

SQL: Query Basics

- Chapter 3 in Murach text
- SQL for retrieving data (SELECT ... FROM ...)
- SQL for filtering data (WHERE, LIMIT, OFFSET)
- SQL for sorting data (ORDER BY)

Basic SELECT Syntax

The basic syntax of the SELECT statement

```
SELECT select_list  
[FROM table_source]  
[WHERE search_condition]  
[ORDER BY order_by_list]  
[LIMIT row_limit]
```

The five clauses of the SELECT statement

- SELECT
- FROM
- WHERE
- ORDER BY
- LIMIT

SELECT Examples with One Table

Keywords: **SELECT, FROM** * = wildcard symbol (“all columns”)

1
2
3
4
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10
11

```
USE ap;  
  
SELECT * FROM invoices;
```

<

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Content:

	invoice_id	vendor_id	invoice_number	invoice_date	invoice_total	payment_total	credit_total	terms_id	invoice_due_date	payment_date
	1	122	989319-457	2018-04-08	3813.33	3813.33	0.00	3	2018-05-08	2018-05-07
	2	123	263253241	2018-04-10	40.20	40.20	0.00	3	2018-05-10	2018-05-14
	3	123	963253234	2018-04-13	138.75	138.75	0.00	3	2018-05-13	2018-05-09
	4	123	2-000-2993	2018-04-16	144.70	144.70	0.00	3	2018-05-16	2018-05-12
	5	123	963253251	2018-04-16	15.50	15.50	0.00	3	2018-05-16	2018-05-11
	6	123	963253261	2018-04-16	42.75	42.75	0.00	3	2018-05-16	2018-05-21
	7	123	963253237	2018-04-21	172.50	172.50	0.00	3	2018-05-21	2018-05-22
	8	89	125520-1	2018-04-24	95.00	95.00	0.00	1	2018-05-04	2018-05-01
	9	121	97/488	2018-04-24	601.95	601.95	0.00	3	2018-05-24	2018-05-21
	10	123	263253250	2018-04-24	42.67	42.67	0.00	3	2018-05-24	2018-05-22
	11	123	963253262	2018-04-25	42.50	42.50	0.00	3	2018-05-25	2018-05-20
	12	96	177271-001	2018-04-26	662.00	662.00	0.00	2	2018-05-16	2018-05-13
	13	95	111-92R-10096	2018-04-30	16.33	16.33	0.00	2	2018-05-20	2018-05-23
	14	115	25022117	2018-05-01	6.00	6.00	0.00	4	2018-06-10	2018-06-10
	15	48	P02-88D77S7	2018-05-03	856.92	856.92	0.00	3	2018-06-02	2018-05-30
	16	97	21-4748363	2018-05-03	9.95	9.95	0.00	2	2018-05-23	2018-05-22
	17	123	4-321-2596	2018-05-05	10.00	10.00	0.00	3	2018-06-04	2018-06-05
	18	123	963253242	2018-05-06	104.00	104.00	0.00	3	2018-06-05	2018-06-05
	19	34	OP58872	2018-05-07	116.54	116.54	0.00	1	2018-05-17	2018-05-19
	20	115	24863706	2018-05-10	6.00	6.00	0.00	4	2018-06-19	2018-06-15
	21	119	10843	2018-05-11	4901.26	4901.26	0.00	2	2018-05-31	2018-05-29
	22	123	963253235	2018-05-11	108.25	108.25	0.00	3	2018-06-10	2018-06-09
	23	97	21-4923721	2018-05-13	9.95	9.95	0.00	2	2018-06-02	2018-05-28
	24	113	77290	2018-05-13	1750.00	1750.00	0.00	5	2018-07-02	2018-07-05

SELECT Examples with One Table

Keywords: **SELECT, FROM**

```
8
9 • SELECT invoice_number, invoice_date, invoice_total
10
11 FROM invoices;
12
13
14
15
16
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

invoice_number	invoice_date	invoice_total
989319-457	2018-04-08	3813.33
263253241	2018-04-10	40.20
963253234	2018-04-13	138.75
2-000-2993	2018-04-16	144.70
963253251	2018-04-16	15.50
963253261	2018-04-16	42.75
963253237	2018-04-21	172.50
125520-1	2018-04-24	95.00
97/488	2018-04-24	601.95
263253250	2018-04-24	42.67
963253262	2018-04-25	42.50
I77271-001	2018-04-26	662.00
111-92R-10096	2018-04-30	16.33
25022117	2018-05-01	6.00
P02-88D77S7	2018-05-03	856.92
21-4748363	2018-05-03	9.95
4-321-2596	2018-05-05	10.00
963253242	2018-05-06	104.00

Adding a Filter to SELECT Statement

Keywords: SELECT, FROM, **WHERE**

```
31 • SELECT invoice_number, invoice_date, invoice_total
32
33 FROM invoices
34
35 WHERE invoice_date BETWEEN '2018-04-01' AND '2018-04-30';
36
37
```

invoice_number	invoice_date	invoice_total
111-92R-10096	2018-04-30	16.33
I77271-001	2018-04-26	662.00
963253262	2018-04-25	42.50
125520-1	2018-04-24	95.00
97/488	2018-04-24	601.95
263253250	2018-04-24	42.67
963253237	2018-04-21	172.50
2-000-2993	2018-04-16	144.70
963253251	2018-04-16	15.50
963253261	2018-04-16	42.75
963253234	2018-04-13	138.75
263253241	2018-04-10	40.20
989319-457	2018-04-08	3813.33

```
41
42 • SELECT invoice_number, invoice_date, invoice_total
43
44 FROM invoices
45
46 WHERE invoice_total < 100;
```

invoice_number	invoice_date	invoice_total
263253241	2018-04-10	40.20
963253251	2018-04-16	15.50
963253261	2018-04-16	42.75
125520-1	2018-04-24	95.00
263253250	2018-04-24	42.67
963253262	2018-04-25	42.50
111-92R-10096	2018-04-30	16.33
25022117	2018-05-01	6.00
21-4748363	2018-05-03	9.95
4-321-2596	2018-05-05	10.00
24863706	2018-05-10	6.00
21-4923721	2018-05-13	9.95

Adding an Order to SELECT Statement

Keywords: SELECT, FROM, [WHERE], **ORDER BY**

```
53 • SELECT invoice_number, invoice_date, invoice_total
54
55 FROM invoices
56
57 WHERE invoice_total < 100
58
59 ORDER BY invoice_total;
60
```

invoice_number	invoice_date	invoice_total
25022117	2018-05-01	6.00
24863706	2018-05-10	6.00
24780512	2018-06-22	6.00
21-4748363	2018-05-03	9.95
21-4923721	2018-05-13	9.95
4-342-8069	2018-05-14	10.00
4-321-2596	2018-05-05	10.00
43966316	2018-06-22	10.00



```
67 • SELECT invoice_number, invoice_date, invoice_total
68
69 FROM invoices
70
71 WHERE invoice_total < 100
72
73 ORDER BY invoice_total DESC;
74
```

invoice_number	invoice_date	invoice_total
125520-1	2018-04-24	95.00
134116	2018-07-28	90.36
39104	2018-07-10	85.31
263253270	2018-07-22	67.92
963253240	2018-07-24	67.00
1-200-5164	2018-05-20	63.40
963253272	2018-05-26	61.50
963253244	2018-07-08	60.00
263253268	2018-07-21	59.97
963253255	2018-05-31	53.75

Adding an Order to SELECT Statement

Keywords: **SELECT**, **FROM**, **[WHERE]**, **ORDER BY**

```
78 • SELECT invoice_number, invoice_date, invoice_total
79
80 FROM invoices
81
82 WHERE invoice_total < 100
83
84 ORDER BY invoice_total, invoice_date DESC, invoice_number;
85
```

Result Grid			
Filter Rows: <input type="text"/>			
Export:  Wrap Cell Content: 			
invoice_number	invoice_date	invoice_total	
24780512	2018-06-22	6.00	
24863706	2018-05-10	6.00	
25022117	2018-05-01	6.00	
21-4923721	2018-05-13	9.95	
21-4748363	2018-05-03	9.95	
43966316	2018-06-22	10.00	
4-342-8069	2018-05-14	10.00	
4-321-2596	2018-05-05	10.00	
4-314-3057	2018-06-11	13.75	
963253251	2018-04-16	15.50	
111-92R-10097	2018-06-04	16.33	

LIMIT and OFFSET in SELECT Statement

Keywords: SELECT, FROM, [WHERE], [ORDER BY], **LIMIT**, **OFFSET**

```
37 • SELECT invoice_id, invoice_number, invoice_total
38 FROM invoices
39 ORDER BY invoice_total DESC
40 LIMIT 5;
41
```

Result Grid | Filter Rows: | Edit: | Export

invoice_id	invoice_number	invoice_total
39	0-2058	37966.19
96	P-0259	26881.40
106	0-2060	23517.58
43	40318	21842.00
102	P-0608	20551.18
NULL	NULL	NULL

```
42 • SELECT invoice_id, invoice_number, invoice_total
43 FROM invoices
44 ORDER BY invoice_id
45 LIMIT 10
46 OFFSET 5;
```

Result Grid | Filter Rows: | Edit: | Export

invoice_id	invoice_number	invoice_total
6	963253261	42.75
7	963253237	172.50
8	125520-1	95.00
9	97/488	601.95
10	263253250	42.67
11	963253262	42.50

Exercises

Use the university db: script files = create_university.sql & insert_university.sql

1. List of courses with more than 3 credit hours
2. List of faculty in BIO department, sorted by last name
3. List of courses in NURS sequence (courseID begins with NURS)

courseTitle	creditHours
Mammalian Anatomy	4
Health: Nursing Process	4
Nursing Care of Client through the Adult Life Span	4
Nursing Care of the Elderly	4
Nursing Care of Young Adults	4
Nursing Care of Children and Adolescents	4
Family and Community Health Concepts	4
Mental Health Nursing	4
Elementary Statistics	4

1

facultyID	facultyFirstName	facultyLastName	department
4317	Justin	Black	BIO
4382	Simon	Cameron	BIO
4516	Tracey	Lewis	BIO
4256	Anne	Vaughan	BIO
4463	Felicity	Wallace	BIO
NULL	NULL	NULL	NULL

2

courseID	courseTitle
NURS200	Introduction to Nursing Research
NURS205	Introduction to Pharmacological Concepts
NURS215	Health: Introduction to Wellness
NURS225	Health: Introduction to Illness
NURS230	Health: Nursing Process
NURS245	Violence and the Impact on Society
NURS301	Nursing Care of Client through the Adult Life Span
NURS310	Nursing Care of the Elderly
NURS320	Nursing Care of Young Adults
NURS352	Advanced Health Assessment for the Registered Nurse

3