

Topics

1. Midterm Review

Set Operators

- What are the Set operators?
- Union
- Union All
- Intersect
- Minus
- Except

Set Operators

- PROVINCES has ONTARIO, MANITOBA and QUEBEC rows included. There are also separate tables for these provinces that do not include a province column.
- What shows if you subtract ONTARIO and QUEBEC from PROVINCES?
- How would the SQL statement that does this be coded?

```
SELECT CUSTID,  
       FNAME,  
       LNAME,  
       CITY,  
       PURCHASE,  
       PDATE  
FROM PROVINCES  
EXCEPT  
(SELECT * FROM ONTARIO  
 UNION  
 SELECT * FROM QUEBEC)
```

Set Operators – Additional Guidelines

- The SELECT lists must match in?
 - Number of columns for each table.
 - Order of columns for each table.
 - The data type of each column
- If the columns match in number, order and data type, do they have to match in name?
 - No
- Parentheses can be used to
 - alter the sequence of execution.
- Where can the ORDER BY clause be used?
 - can appear only at the very end of the statement.
- Duplicate rows are
 - automatically eliminated except in UNION ALL.

Set Operators – Additional Guidelines

- What happens if different column name are used in each sub Select?

```
select DEPTNO CANDEPT,  
       DEPTNAME,  
       MGRNO,  
       ADMRDEPT,  
       LOCATION FROM DEPT
```

UNION

```
select DEPTNO USDEPT,  
       DEPTNAME,  
       MGRNO,  
       ADMRDEPT,  
       LOCATION USLOCATION  
FROM DEPTUS
```

CANDEPT	DEPTNAME	MGRNO	ADMRDEPT	LOCATION
502	ADMIN	8	502	TORONTO
600	SALESEASTUS	11	502	NEW YORK
503	HR	8	502	TORONTO
500	SALESEAST	3	502	TORONTO
601	SALESWESTUS	19	502	LOS ANGELES
501	SALESWEST	5	502	VANCOUVER

Midterm Review From the Beginning

- How is not equal shown in an expression
- $<>$
- \neq

SINGLE ROW FUNCTION TYPES?

- CHARACTER
- NUMERIC
- DATETIME
- CONVERSION

Character Functions

- These functions accept character type arguments and return character or numeric values
- Character Functions
 - LOWER
 - UPPER
 - INITCAP
- Character manipulation
 - SUBSTR
 - CONCAT
 - LENGTH
 - INSTR
 - TRIM
 - REPLACE

- SUBSTR

- SUBSTR(COLNAME,START,LENGTH)

- returns partial string

- INSTR

- INSTR(COLNAME,CHAR(S))

- returns a position number

- REPLACE

- REPLACE(string1, string_to_replace [, replacement_string])

-

-

- What category of function is CAST?
- Conversion function
- Make NumericFld a 15 character field
- `CAST(NumericFld as Char(15))`

- Provide a numeric function
- `ROUND(TOTALPAY,2)`
- What happens with
 `ROUND(TOTALPAY)`
- 0 decimal positions is the default

- What is the difference between single row and multi row functions
- Single row function returns one result for each row
- What is another name for a single row function
- A Scaler Function
- Multi row returns one result per set of rows
- What is another name for a multi row function
- An Aggregate Function

Group Functions

- Name 5 group functions
- AVG
- COUNT
- MAX
- MIN
- SUM

- If you want to use a group function with a column name in a select clause what new clause do you need to use?
- Select Job, AVG(Pay)
- Group By Job

Where vs Having

- What is the difference between a where clause and a having clause?
- The where clause filters out rows that don't meet a search condition
- The having clause filters out entire groups that don't meet a search condition

Subqueries

- In what SQL statements can you use a subquery?
- SELECT
- CREATE
- INSERT
- DELETE
- IN A SELECT
- WHERE CLAUSE
- HAVING CLAUSE
- FROM CLAUSE

SUBQUERY TYPES

- What are the 3 general types of subqueries?
- Single Row Subqueries – returns one row in the “inner” result set
- Multi Row Subqueries – returns multiple rows in the “inner” result set
- Multi-column Subqueries – returns multiple columns in the “inner” result set

AUDBOOKS

Untitled* - Run SQL Scripts - ZEUS.SENECACOLLEGE.CA(S10a04c2)

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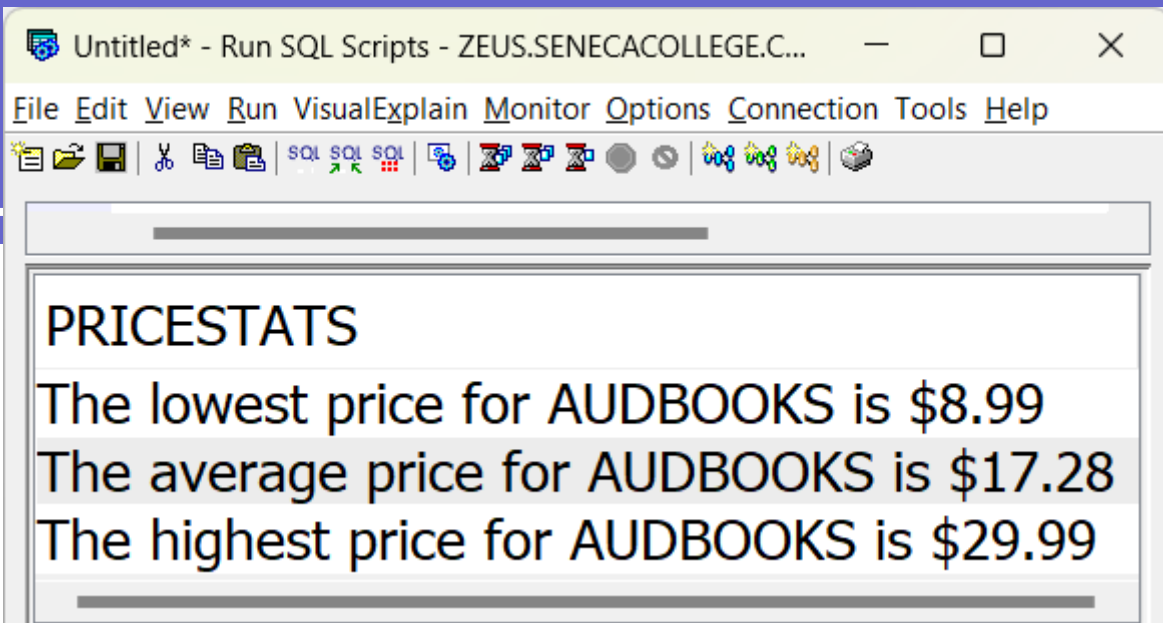
1

BOOKID	BOOK	DURATION	AUTHOR	PRICE	GENRE	DOWNLOADS
1	Spindrift	12.26.21	Allen Steele	17.99	Sci Fi/Fantasy	300
10	The White Tiger	08.06.12	Aravind Adiga	15.99	Fiction	90
11	...Where Angels Fear to Tr	02.54.37	Allen Steele	8.99	Sci Fi/Fantasy	50
12	Another Life	09.28.43	Andrew Vachss	17.99	Thriller/Mystery	100
15	Augustus	15.41.04	Anthony Everitt	17.99	Biography	400
17	Worlds at War (Unabridged)	20.39.51	Anthony Pagden	29.99	Non Fiction	55
22	Sunstorm	10.27.52	Arthur C. Clarke	16.99	Sci Fi/Fantasy	100
24	Time's Eye	11.39.45	Arthur C. Clarke	16.99	Sci Fi/Fantasy	98
26	Voyagers	13.33.30	Ben Bova	17.99	Sci Fi/Fantasy	100
28	Sharpe's Tiger	11.55.24	Bernard Cornwell	17.99	Historical Fiction	88
30	Sharpe's Trafalgar	12.03.42	Bernard Cornwell	17.99	Historical Fiction	100
32	A Short History of Nearly	18.25.45	Bill Bryson	19.99	Non Fiction	53
35	I Shouldn't Even Be Doing	03.15.50	Bob Newhart	13.99	Comedy	100
36	Elantris (Unabridged)	23.57.27	Brandon Sanderson	17.99	Sci Fi/Fantasy	200
41	God Is Not Great	08.46.44	Christopher Hitchens	15.99	Non Fiction	99
44	Daemon (Unabridged)	16.13.39	Daniel Suarez	17.99	Thriller/Mystery	100
46	Born on a Blue Day	06.37.50	Daniel Tammet	15.99	Biography	75
47	What Is the What	21 15 02	Dave Eggers	18.99	Fiction	100

Done: 89 rows retrieved.

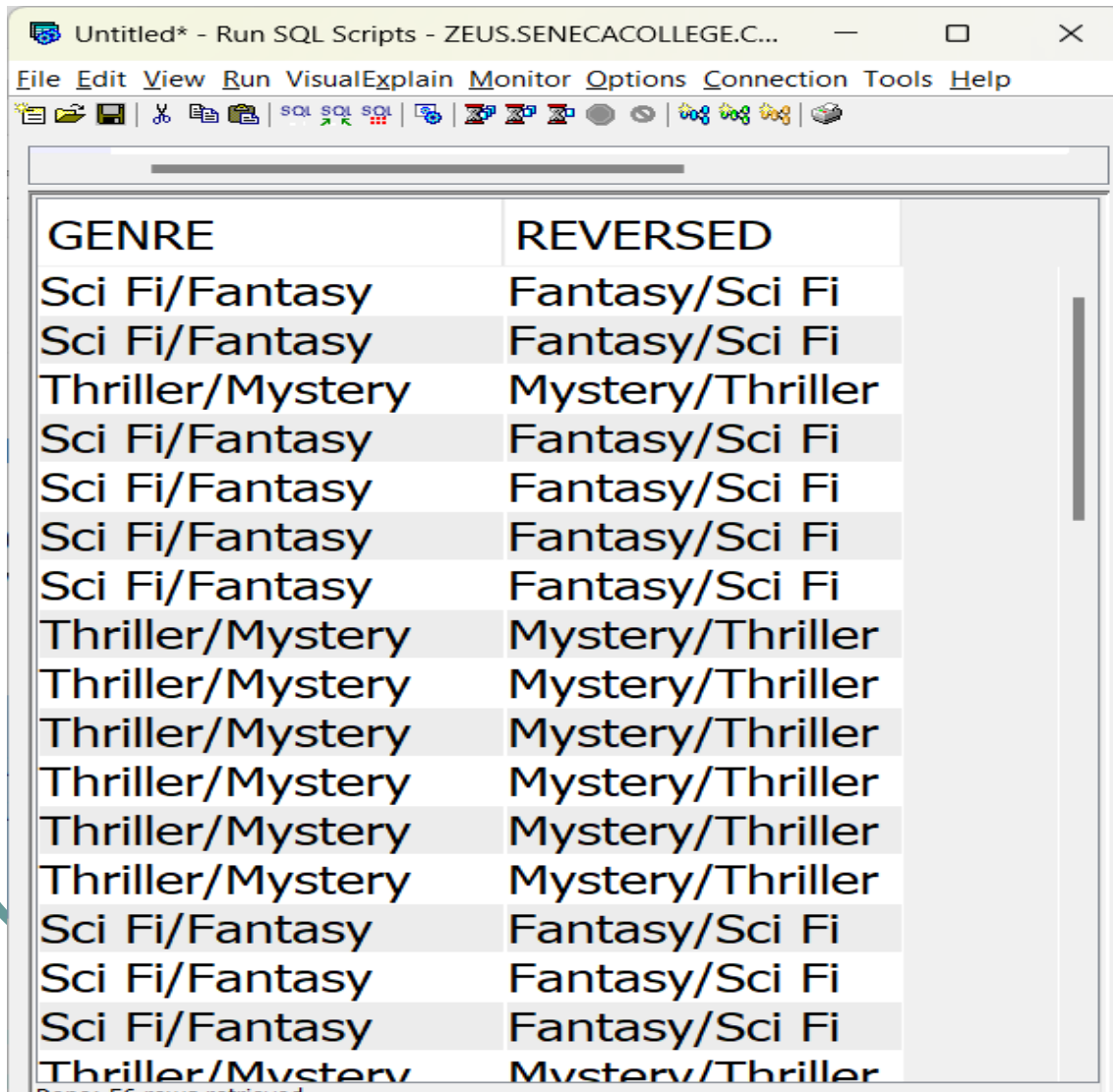
Messages SELECT * FROM AUDBOOKS

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```
SELECT 'The average price for AUBOOKS is $' ||  
       cast(round(avg(price),2) as DECIMAL(7,2)) PRICESTATS  
FROM   AUBOOKS  
UNION  
SELECT 'The highest price for AUBOOKS is $' ||  
       max(PRICE) highprice  
FROM   AUBOOKS  
UNION  
SELECT 'The lowest price for AUBOOKS is $' ||  
       min(price) lowprice  
FROM   AUBOOKS
```

Reverse any Genre using a backslash



The screenshot shows a window titled "Untitled* - Run SQL Scripts - ZEUS.SENECACOLLEGE.C...". The window contains a table with two columns: "GENRE" and "REVERSED". The table lists various genre combinations and their reversed counterparts, demonstrating the effect of a backslash operator. The genres listed are Sci Fi/Fantasy, Thriller/Mystery, and Mystery/Thriller. The reversed versions are Fantasy/Sci Fi, Mystery/Thriller, and Thriller/Mystery respectively. The table is displayed in a grid format with alternating light and dark gray rows.

GENRE	REVERSED
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Thriller/Mystery	Mystery/Thriller
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Thriller/Mystery	Mystery/Thriller
Thriller/Mystery	Mystery/Thriller
Thriller/Mystery	Mystery/Thriller
Thriller/Mystery	Mystery/Thriller
Thriller/Mystery	Mystery/Thriller
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Thriller/Mystery	Mystery/Thriller

Reverse any Genre using a backslash

```
SELECT GENRE,  
       TRIM (SUBSTR (GENRE, INSTR (GENRE, '/') +1)) || '/' ||  
       SUBSTR (GENRE, 1, INSTR (GENRE, '/') -1) AS REVERSED  
FROM   AUDBOOKS
```

GENRE	REVERSED
Sci Fi/Fantasy Fiction	Fantasy/Sci Fi +++++
Sci Fi/Fantasy	Fantasy/Sci Fi
Thriller/Mystery	Mystery/Thriller
Biography	+++++
Non Fiction	+++++

Reverse any Genre using a backslash

```
SELECT GENRE,  
       TRIM(SUBSTR(GENRE, INSTR(GENRE, '/') +1)) || '/' ||  
       SUBSTR(GENRE, 1, INSTR(GENRE, '/') -1) AS REVERSED  
FROM   AUDBOOKS  
WHERE  INSTR(GENRE, '/') > 0
```

GENRE	REVERSED
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Thriller/Mystery	Mystery/Thriller
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Sci Fi/Fantasy	Fantasy/Sci Fi
Thriller/Mystery	Mystery/Thriller
Thriller/Mystery	Mystery/Thriller
Thriller/Mystery	Mystery/Thriller

Changing the Genre

- UPDATE AUDBOOKS
- SET GENRE = CASE
- WHEN INSTR(GENRE, '/') > 1 THEN
- TRIM(SUBSTR(GENRE, INSTR(GENRE, '/') + 1)) ||
- '/' || SUBSTR(GENRE, 1, INSTR(GENRE, '/') - 1)
- WHEN INSTR(GENRE, '/') = 0 THEN GENRE
- END;

- Show the following information on the book genres that have more total downloads than the total downloads for the “Biography” genre. Include the highest, lowest, and average downloads as well.

GENRE	TOTALDOWNLOADS	MOST	LEAST	AVERAGE
Sci Fi/Fantasy	3,949	300	20	119.66
Non Fiction	1,151	298	53	104.63
Thriller/Mystery	3,026	440	30	131.56

***** End of data *****

```
SELECT GENRE,
       SUM(DOWNLOADS) TOTALDOWNLOADS,
       MAX(DOWNLOADS) MOST,
       MIN(DOWNLOADS) LEAST,
       CAST(AVG(DOWNLOADS) AS DECIMAL(7,2)) AVERAGE
FROM   AUDBOOKS
GROUP BY GENRE
HAVING SUM(DOWNLOADS) >
       (SELECT SUM(DOWNLOADS)
        FROM AUDBOOKS
        WHERE GENRE = 'Biography')
```


- Show the books for each genre whose number of downloads is the lowest for that category of book in the following order:

BOOKID	GENRE	BOOK	AUTHOR	LOWESTDOWNLOADS
81	Biography	Fidel Castro: My Life	Fidel Castro, Ignacio Ramonet	23
35	Comedy	I Shouldn't Even Be Doing	Bob Newhart	100
173	Comedy	An Excerpt from I Am Ameri	Stephen Colbert	100
113	Fiction	Spud (Unabridged)	John van de Ruit	40
115	Historical Fiction	The Pillars of the Earth (Ken Follett	33
32	Non Fiction	A Short History of Nearly	Bill Bryson	53
60	Sci Fi/Fantasy	By Schism Rent Asunder	David Weber	20
59	Thriller/Mystery	Play Dead	David Rosenfelt	30
141	Thriller/Mystery	The Closers (Unabridged),	Michael Connelly	30

```

SELECT      BOOKID, GENRE, BOOK, AUTHOR,
            DOWNLOADS LOWESTDOWNLOADS
FROM        AUDBOOKS
WHERE       (GENRE, DOWNLOADS) IN
            (SELECT GENRE, MIN (DOWNLOADS)
             FROM    AUDBOOKS
             GROUP BY GENRE)
ORDER BY   GENRE

```

- You want the next 4 books with less downloads than Time's Eye by Arthur C. Clarke. You know the book id is 24 for that book. Use Top-N analyses for your answer.

BOOK	AUTHOR	DOWNLOADS
Dusty Springfield's Dusty	Warren Zanes	96
WWW: Wake (Unabridged)	Robert J. Sawyer	94
The Graveyard Book (Unabri	Neil Gaiman	94
Your Heart Belongs to Me	Dean Koontz	92
***** End of data *****		

```
SELECT BOOK, AUTHOR, DOWNLOADS
FROM   AUBOOKS
WHERE  DOWNLOADS <
      (SELECT DOWNLOADS
       FROM   AUBOOKS
       WHERE  BOOKID = 24)
ORDER BY DOWNLOADS DESC
FETCH FIRST 4 ROWS ONLY
```

SCIFI TABLE

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BOOKID	BOOK	DURATION	AUTHOR	PRICE	DOWNLOADS
1	Spindrift	12.26.21	Allen Steele	17.99	0
11	...Where Angels Fear to Tr	02.54.37	Allen Steele	8.99	0
22	Sunstorm	10.27.52	Arthur C. Clarke	16.99	0
24	Time's Eye	11.39.45	Arthur C. Clarke	16.99	0
26	Voyagers	13.33.30	Ben Bova	17.99	0
36	Elantris (Unabridged)	23.57.27	Brandon Sanderson	17.99	0
60	By Schism Rent Asunder	23.31.09	David Weber	19.99	0
64	Off Armageddon Reef	23.25.13	David Weber	19.99	0
68	March Upcountry	17.14.41	David Weber and John Ringo	17.99	0
71	Outlander	23.21.16	Diana Gabaldon	17.99	0
75	Way of the Wolf	11.17.47	E.E. Knight	17.99	0
78	The Historian,	11.21.41	Elizabeth Kostova	17.99	0
88	Wicked	17.49.10	Gregory Maguire	21.99	0
91	The Strain	13.51.43	Guillermo Del Toro	18.99	0
96	The Devil's Eye	12.01.29	Jack McDevitt	17.99	0
102	The Accidental Time Machin	07.53.37	Joe Haldeman	15.99	0
106	The Ghost Brigades (Unabri	10.25.17	John Scalzi	17.99	0
108	The Last Colony (Unabridge	09.43.58	John Scalzi	17.99	0

Done: 33 rows retrieved.

Messages SELECT * FROM SCIFI

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FICTION TABLE

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BOOKID	BOOK	DURATION	AUTHOR	PRICE	DOWNLOADS
10	The White Tiger	08.06.12	Aravind Adiga	15.99	0
47	What Is the What	21.15.02	Dave Eggers	18.99	0
51	First Family	14.32.12	David Baldacci	17.99	0
80	The Snows of Kilimanjaro	04.43.00	Ernest Hemingway	15.99	0
112	The Kite Runner (Unabridged)	12.11.59	Khaled Hosseini	17.99	0
113	Spud (Unabridged)	14.39.07	John van de Ruit	14.99	0

Done: 6 rows retrieved.

Messages SELECT * FROM FICTION

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MYGENRES TABLE

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45 WHERE GENRE = 'Sci Fi/Fantasy' WITH DATA

BOOKID	BOOK	DURATION	AUTHOR	PRICE	DOWNLOADS	GENRE
10	The White Tiger	08.06.12	Aravind Adiga	15.99		0Fiction
47	What Is the What	21.15.02	Dave Eggers	18.99		0Fiction
51	First Family	14.32.12	David Baldacci	17.99		0Fiction
80	The Snows of Kilimanjaro	04.43.00	Ernest Hemingway	15.99		0Fiction
112	The Kite Runner (Unabridge	12.11.59	Khaled Hosseini	17.99		0Fiction
113	Spud (Unabridged)	14.39.07	John van de Ruit	14.99		0Fiction
1	Spindrift	12.26.21	Allen Steele	17.99		0Sci Fi/Fantasy
11	...Where Angels Fear to Tr	02.54.37	Allen Steele	8.99		0Sci Fi/Fantasy
22	Sunstorm	10.27.52	Arthur C. Clarke	16.99		0Sci Fi/Fantasy
24	Time's Eye	11.39.45	Arthur C. Clarke	16.99		0Sci Fi/Fantasy
26	Voyagers	13.33.30	Ben Bova	17.99		0Sci Fi/Fantasy
36	Elantris (Unabridged)	23.57.27	Brandon Sanderson	17.99		0Sci Fi/Fantasy
60	By Schism Rent Asunder	23.31.09	David Weber	19.99		0Sci Fi/Fantasy
64	Off Armageddon Reef	23.25.13	David Weber	19.99		0Sci Fi/Fantasv

Done: 39 rows retrieved.

Messages SELECT * FROM MYGENRES ORDER BY GENRE

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- Produce a table called MYGENRES referring to the SCIFI and FICTION tables

```
CREATE TABLE MYGENRES  
AS (SELECT * FROM SCIFI) WITH DATA
```

```
ALTER TABLE MYGENRES  
ADD COLUMN GENRE CHAR(20) DEFAULT 'Sci Fi/Fantasy';
```

```
INSERT INTO MYGENRES  
SELECT BOOKID, BOOK, DURATION,  
       AUTHOR, PRICE, DOWNLOADS,  
       'Fiction'  
FROM   FICTION
```

```

SELECT BOOKID, BOOK, DURATION,
       PRICE, DOWNLOADS
FROM   MYGENRES
INTERSECT
SELECT BOOKID, BOOK, DURATION,
       PRICE, DOWNLOADS
FROM   FICTION

```

BOOKID	BOOK	DURATION	PRICE	DOWNLOADS
51	First Family	14:32:12	17.99	0
10	The White Tiger	08:06:12	15.99	0
112	The Kite Runner (Unabridge	12:11:59	17.99	0
113	Spud (Unabridged)	14:39:07	14.99	0
80	The Snows of Kilimanjaro	04:43:00	15.99	0
47	What Is the What	21:15:02	18.99	0

```
SELECT BOOKID, BOOK, DURATION,  
       PRICE, DOWNLOADS  
FROM   AUDBOOKS  
INTERSECT  
SELECT BOOKID, BOOK, DURATION,  
       PRICE, DOWNLOADS  
FROM   FICTION
```

BOOKID	BOOK	DURATION	PRICE	DOWNLOADS
***** End of data *****				

ZERO DOWNLOADS IN FICTION
NON ZERO DOWNLOADS IN AUDBOOKS

Subtract all SCIFI from MYGENRES

```
SELECT * FROM MYGENRES  
EXCEPT  
SELECT * FROM SCIFI
```

Number of columns not consistent.

```
SELECT BOOKID,BOOK,DURATION,  
       AUTHOR, PRICE,DOWNLOADS  
FROM   MYGENRES  
EXCEPT  
SELECT * FROM SCIFI
```

BOOKID	BOOK	DURATION	AUTHOR	PRICE	DOWNLOADS
47	What Is the What	21:15:02	Dave Eggers	18.99	0
112	The Kite Runner (Unabridge	12:11:59	Khaled Hosseini	17.99	0
51	First Family	14:32:12	David Baldacci	17.99	0
10	The White Tiger	08:06:12	Aravind Adiga	15.99	0
113	Spud (Unabridged)	14:39:07	John van de Ruit	14.99	0
80	The Snows of Kilimanjaro	04:43:00	Ernest Hemingway	15.99	0

Show the following:

TABLES	TOTALS
TOTAL BOOKS IN MYGENRES	39
TOTAL BOOKS IN SCIFI	33
TOTAL BOOKS IN MYGENRES - SCIFI	6

```
SELECT      'TOTAL BOOKS IN SCIFI',
            COUNT(*)
FROM        SCIFI
UNION ALL
SELECT      'TOTAL BOOKS IN MYGENRES - SCIFI',
            COUNT(*)
FROM
    (SELECT BOOKID, BOOK
     FROM   MYGENRES
     EXCEPT
     SELECT BOOKID, BOOK
     FROM   SCIFI)
```

Information on AUDBOOKS

Genre

TOTALGENRE

7

```
SELECT COUNT(DISTINCT GENRE) TOTALGENRE
FROM   AUDBOOKS
```

GENRE

Fiction

Historical Fiction

Comedy

Sci Fi/Fantasy

Non Fiction

Biography

Thriller/Mystery

Done: 7 rows retrieved.

```
SELECT DISTINCT GENRE
FROM   AUDBOOKS
```

- BONUS in SENECA TECH is null capable and numeric

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1 SET SCHEMA DBS311W24;

EMPNO	FIRSTNME	LASTNAME	HIREDATE	JOB	SALARY	BONUS
000010	CHRISTINE	HAAS	1985-01-01	PRES	72750.00	1000.00
000020	MICHAEL	THOMPSON	1993-10-10	MANAGER	61250.00	800.00
000030	SALLY	KWAN	1995-04-05	MANAGER	58250.00	800.00
000050	JOHN	GEYER	1969-08-17	MANAGER	60175.00	800.00
000060	IRVING	STERN	1993-09-14	MANAGER	52250.00	500.00
000070	EVA	PULASKI	2000-09-30	MANAGER	56170.00	700.00
000090	EILEEN	HENDERSON	1990-08-15	MANAGER	49750.00	600.00
000100	THEODORE	SPENSER	2000-06-19	MANAGER	46150.00	-
000110	VICENZO	LUCCHESI	1978-05-16	SALESREP	66500.00	900.00
000120	SEAN	O'CONNELL	1983-12-05	CLERK	49250.00	600.00
000130	DELORES	QUINTANA	1991-07-28	ANALYST	43800.00	500.00
000140	HEATHER	NICHOLLS	1996-12-15	ANALYST	48420.00	600.00
000150	BRUCE	ADAMSON	1992-02-12	DESIGNER	45280.00	500.00
000160	ELIZABETH	PIANKA	1997-10-11	DESIGNER	42250.00	400.00
000170	MASATOSHI	YOSHIMURA	1998-09-15	DESIGNER	44680.00	500.00
000180	MARILYN	SCOUTTEN	1993-07-07	DESIGNER	41340.00	-
000190	JAMES	WALKER	1994-07-26	DESIGNER	40450.00	400.00
000200	DAVID	BROWN	1986-03-03	DESIGNER	47740.00	600.00
000210	WILLIAM	JONES	1999-04-11	DESIGNER	38270.00	-
000220	JENNIFER	LUTZ	1988-08-29	DESIGNER	49840.00	600.00

Done: 42 rows retrieved.

Messages SELECT * FROM SENECA TECH

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- Produce the following with an SQL statement referring to SENECA TECH

EMPNO	FULLNAME	HIREDATE	JOB	SALARY	BONUS	TOTAL
000010	CHRISTINE HAAS	1985-01-01	PRES	72750.00	1000.00	73750.00
000020	MICHAEL THOMPSON	1993-10-10	MANAGER	61250.00	800.00	62050.00
000030	SALLY KWAN	1995-04-05	MANAGER	58250.00	800.00	59050.00
000050	JOHN GEYER	1969-08-17	MANAGER	60175.00	800.00	60975.00
000060	IRVING STERN	1993-09-14	MANAGER	52250.00	500.00	52750.00
000070	EVA PULASKI	2000-09-30	MANAGER	56170.00	700.00	56870.00
000090	EILEEN HENDERSON	1990-08-15	MANAGER	49750.00	600.00	50350.00
000100	THEODORE SPENSER	2000-06-19	MANAGER	46150.00	NO VALUE	46150.00
000110	VICENZO LUCCHESI	1978-05-16	SALESREP	66500.00	900.00	67400.00
000120	SEAN O'CONNELL	1983-12-05	CLERK	49250.00	600.00	49850.00
000130	DELORES QUINTANA	1991-07-28	ANALYST	43800.00	500.00	44300.00
000140	HEATHER NICHOLLS	1996-12-15	ANALYST	48420.00	600.00	49020.00
000150	BRUCE ADAMSON	1992-02-12	DESIGNER	45280.00	500.00	45780.00
000160	ELIZABETH PIANKA	1997-10-11	DESIGNER	42250.00	400.00	42650.00
000170	MASATOSHI YOSHIMURA	1998-09-15	DESIGNER	44680.00	500.00	45180.00
000180	MARILYN SCOUTTEN	1993-07-07	DESIGNER	41340.00	NO VALUE	41340.00
000190	JAMES WALKER	1994-07-26	DESIGNER	40450.00	400.00	40850.00
000200	DAVID BROWN	1986-03-03	DESIGNER	47740.00	600.00	48340.00
000210	WILLIAM JONES	1999-04-11	DESIGNER	38270.00	NO VALUE	38270.00

SOLUTION

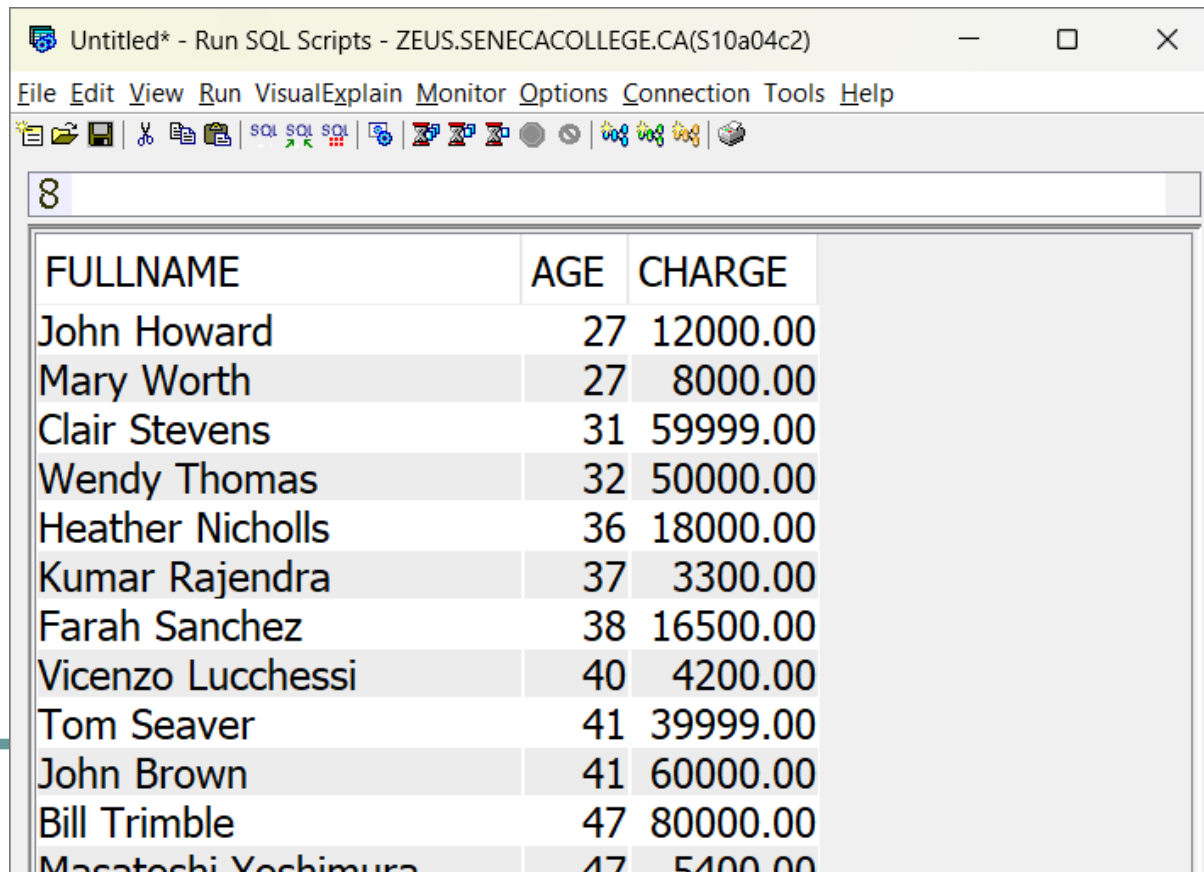
```
SELECT EMPNO,  
       TRIM(FIRSTNME) || ' ' || LASTNAME FULLNAME,  
       HIREDATE, JOB, SALARY,  
       NVL(CAST(BONUS AS CHAR(10)), 'NO VALUE') BONUS,  
       SALARY + NVL(BONUS,0) TOTAL  
FROM   SENECA TECH  
SELECT statement run complete.
```

- in class exercise PATIENT6
- Who paid less than the lowest charge for the youngest patient.

PATIENTNO	FIRSTNAME	LASTNAME	PINSURNUM	BIRTHDATE	CHARGE
123	Karen	Wong	555	12/25/67	6,000.00
456	Bill	Trimble	666	07/01/78	80,000.00
789	Tom	Seaver	888	02/22/84	39,999.00
246	John	Howard	444	04/15/98	12,000.00
333	Mandy	Suarez	444	11/25/77	3,200.00
555	Kumar	Rajendra	222	04/04/88	3,300.00
777	Wendy	Thomas	222	01/24/93	50,000.00
888	Casey	Stengal	111	02/18/66	44,000.00
999	Ted	Mendez	111	11/11/68	2,200.00
321	Mary	Worth	666	04/15/98	8,000.00
432	Jerry	Lowell	888	04/30/61	5,999.00
654	Wei	Tsung	444	05/15/77	900.00
543	Farah	Sanchez	999	11/24/87	16,500.00
654	John	Brown	777	04/02/84	60,000.00
987	Clair	Stevens	111	01/22/94	59,999.00
642	Eva	Pulaski	222	05/15/77	10,000.00
694	Delores	Quintana	333	12/12/67	4,400.00
473	Masatoshi	Yoshimura	999	12/13/78	5,400.00
403	Bruce	Adamson	444	02/24/73	50,000.00

Problem

- Who paid less than the lowest charge for the youngest patient – sort by age/charge



The screenshot shows a window titled "Untitled* - Run SQL Scripts - ZEUS.SENECACOLLEGE.CA(S10a04c2)". The window contains a table with three columns: FULLNAME, AGE, and CHARGE. The table is sorted by age and then by charge. The data is as follows:

FULLNAME	AGE	CHARGE
John Howard	27	12000.00
Mary Worth	27	8000.00
Clair Stevens	31	59999.00
Wendy Thomas	32	50000.00
Heather Nicholls	36	18000.00
Kumar Rajendra	37	3300.00
Farah Sanchez	38	16500.00
Vicenzo Lucchessi	40	4200.00
Tom Seaver	41	39999.00
John Brown	41	60000.00
Bill Trimble	47	80000.00
Macatoschi Yochimura	47	5400.00

Problem

- These patients paid less than the lowest charge for the youngest patient.

FULLNAME	AGE	CHARGE
Karen Wong	58	6000.00
Mandy Suarez	48	3200.00
Kumar Rajendra	37	3300.00
Ted Mendez	57	2200.00
Jerry Lowell	64	5999.00
Wei Tsung	48	900.00
Delores Quintana	58	4400.00
Masatoshi Yoshimura	47	5400.00
Vicenzo Lucchessi	40	4200.00

Row 9 rows retrieved

Solution

```
SELECT TRIM(FIRSTNAME) || ' ' || LASTNAME FULLNAME,  
       YEAR(CURRENT DATE) - YEAR(BIRTHDATE) AGE,  
       CHARGE  
FROM   PATIENT6  
WHERE  CHARGE < (SELECT CHARGE  
                  FROM   PATIENT6  
                  WHERE  YEAR(CURRENT DATE) - YEAR(BIRTHDATE) =  
                        (SELECT MIN(YEAR(CURRENT DATE) -  
                                   YEAR(BIRTHDATE))  
                         FROM PATIENT6 )  
                  ORDER BY YEAR(CURRENT DATE) - YEAR(BIRTHDATE) ,  
                           CHARGE  
                  FETCH  FIRST ROW ONLY)
```

Assignment 1 Due Next Week

- Text based file by email before the deadline.
- Only one submission per group
- Wednesday, Oct 8 at 9:00 AM
- At 9:01 AM it is late
- Each member should make sure they understand the parts they did not work on