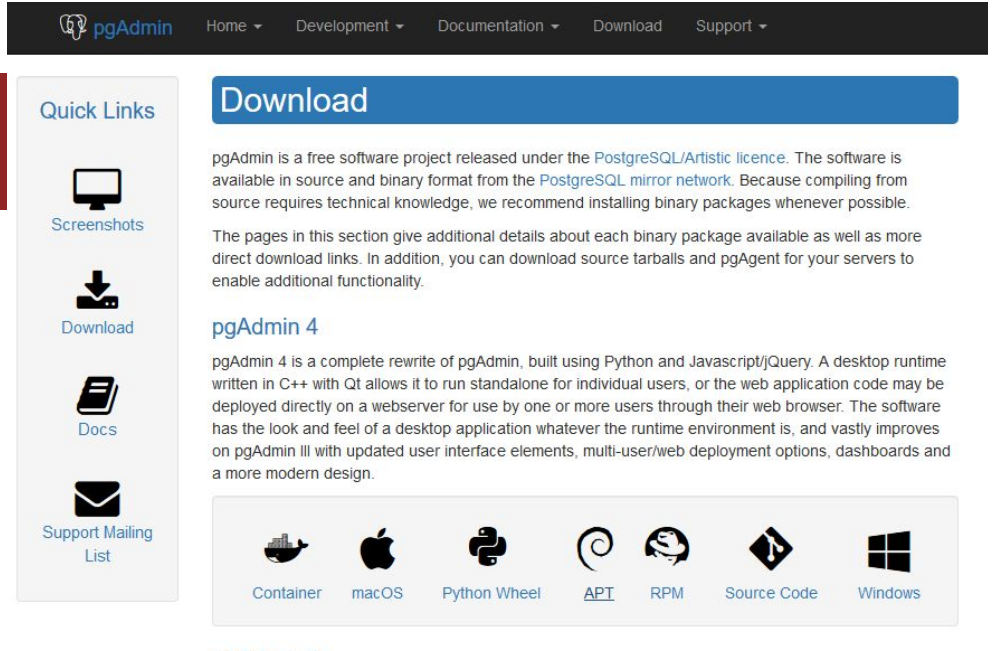
Getting Set Up



2. Ensure firewall access to port 1032

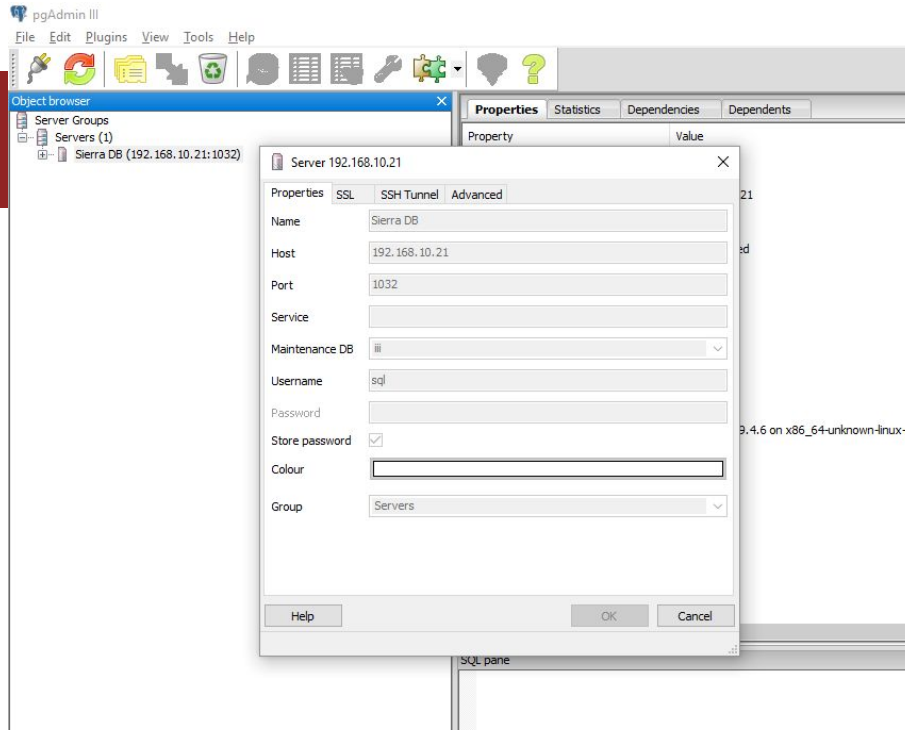
Getting Set Up

3. Install pgAdmin
   https://www.pgadmin.org/download/



Getting Set Up

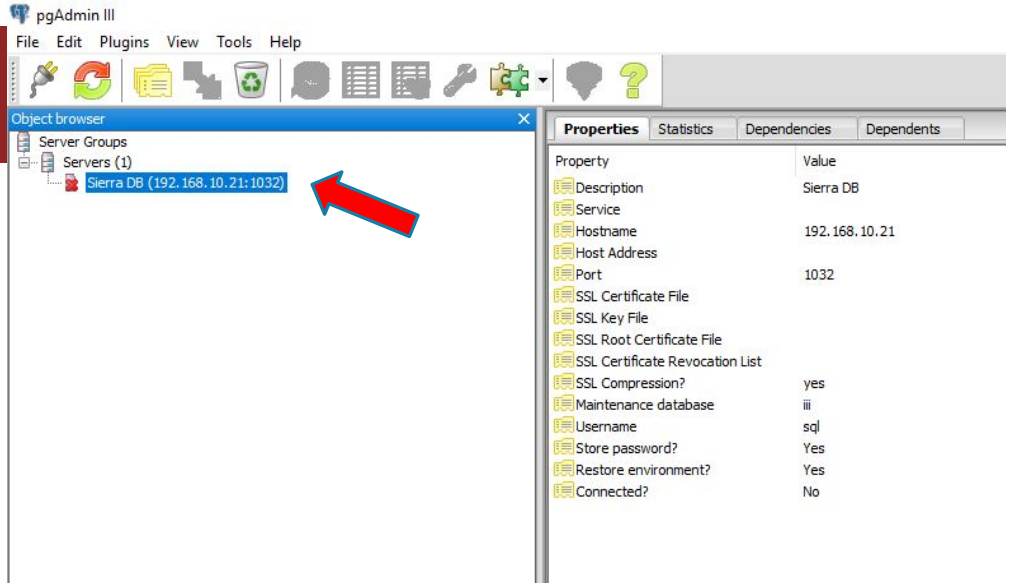
4. Configure pgAdmin
   Name: Whatever you want
   Host: Sierra *database* server



How to Use pgAdmin

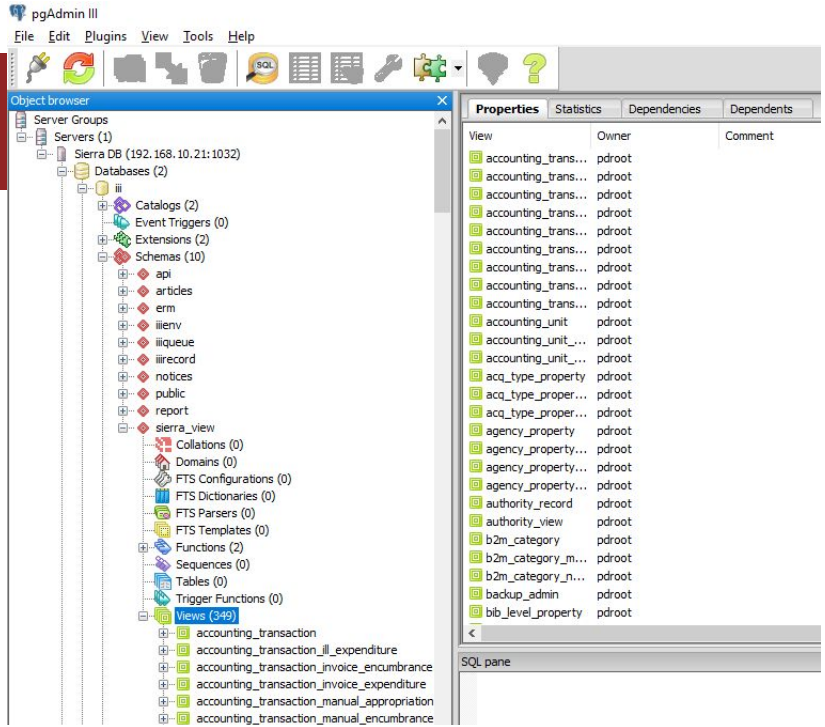
To Connect

- Expand Servers
- Double-click



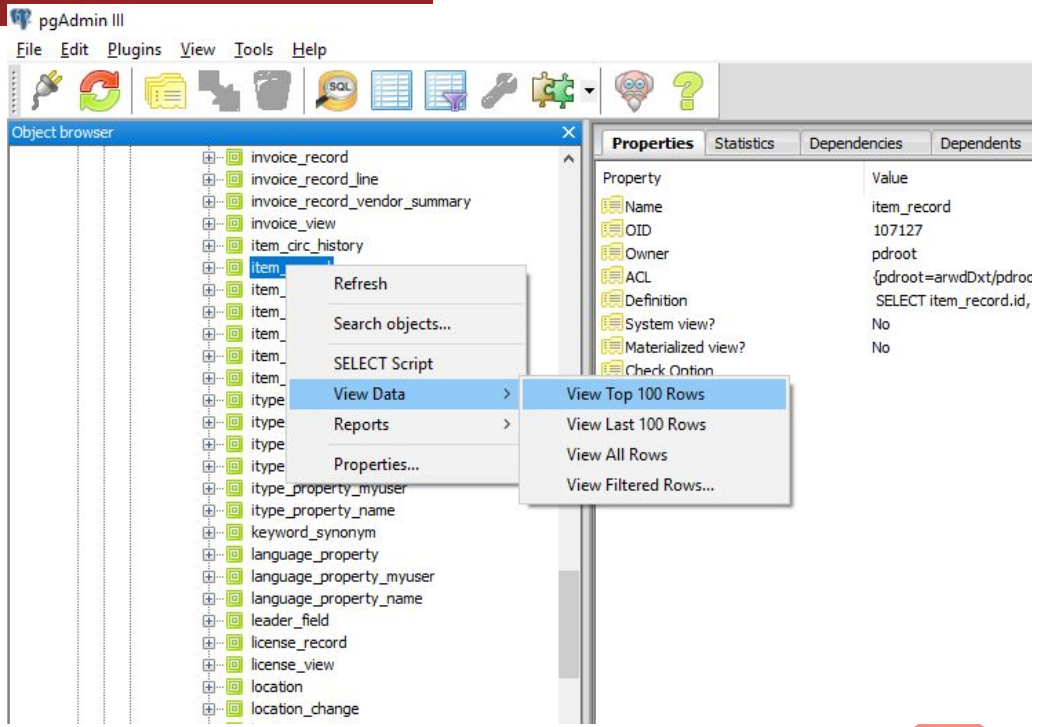
Views

Servers > [name] > Databases > Schemas > sierra_view > Views



Ways to Learn About a View

Right click > View Data > View Top 100 Rows



Edit Data - Sierra DB (192.168.10.21:1032) - iii - sierra_view.item_record

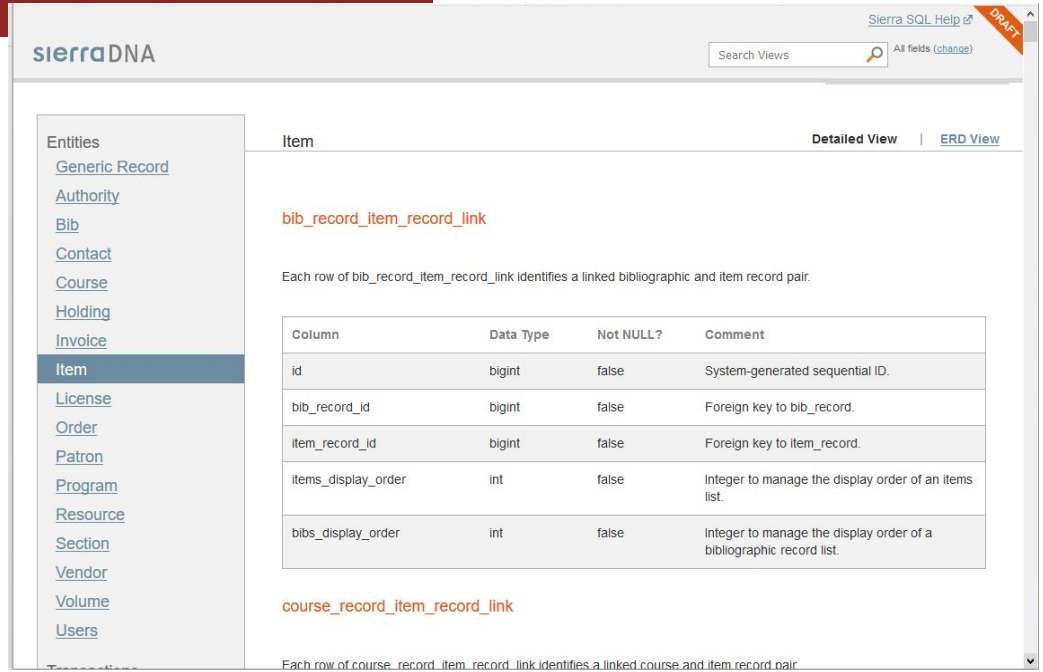
File Edit View Tools Help

100 rows

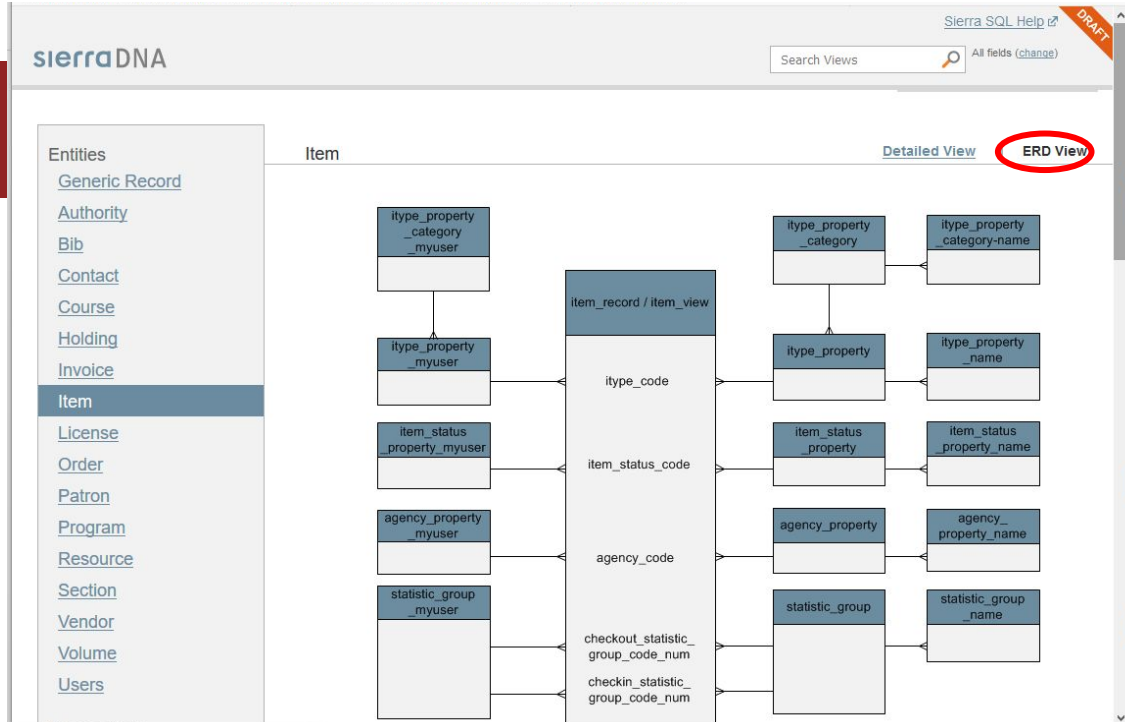
	id bigint	record_id bigint	icode1 integer	icode2 character(1)	itype_code_num smallint	location_code character varying(5)	agency_code_num smallint	item_status_code character varying(3)	is_inherit_loc boolean	price numer
1	3941100652988071	3941100652988071	0	-	230	9cinc	0	%	FALSE	0.0000
2	10133550135207265	10133550135207265	0	-	230	re2pl	0	%	FALSE	0.0000
3	6474375437855531	6474375437855531	0	-	230	pc2pl	0	%	FALSE	0.0000
4	1126350881433238	1126350881433238	0	-	230	tllpl	0	%	FALSE	0.0000
5	30962698412117321	30962698412117321	0	-	231	9cler	0	%	FALSE	0.0000
6	4504050600725359	4504050600725359	0	-	230	9midp	0	%	FALSE	0.0000
7	450972566211	450972566211	0	-	10	non	0	-	FALSE	24.950
8	1407825856742974	1407825856742974	0	-	230	9lane	0	%	FALSE	0.0000
9	3941100652814480	3941100652814480	0	-	231	9cinc	0	%	FALSE	0.0000
10	4785525577381147	4785525577381147	0	-	231	9wcpl	0	%	FALSE	0.0000
11	450972871833	450972871833	0	-	10	fic	0	-	FALSE	24.950
12	450972674256	450972674256	0	-	10	jnon	0	-	FALSE	12.350
13	3378150696429195	3378150696429195	0	-	230	9ascp	0	%	FALSE	0.0000
14	1689300833192927	1689300833192927	0	-	231	9ment	0	%	FALSE	0.0000
15	450973024698	450973024698	0	-	10	jgrap	0	-	FALSE	26.650
16	3941100653275535	3941100653275535	0	-	230	9cinc	0	%	FALSE	0.0000
17	281925950139744	281925950139744	0	-	230	we4pl	0	%	FALSE	0.0000
18	450973133240	450973133240	0	-	42	crock	0	-	FALSE	13.980
19	281925949593159	281925949593159	0	-	231	we4pl	0	%	FALSE	0.0000

Ways to Learn About a View

Sierra DNA
(Documentation NAvigator)
https://techdocs.iii.com/sierradna/

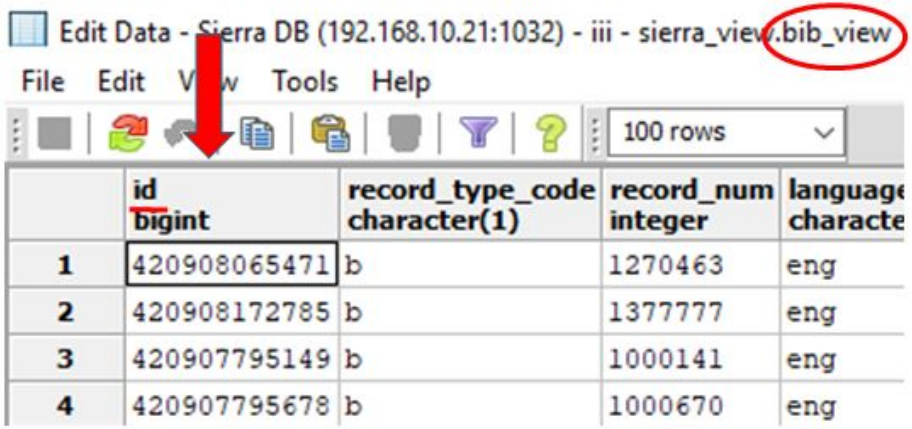


ERD View

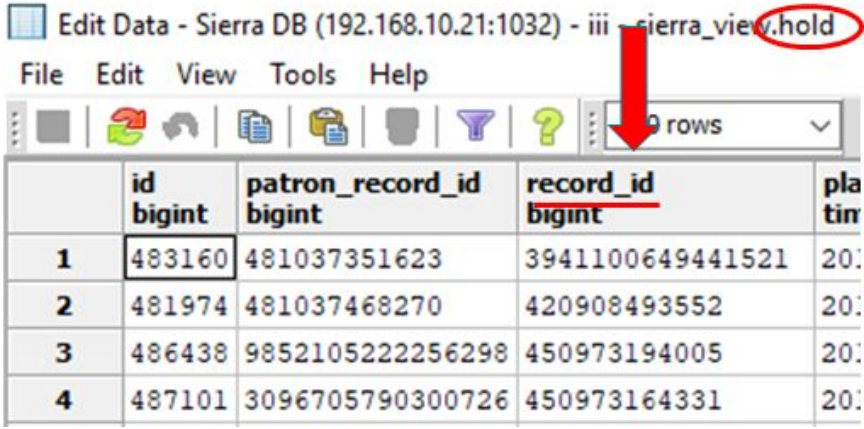

sierraDNA
Sierra SQL Help
DRAFT
Search Views
All fields (change)
Entities
Generic Record
Authority
Bib
Contact
Course
Holding
Invoice
Item
License
Order
Patron
Program
Resource
Section
Vendor
Volume
Users
Item
Detailed View
ERD View
itype_property_category_myuser
itype_property_myuser
item_status_property_myuser
agency_property_myuser
statistic_group_myuser
item_record / item_view
itype_code
item_status_code
agency_code
checkout_statistic_group_code_num
checkin_statistic_group_code_num
itype_property_category
itype_property_category-name
itype_property
itype_property_name
item_status_property
item_status_property_name
agency_property
agency_property_name
statistic_group
statistic_group_name

How tables are linked

Top rows for bib_view and hold



	id bigint	record_type_code character(1)	record_num integer	language characte
1	420908065471	b	1270463	eng
2	420908172785	b	1377777	eng
3	420907795149	b	1000141	eng
4	420907795678	b	1000670	eng



	id bigint	patron_record_id bigint	record_id bigint	pla tim
1	483160	481037351623	3941100649441521	201
2	481974	481037468270	420908493552	201
3	486438	9852105222256298	450973194005	201
4	487101	3096705790300726	450973164331	201

Sierra DNA

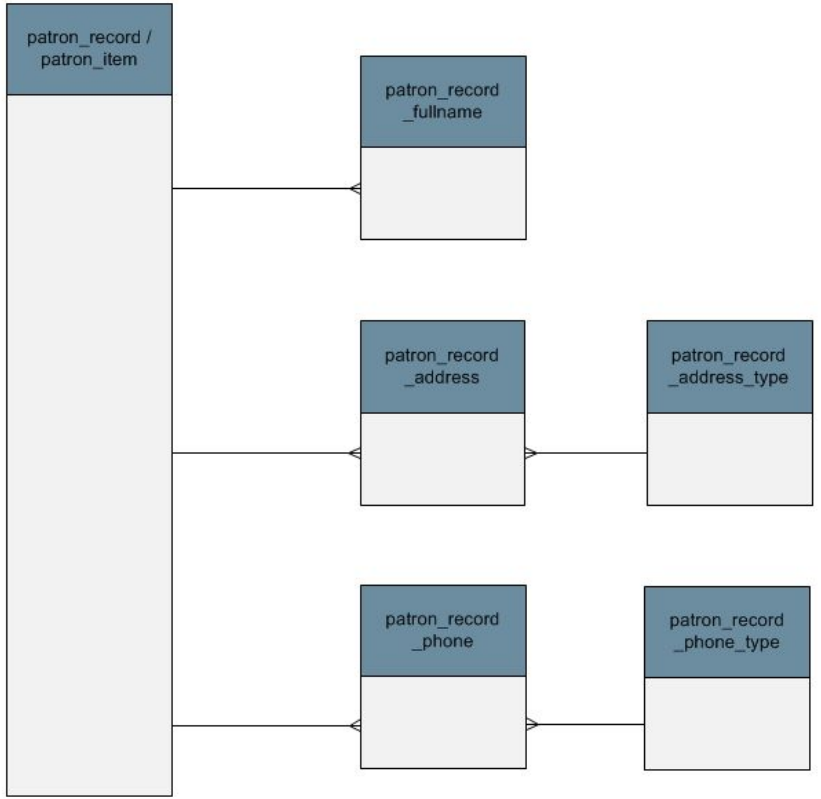
hold

Each row of hold describes a bibliographic, item, or volume hold.

Column	Data Type	Not NULL?	Comment
id	bigint	false	System-generated sequential ID.
patron_record_id	bigint	false	Foreign key to patron_record.
record_id	bigint	false	Foreign key to record.
placed_gmt	timestamp	false	Date the hold was placed.
is_frozen	boolean	false	Specifies whether the hold is frozen (suspended).
delay_days	int	false	Stores the "not wanted before" date as a number c "180". If a "not wanted before" date was not specif

Sierra DNA: Some Views

- patron_record
- patron_view
- patron_record_address
- patron_address_type
- patron_record_fullname
- patron_record phone
- patron_record_phone_type



item_record vs. item_view

- item_view also includes metadata like the item record number and the record creation date.
- item_view also contains barcode.
- item_record contains is_available_at_library.

- item_view is less efficient

Sierra DNA

item_view

Each row of item_view includes metadata and data for one item record. The contents include identification and circulation information, as well as data that determines how the system handles the record.

Column	Data Type	Not NULL?	Comment
id	bigint	false	System-generated sequential ID.
record_type_code	char	false	Record type code, i.e., 'i'.
record_num	int	false	Record number.
barcode	varchar	false	The item's barcode.
icode1	int	false	The library determines the name and purpose of this code and the code's definition.
icode2	char	false	The library determines the name and purpose of this code and the code's definition.
itype_code_num	int2	false	The type of item. (The library defines item types.)
location_code	varchar	false	The branch location code for the item

Sierra DNA

circ_trans

Each row of circ_trans contains information about a circulation transaction.

Column	Data Type	Not NULL?	Comment
id	int	false	System-generated sequential ID.
transaction_gmt	timestamptz	false	Transaction date in UNIX format.
application_name	varchar	false	The name of the program that generated the transaction. Valid program names are: • circ (includes transactions made using PC Circ) • circa (for transactions written by selfcheckwebserver and in-house use [transaction codes 'u' and 's'], which use webpac to execute transactions.) • millcirc • millmyselfcheck • readreq • selfcheck
source_code	varchar	false	The transaction source. Possible values are: • local • INN-Reach • ILL
op_code	varchar	false	Type of transaction: o = checkout — i = checkin n = hold — h = hold with recall nb = bib hold — hb = hold recall bib ni = item hold — hi = hold recall item

Top Rows

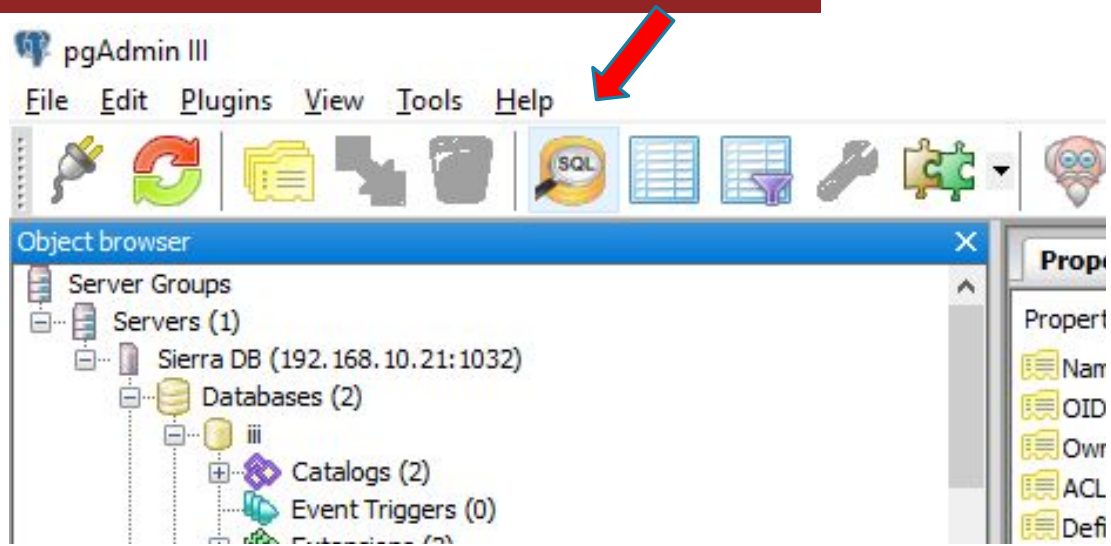
Edit Data - Sierra DB (192.168.10.21:1032) - iii - sierra_view.item_view

File Edit View Tools Help

100 rows

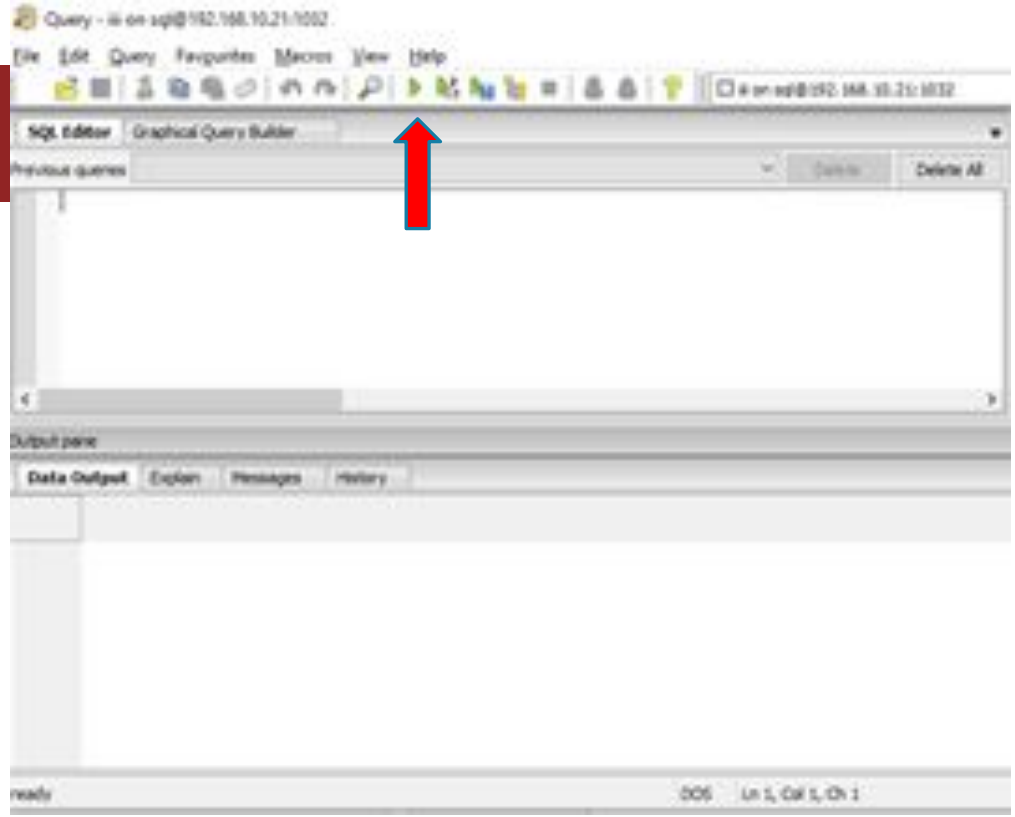
	id bigint	record_type_code character(1)	record_num integer	barcode character varying(1000)	icode1 integer	icode2 character(1)	itype_code_num smallint	locatio charac
1	450972975603	i	1409523	ITMPL004814752	0	-	42	crock
2	450973195937	i	1629857	ITMPL006179675	0	-	10	bio
3	450972914947	i	1348867	ITMPL004814828	0	-	43	jcdbk
4	450972567054	i	1000974	ITMPL000650100	0	u	10	mys
5	450972567230	i	1001150	ITMPL000930098	0	-	10	non
6	450972567962	i	1001882	ITMPL090129718	0	-	10	ov
7	450973001906	i	1435826	ITMPL004225801	0	-	10	non
8	450973028076	i	1461996	ITMPL004480786	0	-	31	dvde
9	450972566373	i	1000293	ITMPL000071794	0	-	10	non
10	450972566866	i	1000786	ITMPL090012575	0	z	10	rflhb
11	450972566325	i	1000245	ITMPL000053420	0	-	10	non
12	450973109849	i	1543769	ITMPL005310941	0	-	10	ov
13	450972567088	i	1001008	ITMPL001491165	0	-	10	jfic
14	450972567238	i	1001158	ITMPL000922939	0	-	10	jnon
15	450973188537	i	1622457	ITMPL006105720	0	-	10	jnon
16	450973059310	i	1493230	ITMPL004785903	0	-	31	dvdt
17	450973160585	i	1594505	ITMPL005831771	0	-	10	jfic

Entering SQL Queries in pgAdmin



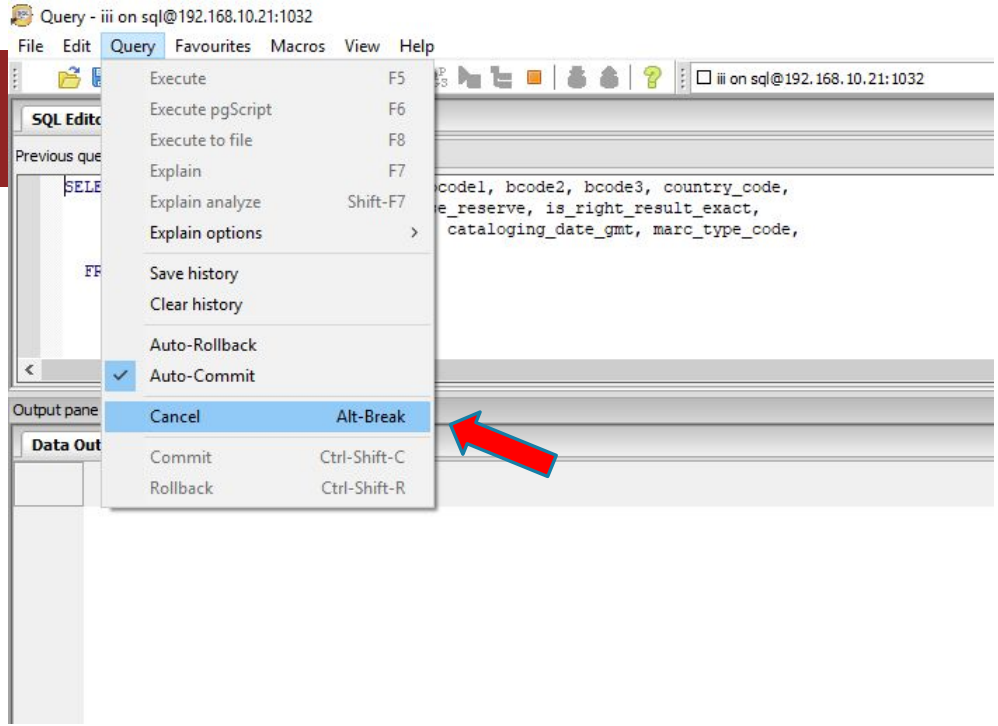
SQL Window

1. Type your query
2. Click the green triangle
   (or press F5)



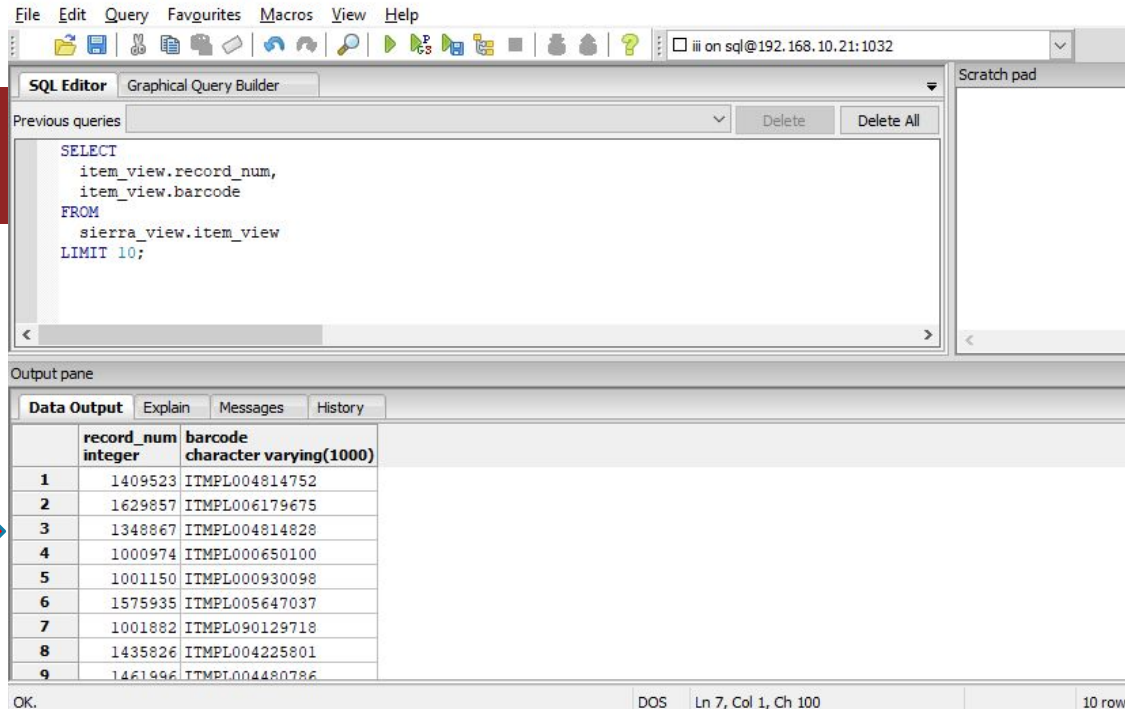
Canceling It

- Query – Cancel
  (or press Alt-Break)



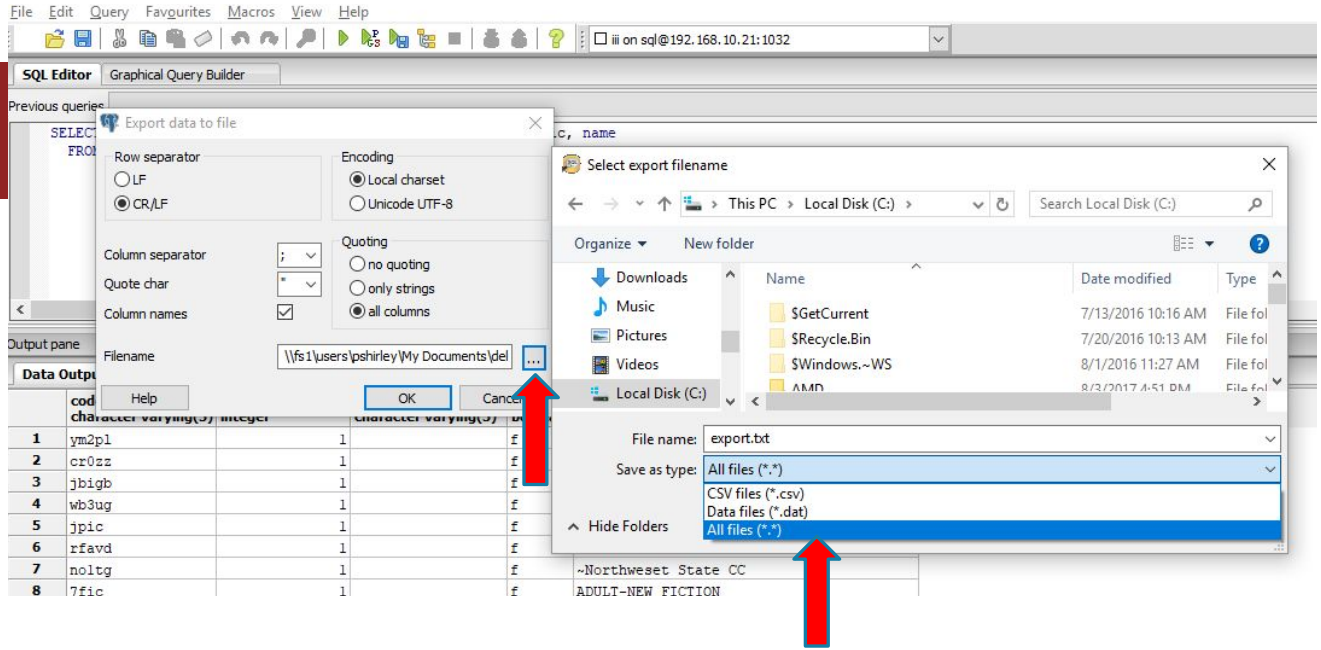
Results

Results appear below



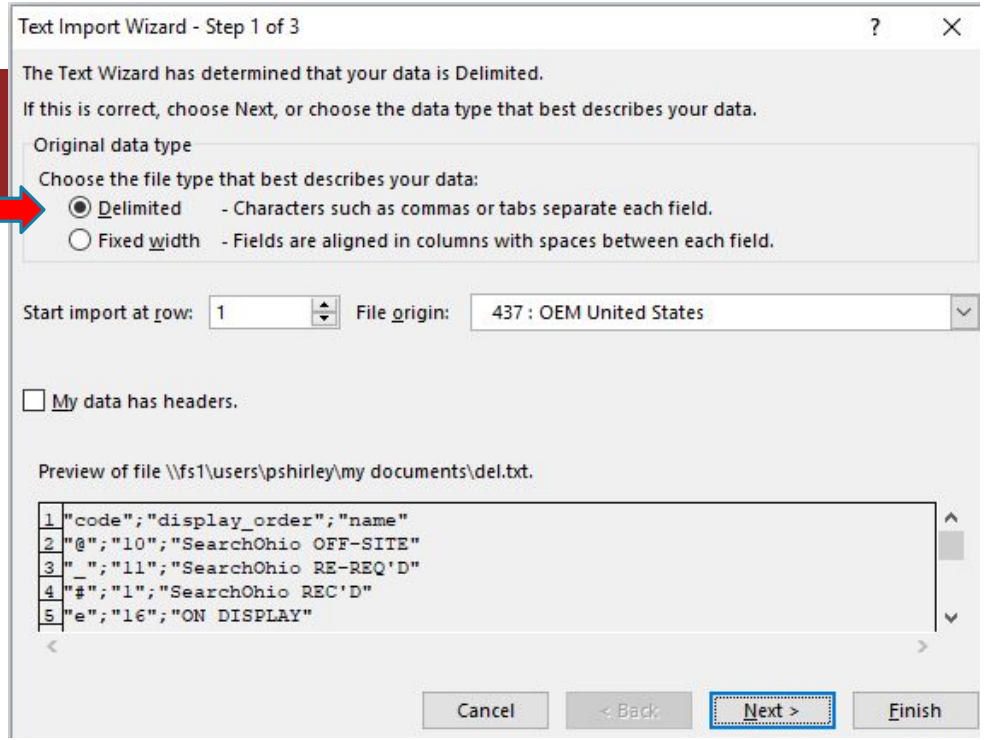
Export

- File – Export
- Click "…"
- Something.txt
- Change CSV to All files



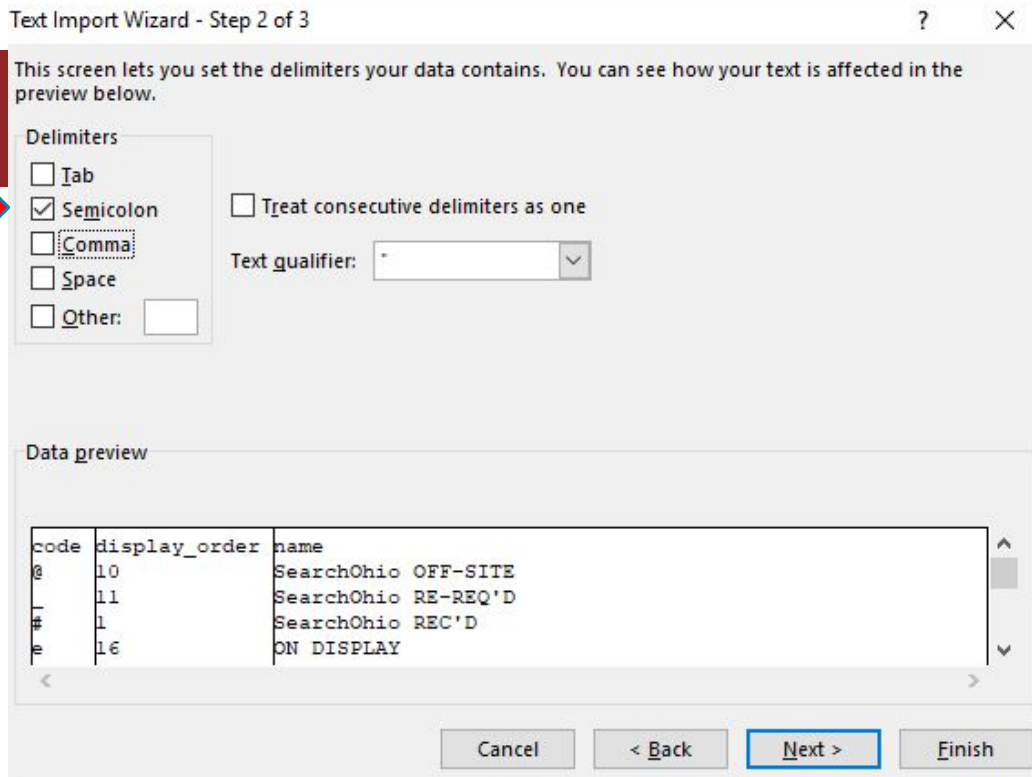
Open in Excel

- Delimited



Open in Excel

- Semicolon
- Finish



Saving Queries, Opening Saved Queries

- File - Save
- File - Open

SQL Queries

What SQL Queries Looks Like

```
SELECT
    item_record.record_id,
    item_record.last_checkin_gmt,
    item_record.location_code
FROM
    sierra_view.item_record;
```

Comments

```
-- Returns record numbers, last checkin, and barcodes
SELECT
    Item_record.record_id,
    last_checkin_gmt,
    item_record.location_code
FROM
    sierra_view.item_record;
```

Very Little White Space

```
SELECT item_record.record_id, last_checkin_gmt,
item_record.location_code FROM sierra_view.item_record;
```

Plenty of White Space

```
SELECT
    item_record.record_id,
    last_checkin_gmt,
    item_record.location_code

FROM
    sierra_view.item_record;
```

AS: Aliases for Column Headings

```
SELECT
    item_record.id AS item_id,
    item_record.last_checkin_gmt AS last_checkin,
    item_record.location_code AS location
FROM
    sierra_view.item_record;
```

Double Quotes (Spaces, Capitalization)

```
SELECT
   item_record.id AS "Item ID",
   item_record.last_checkin_gmt AS "Last checkin",
   item_record.location_code AS "Location"
FROM
   sierra_view.item_record;
```

Alias for a Table

```
SELECT
   i.record_id AS "Item ID",
   i.last_checkin_gmt AS "Last checkin",
   i.location_code AS "Location"
FROM
   sierra_view.item_record  i;
```

A Few Functions: id2reckey()

```
SELECT
   id2reckey(i.record_id) AS "Record number",
   i.last_checkin_gmt AS "Last checkin",
   i.location_code AS "Location"
FROM
   sierra_view.item_record  i;
```

A Few Functions: Concatenation

```
SELECT
   CONCAT(id2reckey(i.record_id), 'a') AS "Record number",
   last_checkin_gmt AS "Last checkin",
   i.location_code AS "Location"
FROM
   sierra_view.item_record  i;
```

Time Stamps

	Record number bigint	Last checkin timestamp with time zone	Location character varying(5)
1	394110065298807 1	2014-03-11 15:22:09-04	9cinc
2	10133550135207265	2016-01-10 15:39:53.411-05	re2pl
3	6474375437855531	2015-09-29 14:34:21.077-04	pc2pl
4	1126350881433238	2015-07-16 09:07:05.766-04	tllpl
5	30962698412117321	2015-08-22 10:26:40.819-04	9cler

Extracting date from a time stamp

```
SELECT
   i.record_id AS "Record number",
   last_checkin_gmt::date AS "Last checkin",
   i.location_code AS "Location"
FROM
   sierra_view.item_record  i;
```

WHERE: Introduction

```
SELECT
    i.record_id,
    last_checkin_gmt,
    i.location_code
FROM
    sierra_view.item_record  i
WHERE   i.location_code = 'dvdj';
```

WHERE: Equals and Not Equals

```
WHERE   i.location_code = 'dvdj'
WHERE   i.checkout_total = 0

WHERE   i.location_code <> 'dvdj'
WHERE   i.checkout_total <> 0

WHERE   i.location_code != 'dvdj'
WHERE   i.checkout_total != 0
```

WHERE: Greater Than, Less Than

```
WHERE   i.location_code > 'd'
WHERE   i.checkout_total > 0
WHERE   i.location_code >= 'd'
WHERE   i.checkout_total >= 0

WHERE   i.location_code < 'd'
WHERE   i.checkout_total < 1000
WHERE   i.location_code <= 'd'
WHERE   i.checkout_total <= 1000
```

WHERE: BETWEEN

```
WHERE o.volume_count BETWEEN 1 AND 5;
WHERE b.title BETWEEN 'A' AND 'B';

WHERE UPPER(b.title) BETWEEN 'A' AND 'B';
WHERE LOWER(b.title) BETWEEN 'a' AND 'b';
```

WHERE: Dates

```
WHERE p.activity_gmt > '1/31/2018'

WHERE p.activity_gmt > '2018-1-31'

WHERE p.activity_gmt BETWEEN '1/1/2017' AND
'12/31/2017'

WHERE p.activity_gmt > now() - interval '1 year'
```

WHERE: IN

```
WHERE o.material_type_code IN ('a', 'b', 'g');
WHERE o.volume_count IN (1,2,7);
```

WHERE: LIKE, NOT LIKE

_ (underscore) exactly one character
% zero or more characters (anything, or nothing)

```
WHERE LOWER(b.title) LIKE '%librar%';
WHERE b.title LIKE '_';
```

WHERE: POSIX Regular Expressions

~ matches
~* matches (not case sensitive)
!~ does not match
!~* does not match (not case sensitive)

```
WHERE i.location_code ~ '^j.*'
```

ORDER BY

```
SELECT
   i.record_id,
   i.last_checkin_gmt,
   i.location_code
FROM
   sierra_view.item_record  i
WHERE   i.location_code = 'dvdj'
ORDER BY   i.last_checkin_gmt DESC,
   i.location_code;
```

GROUP BY and COUNT

```
SELECT
   i.id,
   i.item_status_code
FROM
   sierra_view.item_view i
WHERE
   i.location_code = 'jpic';
```

id bigint	item_status_code character varying(3)
450973125002	-
450972603170	m
450973024308	-
450972614775	-
450973197141	-
450973088494	-
450973178979	-
450973189931	-
450973197687	-
450973234627	-
450972594279	m
450972597532	m
450972949579	-
450973069468	-
450973119497	-

GROUP BY and COUNT

```
SELECT
   COUNT(i.id),
   i.item_status_code
FROM
   sierra_view.item_view i
WHERE
   i.location_code = 'jpic'
GROUP BY
   i.item_status_code;
```

count bigint	item_status_code character varying(3)
16	u
6	!
1	w
4	a
1	(
8094	-
99	n
4	z
26	$
197	m
5	d
12	@

GROUP BY and AVG

```
SELECT
    i.location_code,
    AVG(i.checkout_total)
FROM
    sierra_view.item_view i
GROUP BY
    i.location_code;
```

location_code character varying(5)	avg numeric
jgrap	23.1386735572782084
largm	8.6666666666666667
csoun	29.7857142857142857
nwnon	2.4578447794528197
cdbkn	21.3684210526315789
dvdjn	34.9349593495934959
pbkn	7.9784172661870504
nwov	3.5572519083969466
cfoln	4.7857142857142857
cjazn	9.0869565217391304
cbkx	22.4453781512605042
rfatl	0.20000000000000000000
blusn	7.6666666666666667
ygrap	29.1884346959122632
plar	31.1666666666666667

GROUP BY and AVG and ROUND

```
SELECT
   i.location_code,
   ROUND(AVG(i.checkout_total))
FROM
   sierra_view.item_view i
GROUP BY
   i.location_code;
```

location_code character varying(5)	round numeric
jqrap	23
largm	9
csoun	30
nwnon	2
cdbkn	21
dvdjn	35
pbkn	8
nwov	4
cfoln	5
cjazn	9
cbkx	22
rfatl	0
blusn	8
ygrap	29
plar	31

HAVING

```
SELECT
   COUNT(i.id),
   i.item_status_code
FROM
   sierra_view.item_view i
WHERE
   i.location_code = 'jpic'
GROUP BY
   i.item_status_code
HAVING COUNT(i.id) < 100;
```

JOIN

The SQL (snippet)

```
FROM
   sierra_view.bib_view  b
JOIN
   sierra_view.hold  h
   ON b.id = h.record_id;
```

How to Join Two Views

One table has to have the other table's ID number.

OR

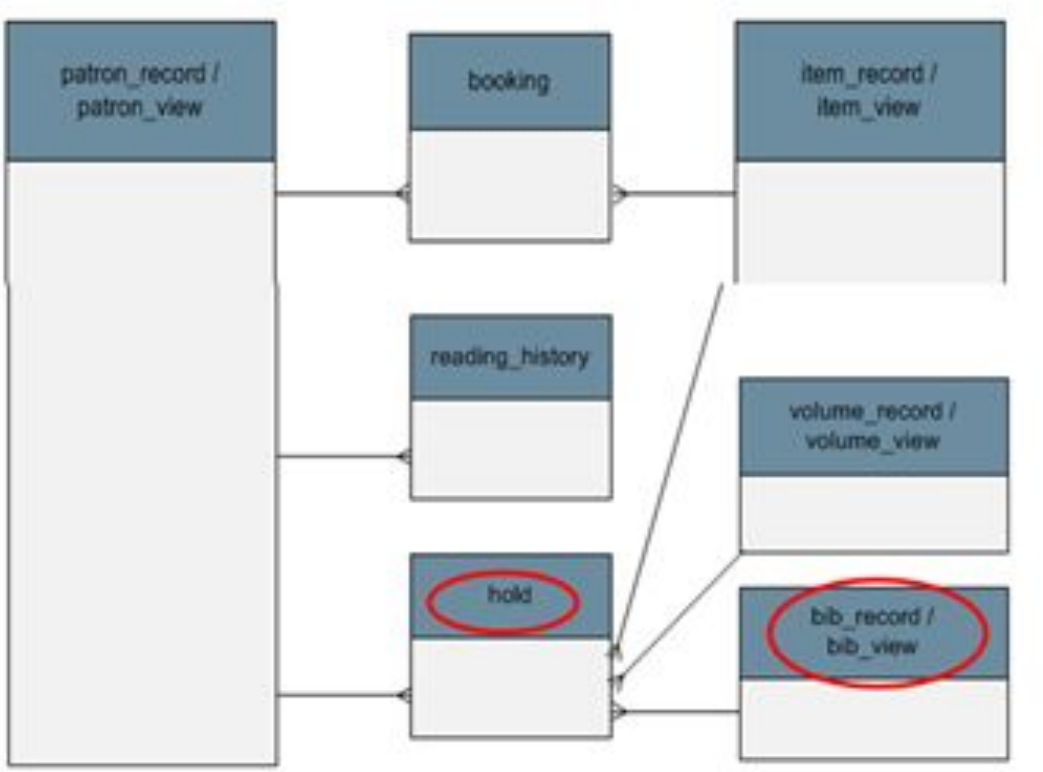
A third table has to have the ID numbers of both tables.*

How to Join Two Views - We'll look at:

- Sierra DNA (web site)
  - Detailed view
  - ERD view
- Top rows (in pgAdmin)

Bibs with Bib-level Holds

Sierra DNA - ERD View



Sierra DNA - Detailed View for hold

hold

Each row of hold describes a bibliographic, item, or volume hold.

Column	Data Type	Not NULL?	Comment
id	bigint	false	System-generated sequential ID.
patron_record_id	bigint	false	Foreign key to patron_record.
record_id	bigint	false	Foreign key to record.
placed_gmt	timestamp	false	Date the hold was placed

Top Rows for bib_view and hold

Top rows for bib_view and hold

Edit Data - Sierra DB (192.168.10.21:1032) - iii - sierra_view.bib_view

File Edit View Tools Help

100 rows

	id bigint	record_type_code character(1)	record_num integer	language characte
1	420908065471	b	1270463	eng
2	420908172785	b	1377777	eng
3	420907795149	b	1000141	eng
4	420907795678	b	1000670	eng

Edit Data - Sierra DB (192.168.10.21:1032) - iii - sierra_view.hold

File Edit View Tools Help

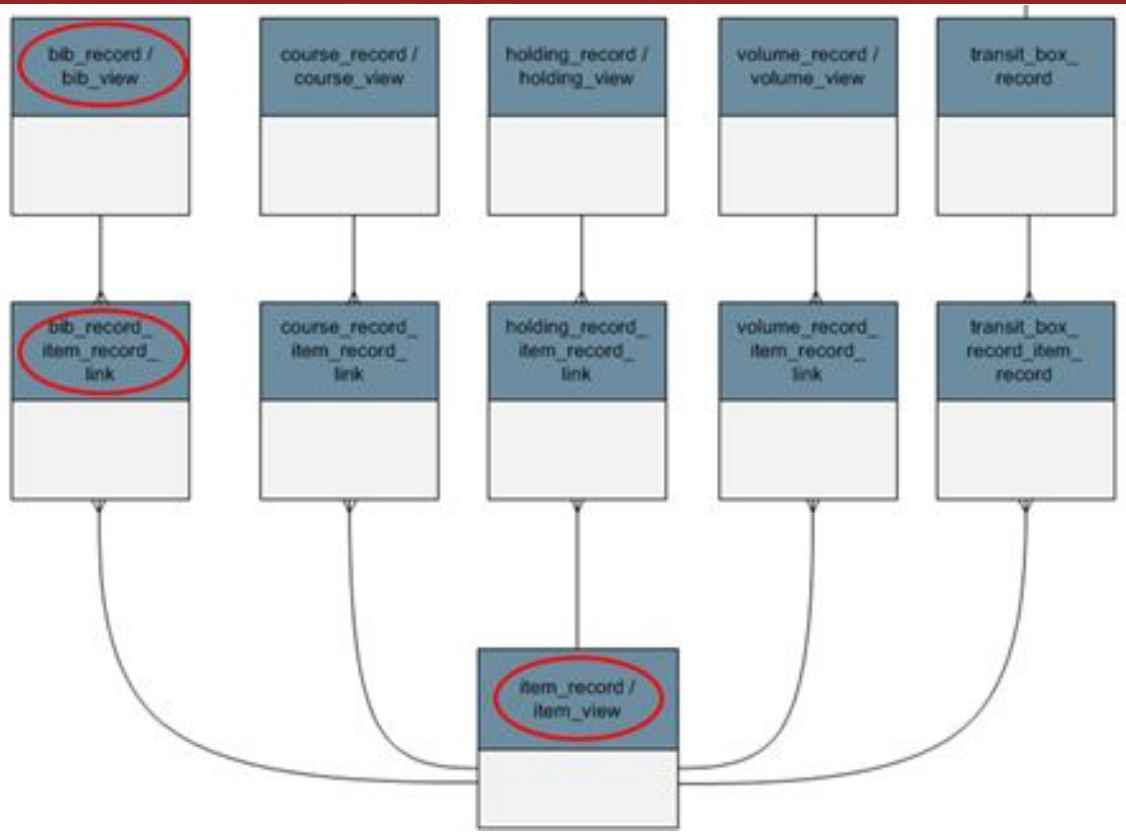
rows

	id bigint	patron_record_id bigint	record_id bigint	pla tim
1	483160	481037351623	3941100649441521	201
2	481974	481037468270	420908493552	201
3	486438	9852105222256298	450973194005	201
4	487101	3096705790300726	450973164331	201

Using JOIN with bib_view and hold

```
SELECT
    b.record_num,
    h.id
FROM
    sierra_view.bib_view  b
JOIN
    sierra_view.hold  h
    ON b.id = h.record_id;
```

Sometimes There's a "Link" View

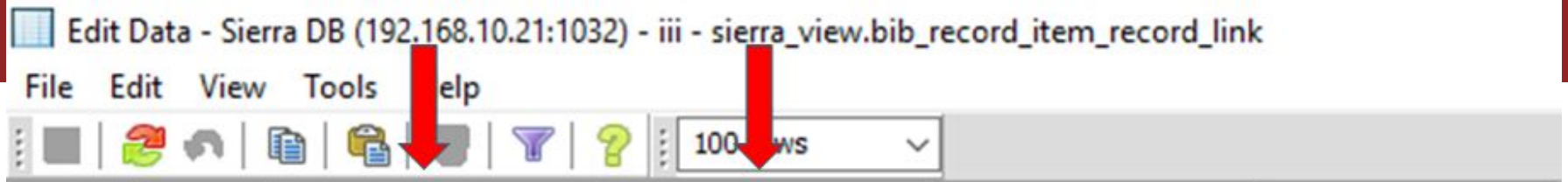


Sierra DNA

bib_record_item_record_link

Each row of bib_record_item_record_link identifies a linked bibliographic and item record pair.

Column	Data Type	Not NULL?	Comment
id	bigint	false	System-generated sequential ID.
bib_record_id	bigint	false	Foreign key to bib_record.
item_record_id	bigint	false	Foreign key to item_record.
items_display_order	int	false	Integer to manage the display order of an items list.
bibs_display_order	int	false	Integer to manage the display order of a bibliographic record list.



	id bigint	bib_record_id bigint	item_record_id bigint	items_display_order integer	bibs_display_order integer
1	110484	420908192612	450973016239	0	0
2	168664	420908268026	450973099199	0	0
3	326793	420908532670	450973209082		0
4	82	420908348172	450973129978	0	0
5	84	420908348197	450973128732	0	0
6	339059	30962668348043236	30962698412814308	0	0
7	246963	420908372871	450973159892		0
8	234485	5629920442032659	5629950506803731	0	0
9	246970	420908467025	450973159899		0
10	274415	420908487713	450973176058		0
11	326797	420908536452	450973209086		0
12	234490	1126320818405145	1126350883176217	0	0
13	314605	420908533437	450973201587		0

JOIN Bib, link, and item

```
SELECT *
FROM
   sierra_view.bib_record  b
JOIN
   sierra_view.bib_record_item_record_link  L
   ON  b.id = L.bib_record_id
JOIN
   sierra_view.item_record  i
   ON i.id = L.item_record_id;
```

When to Use Different Kinds of JOIN

JOIN

LEFT JOIN

Example

```
SELECT
    b.record_num,
    b.title,
    h.id
FROM  sierra_view.bib_view  b
JOIN sierra_view.hold  h
    ON  h.record_id = b.id;
```

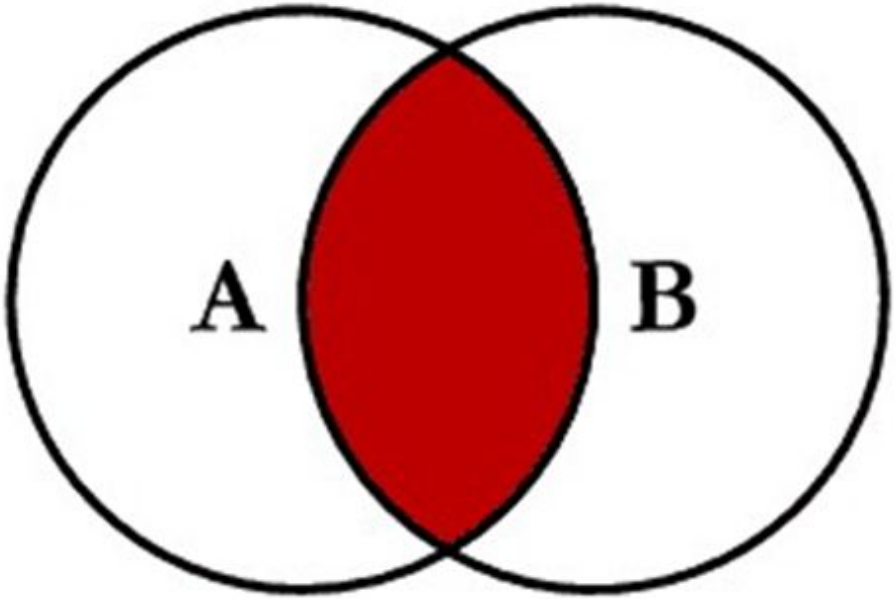
Output pane

Data Output | Explain | Messages | History

	record_num integer	title character varying(1000)	id bigint
1	1569295	"C" is for corpse : a Kinsey Millhone mystery	484848
2	1703624	"D" is for deadbeat	457766
3	1764291	12 Rules for life : an antidote to chaos	482335
4	1764291	12 Rules for life : an antidote to chaos	481754
5	1765746	12 Strong (Rental)	470220
6	1765746	12 Strong (Rental)	480175
7	1765745	12 Strong (Rental)	480174
8	1765746	12 Strong (Rental)	475560
9	1765745	12 Strong (Rental)	468942
10	1765745	12 Strong (Rental)	467844
11	1765745	12 Strong (Rental)	468580
12	1765746	12 Strong (Rental)	469224
13	1765746	12 Strong (Rental)	474459
14	1765745	12 Strong (Rental)	467879

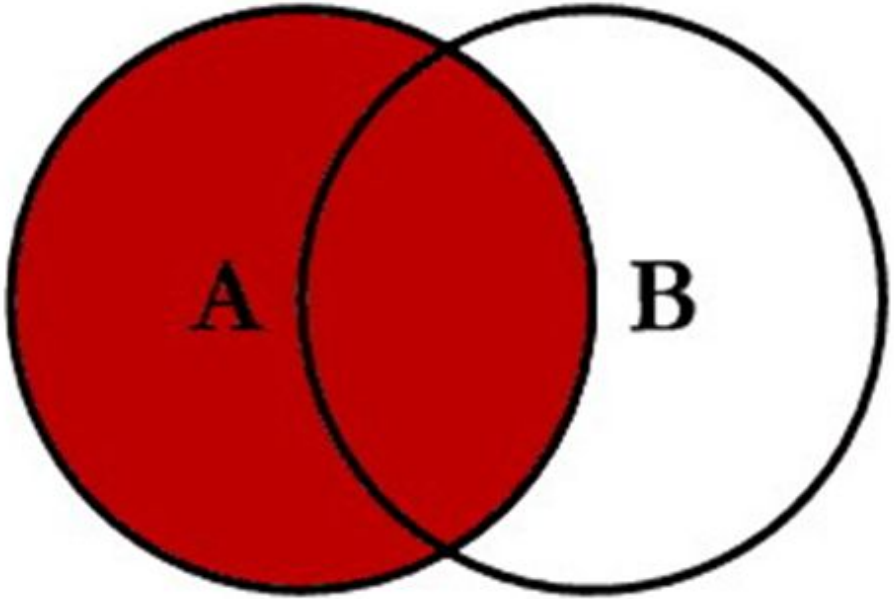
This doesn’t include bibs with zero bib-level holds.

JOIN (INNER JOIN):
Bibs with title-level holds



bib_view hold

LEFT JOIN (LEFT OUTER JOIN):
All bibs, some of which have title-level holds



Include Bibs with No Bib-level Holds

```
SELECT
    b.record_num,
    b.title,
    h.id
FROM  sierra_view.bib_view  b
LEFT JOIN sierra_view.hold  h
    ON h.record_id = b.id;
```

A Different Kind of Table

- varfield
- varfield_view
- subfield
- subfield_view

varfield_view: Each line has:

- The content of a variable-length field
- The ID of the record it's from
- The kind of record it's from (b, i, p, etc.)
- The field tag
- The MARC tag and indicators

Edit Data - Sierra DB (192.168.10.21:1032) - iii - sierra_view.varfield_view

File Edit View Tools Help

100 rows

	id bigint	record_id bigint	record_type_code character(1)	record_num integer	varfield_type_code character(1)	marc_tag character varying(3)	marc_ind1 character(1)	marc_ind2 character(1)	occ_num integer	field_content character varying(20001)
74	5994477	481037404117	p	1066965	x				2	Fri Jul 02 2010: Bill $14.9
75	5994479	481037404117	p	1066965	x				3	Fri Jul 02 2010: Bill $18.9
76	485202	420907795149	b	1000141	t	245	1	0	0	|aCrooning :|ba collection
77	485203	420907795149	b	1000141	r	300			0	|a287 p.
78	485204	420907795149	b	1000141	c	092			0	|a814 Dun
79	485205	420907795149	b	1000141	p	260			0	|aNew York :|bSimon and Sch
80	485206	420907795149	b	1000141	a	100	1		0	|aDunne, John Gregory,|d193
81	485207	420907795149	b	1000141	n	590			0	|aDUNNE 363121 $19.95
82	485208	420907795149	b	1000141	l	010			0	|a90009404
83	485209	420907795149	b	1000141	y	005			0	19900105082902.2
84	485210	420907795149	b	1000141	y	040			1	|aDLC|cDLC
85	485211	420907795149	b	1000141	i	020			0	|z0671672362
86	222097	450972975603	i	1409523	b				0	ITMPL004814752
87	222098	450972975603	i	1409523	p				0	CD ROCK
88	222099	450972975603	i	1409523	l				0	$11.98 1CD 1/08
89	12399802	450973195937	i	1629857	b				0	ITMPL006179675
90	152297	450972914947	i	1348867	b				0	ITMPL004814828
91	152298	450972914947	i	1348867	p				0	J CD BOOK
92	152299	450972914947	i	1348867	l				0	$90.00 17CD 7/05
93	152300	450972914947	i	1348867	m				0	17 cds.
94	152301	450972914947	i	1348867	x				0	RTI CLEANED ALL 17 DISCS
95	176	450972567054	i	1000974	b				0	ITMPL000650100
96	177	450972567054	i	1000974	a	947			0	|aITMPL000650100|bMN|cMYST

Get MARC Field 245 for Bib Records

```
SELECT
    b.record_num,
    v.field_content
FROM
    sierra_view.bib_view  b
JOIN sierra_view.varfield_view  v
    ON (v.record_num = b.record_num
    AND v.marc_tag = '245');
```

Output pane

Data Output | Explain | Messages | History

	record_num integer	field_content character varying(20001)
1	1000113	|aThe foxman /|cby Gary Paulsen.
2	1000162	|aSliver :|ba novel /|cIra Levin.
3	1756201	|aNo room for small dreams :|bcourage, imagination, and the making of modern Israel /|cShimon Peres.
4	1000573	|aRealms of fantasy /|cMalcolm Edwards & Robert Holdstock.
5	1000682	|aThe river bank :|band other stories from the Wind in the willows /|cKenneth Grahame ; illustrated by Inga
6	1623482	|aClassical harp|h[electronic resource] /|cPatricia Spero.
7	1000410	|aThe Christmas album|h[sound recording].
8	1767558	|aSoul /|cJoey W. Hill.
9	1309072	|aThe costume party /|cstory and pictures by Victoria Chess.
10	1000519	|aWashington County, Ohio, to 1980 :|ba collection of topical & family sketches /|cWashington County Historic

Two fields? Two JOINs to varfield_view

```
JOIN sierra_view.varfield_view  v1  ON (b.record_num =
v1.record_num AND v1.marc_tag = '245')

JOIN sierra_view.varfield_view  v2  ON (b.record_num =
v2.record_num AND v2.marc_tag = '260')
```

```
SELECT
    b.record_num AS "Bib#",
    v1.field_content AS "245",
    v2.field_content AS "260"
FROM
    sierra_view.bib_view  b
JOIN sierra_view.varfield_view v1 ON (b.record_num =
v1.record_num AND v1.marc_tag = '245')
JOIN sierra_view.varfield_view v2 ON (b.record_num =
v2.record_num AND v2.marc_tag = '260');
```

Output pane

Data Output | Explain | Messages | History

	Bib# integer	245 character varying(20001)	260 character varying(20001)
1	1000113	|aThe foxman /|cby Gary Paulsen.	|aNew York :|bPuffin Books,|c1990.
2	1000162	|aSliver :|ba novel /|cIra Levin.	|aNew York :|bBantam Books,|c1991.
3	1000573	|aRealms of fantasy /|cMalcolm Edwards & Robert Holds	|aGarden City, N.Y. :|bDoubleday,|c1983.
4	1000682	|aThe river bank :|band other stories from the Wind i	|aCambridge, Massachusetts :|bCandlewick Press,|cc1996.
5	1623482	|aClassical harp|h[electronic resource] /|cPatricia S	|aSuffolk, Eng. ;|aBoulder, Colo. :|bNew World Music,|c2
6	1000410	|aThe Christmas album|h[sound recording].	|a[S.l.] :|bPhilips Digital Classics,|cp1990.
7	1309072	|aThe costume party /|cstory and pictures by Victoria	|aLa Jolla, CA :|bKane/MIller,|c2005.
8	1000519	|aWashington County, Ohio, to 1980 :|ba collection of	|a[Marietta] :|bThe Society,|cc1980.
9	1309664	|aPeyton Place /|cby Grace Metalious ; with a new int	|aBoston :|bNortheastern University Press,|c1999.
10	1559864	|aThe lion and the bird /|cMarianne Dubuc ; translate	|aNew York :|bEnchanted Lion Books,|c2014.
11	1003075	|aFamous kings & queens of England & Scotland /|cby J	|aNew York :|bArco Pub. Co.,|cc1977.
12	1004207	|aHow to write a play /|cby Raymond Hull.	|aCincinnati, Ohio :|bWriter's Digest Books,|cc1983.
13	1007964	|aMotor auto engines and electrical systems /|ceditor	|aNew York :|bMotor,|cc1977.
14	1003974	|aPassage to Pontefract /|cJean Plaidy	|aNew York :|bPutnam,|c1982

What if you have a repeatable field?

```
SELECT
    v.field_content as "245",
    v2.field_content as "500"
FROM
    sierra_view.bib_view  b
JOIN
    sierra_view.varfield_view  v ON (b.record_num =
v.record_num and v.marc_tag = '245')
LEFT JOIN
    sierra_view.varfield_view  v2 ON (b.record_num =
v2.record_num and v2.marc_tag = '500');
```

245 character varying(20001)	500 character varying(20001)
|aInvestigating your own back yard /|cNatalie	|aIncludes index.
|aInvestigating your own back yard /|cNatalie	|a"N6157."
|aInvestigating your own back yard /|cNatalie	|aTeacher guide - ask at desk. (Invest
|aWhere's my jetpack?|h[electronic resource] :	|aDownloadable audio file.
|aWhere's my jetpack?|h[electronic resource] :	|aTitle from: Title details screen.
|aWhere's my jetpack?|h[electronic resource] :	|aUnabridged.
|aWhere's my jetpack?|h[electronic resource] :	|aDuration: 3:41:05.
|aAmerica 1941 :|ba nation at the crossroads /	|aIncludes index.
|aAmerica 1941 :|ba nation at the crossroads /	|wnnnc|aPaige, Robin
|aA ghoul's guide to love and murder /|cVictor	|a"An Obsidian mystery."
|aPreschool prep.|pCounting around the zoo.	|aWidescreen (16x9)
|aAn Americana Christmas|h[sound recording].	|aTitle from container.
|aAn Americana Christmas|h[sound recording].	|aCompact disc.

```
SELECT
   v.field_content as "245",
   v2.field_content as "500",
   v3.field_content as "700"
FROM
   sierra_view.bib_view  b
JOIN
   sierra_view.varfield_view  v on (b.record_num =
v.record_num and v.marc_tag = '245')
LEFT JOIN
   sierra_view.varfield_view  v2 on (b.record_num =
v2.record_num and v2.marc_tag = '500')
LEFT JOIN
   sierra_view.varfield_view  v3 on (b.record_num =
v3.record_num and v3.marc_tag = '700');
```

245 character varying(20001)	500 character varying(20001)	700 character varying(20001)
|aAnne of Green Gables|h[videorec	|aBased on the novel by L.M.	|aNicholls, George,|d1897-1939.
|aAnne of Green Gables|h[videorec	|aBased on the novel by L.M.	|aMintz, Sam.
|aAnne of Green Gables|h[videorec	|aBased on the novel by L.M.	|aShirley, Anne,|d1918-
|aAnne of Green Gables|h[videorec	|aBased on the novel by L.M.	|aBrown, Tom,|d1913 Jan. 6-
|aAnne of Green Gables|h[videorec	|aBased on the novel by L.M.	|aHeggie, O. P.|q(Otto Peters),|d1876-193
|aAnne of Green Gables|h[videorec	|aBased on the novel by L.M.	|aMontgomery, L. M.|q(Lucy Maud),|d1874-19
|aAnne of Green Gables|h[videorec	|aOriginally released as a mo	|aNicholls, George,|d1897-1939.
|aAnne of Green Gables|h[videorec	|aOriginally released as a mo	|aMintz, Sam.
|aAnne of Green Gables|h[videorec	|aOriginally released as a mo	|aShirley, Anne,|d1918-
|aAnne of Green Gables|h[videorec	|aOriginally released as a mo	|aBrown, Tom,|d1913 Jan. 6-
|aAnne of Green Gables|h[videorec	|aOriginally released as a mo	|aHeggie, O. P.|q(Otto Peters),|d1876-193
|aAnne of Green Gables|h[videorec	|aOriginally released as a mo	|aMontgomery, L. M.|q(Lucy Maud),|d1874-19
|aAnne of Green Gables|h[videorec	|aFeatures: scene selections,	|aNicholls, George,|d1897-1939.
|aAnne of Green Gables|h[videorec	|aFeatures: scene selections,	|aMintz, Sam.
|aAnne of Green Gables|h[videorec	|aFeatures: scene selections,	|aShirley, Anne,|d1918-
|aAnne of Green Gables|h[videorec	|aFeatures: scene selections,	|aBrown, Tom,|d1913 Jan. 6-
|aAnne of Green Gables|h[videorec	|aFeatures: scene selections,	|aHeggie, O. P.|q(Otto Peters),|d1876-193
|aAnne of Green Gables|h[videorec	|aFeatures: scene selections,	|aMontgomery, L. M.|q(Lucy Maud),|d1874-19

If you want one line per title

Combine all 500 fields and all 700 files onto one line.

OR

Just get the first 500 field and the first 700 field.

All 500 fields and all 700 files onto one line

```
SELECT...
STRING_AGG(v.field_content, '; ' order by occ_num) as
"500"
…
GROUP BY v.field_content;
```

```
SELECT
   v.field_content as "245",
STRING_AGG(v2.field_content, '; ' order by v2.occ_num) as "500",
STRING_AGG(v3.field_content, '; ' order by v3.occ_num) as "700"
FROM
   sierra_view.bib_view  b
JOIN
   sierra_view.varfield_view  v on (b.record_num =
v.record_num and v.marc_tag = '245')
LEFT JOIN
   sierra_view.varfield_view  v2 on (b.record_num =
v2.record_num and v2.marc_tag = '500')
LEFT JOIN
   sierra_view.varfield_view  v3 on (b.record_num =
v3.record_num and v3.marc_tag = '700')
GROUP BY v.field_content;
```

245 character varying(20001)	500 text	700 text
[illegible]		[illegible]
|aAnne of Green Gables|h[videorec	|aBased on the novel by L.M. Montgome	|aNicholls, George,|d1897-1939.; |aN

Only the first 500 field and the first 700 f

This requires a subquery

The Way We Did it Earlier

```
SELECT
   b.record_num,
   v.field_content
FROM
   sierra_view.bib_view  b
JOIN sierra_view.varfield_view  v
   ON v.record_num = b.record_num
WHERE
   v.marc_tag = '500';
```

Using a Subquery

```
SELECT
   b.record_num,

   (SELECT field_content AS b500
    FROM sierra_view.varfield_view  v
    WHERE b.id = v.record_id AND v.marc_tag = '500'
    LIMIT 1)

FROM
   sierra_view.bib_view  b;
```

```
SELECT
   b.record_num,
   (SELECT field_content AS b500
    FROM sierra_view.varfield_view  v
    WHERE b.id = v.record_id AND v.marc_tag = '500'
    LIMIT 1),
   (SELECT field_content AS b700
    FROM sierra_view.varfield_view  v2
    WHERE b.id = v2.record_id AND v2.marc_tag = '700'
    LIMIT 1)
FROM
   sierra_view.bib_view  b;
```

Consider Attending

- Automating Booklist Curation with SQL
  - Tuesday 1:30-2:30 Deer Valley
- Cache and Release: Capturing and Using Sierra's Temporary SQL Data
  - Wednesday 3:00-4:00 Deer Valley
- SQL Users Birds of A Feather

Find Us On Slack

All three of us can be found on the Sierra_ILS slack workspace, run by Craig Bowman

Questions?

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Phil Shirley pshirley@fallslibrary.org

Ray Voelker ray.voelker@cincinnatilibrary.org