```
11
12
     -- Scalar Subqueries
13
14
15
     -- Order with the maximum order ID
16
17
18
    USE TSQLV4;
19
     DECLARE @maxid AS INT = (SELECT MAX(orderid)
20
21
     FROM Sales.Orders);
22
23
     SELECT orderid, orderdate, empid, custid
24
     FROM Sales.Orders
     WHERE orderid = @maxid;
25
26
27
28
     SELECT orderid, orderdate, empid, custid
29
     FROM Sales.Orders
     WHERE orderid = (SELECT MAX(0.orderid)
30
31
      FROM Sales.Orders AS 0);
32
33
     -- PREDICATE: view table of orderid, orderdate, empid, and custid for just the max/highest order ID
34
35
     USE Northwinds2022TSQLV7;
36
     DECLARE @maxid AS INT = (SELECT MAX(orderid)
37
38
     FROM Sales.[Order]);
39
     SELECT orderid, orderdate, EmployeeId, CustomerId
40
     FROM Sales.[Order]
41
42
     WHERE orderid = @maxid;
43
44
45
     SELECT orderid, orderdate, EmployeeId, CustomerId
     FROM Sales.[Order]
46
     WHERE orderid = (SELECT MAX(0.orderid)
47
48
      FROM Sales.[Order] AS 0);
49
```

	orderid	~	orderdate	~	empid	~	custid	~
1	11077		2016-05-06		1		65	

	orderid	~	orderdate	~	empid	~	custid	~
1	11077		2016-05-06		1		65	

	orderid 🗸	orderdate 🗸	EmployeeId 🗸	CustomerId 🗸
1	11077	2016-05-06	1	65

	orderid 🗸	orderdate \	✓ EmployeeId	~	CustomerId	~
1	11077	2016-05-06	1		65	

```
52
      -- Scalar subquery expected to return one value
 53
      USE TSQLV4;
 54
 55
 56
      SELECT orderid
 57
      FROM Sales.Orders
 58
      WHERE empid =
 59
       (SELECT E.empid
 60
        FROM HR. Employees AS E
         WHERE E.lastname LIKE N'C%');
 61
 62
      GO
 63
 64
      -- BUG Subguery returned more than 1 value
 65
 66
      -- SELECT orderid
 67
      -- FROM Sales.Orders
 68
      -- WHERE empid =
 69
           (SELECT E.empid
 70
            FROM HR. Employees AS E
 71
            WHERE E.lastname LIKE N'D%');
 72
      -- G0
 73
 74
      SELECT orderid
 75
      FROM Sales.Orders
 76
      WHERE empid =
 77
        (SELECT E.empid
 78
         FROM HR. Employees AS E
 79
         WHERE E.lastname LIKE N'A%');
 80
 81
      -- PREDICATE: orders placed by employees whose last name starts with the letter C
 82
 83
      USE Northwinds2022TSQLV7;
 84
      SELECT orderid
 86
      FROM Sales.[Order]
      WHERE EmployeeId =
 87
 88
        (SELECT E.EmployeeId
 89
         FROM HumanResources. Employee AS E
 90
         WHERE E.EmployeeLastName LIKE N'C%');
 91
      GO
 93
      -- PREDICATE: orders placed by employees whose last name starts with the letter D
 94
      -- BUG Subquery returned more than 1 value
 95
 96
      -- SELECT orderid
      -- FROM Sales.[Order]
 97
 98
      -- WHERE EmployeeId =
 99
           (SELECT E.EmployeeId
            FROM HumanResources.Employee AS E
100
            WHERE E.EmployeeLastName LIKE N'D%');
101
      -- GO
103
104
      -- PREDICATE: orders placed by employees whose last name starts with the letter A
105
106
      SELECT orderid
      FROM Sales.[Order]
107
108
      WHERE EmployeeId =
109
        (SELECT E.EmployeeId
110
         FROM HumanResources. Employee AS E
111
         WHERE E.EmployeeLastName LIKE N'A%');
112
```

Resu	lts	Mes	sages
	ord	erid	~
1	10	262	

1	10262
2	10268
3	10276
4	10278
5	10279
6	10286
7	10287
8	10290
9	10301
10	10305

orderid

	orderid	~				
1	10262					
2	10268					
3	10276					
4	10278					
5	10279					
6	10286					
7	10287					
8	10290					
9	10301					
10	10305					
C	orderid					

```
154
      USE TSQLV4;
155
      SELECT orderid
156
      FROM Sales.Orders
157
158
      WHERE empid IN
159
        (SELECT E.empid
160
         FROM HR. Employees AS E
         WHERE E.lastname LIKE N'D%');
161
162
163
164
      USE Northwinds2022TSQLV7;
165
166
      -- Predicate: orders placed by employees with a last name starting with D
167
168
      SELECT orderid
      FROM Sales.[Order]
169
170
      WHERE EmployeeId IN
171
        (SELECT E.EmployeeId
         FROM HumanResources.Employee AS E
172
         WHERE E.EmployeeLastName LIKE N'D%');
173
174
```

Results	Messages

	orderid 🗸
1	10258
2	10270
3	10275
4	10285
5	10292
6	10293
7	10304
8	10306
9	10311
10	10314
11	10316
12	10325
13	10340
14	10351
15	10357
	orderid 🗸
1	orderid $\checkmark$
1 2	
	10255
2	10255 10258
2	10255 10258 10263
2 3 4	10255 10258 10263 10270
2 3 4 5	10255 10258 10263 10270 10275
2 3 4 5	10255 10258 10263 10270 10275 10285
2 3 4 5 6 7	10255 10258 10263 10270 10275 10285 10292
2 3 4 5 6 7 8	10255 10258 10263 10270 10275 10285 10292 10293
2 3 4 5 6 7 8	10255 10258 10263 10270 10275 10285 10292 10293 10304
2 3 4 5 6 7 8 9 10	10255 10258 10263 10270 10275 10285 10292 10293 10304 10306
2 3 4 5 6 7 8 9 10 11	10255 10258 10263 10270 10275 10285 10292 10293 10304 10306 10311
2 3 4 5 6 7 8 9 10 11	10255 10258 10263 10270 10275 10285 10292 10293 10304 10306 10311 10314

```
176
      USE TSQLV4;
177
178
      SELECT 0.orderid
179
      FROM HR. Employees AS E
        INNER JOIN Sales.Orders AS 0
180
181
          ON E.empid = 0.empid
182
      WHERE E.lastname LIKE N'D%';
183
184
      -- Predicate: orders placed by employees with a last name starting with D
185
186
      USE Northwinds2022TSQLV7;
187
188
      SELECT 0.orderid
189
      FROM HumanResources. Employee AS E
190
        INNER JOIN Sales.[Order] AS 0
191
          ON E.EmployeeId = 0.EmployeeId
      WHERE E.EmployeeLastName LIKE N'D%';
192
193
```

Results	Messages
orde	erid 🗸

	orderid 🗸
1	10258
2	10270
3	10275
4	10285
5	10292
6	10293
7	10304
8	10306
9	10311
10	10314
11	10316
12	10325
	orderid 🗸
1	orderid $\checkmark$
1 2	
	10255
2	10255 10258
2	10255 10258 10263
2 3 4	10255 10258 10263 10270
2 3 4 5	10255 10258 10263 10270 10275
2 3 4 5	10255 10258 10263 10270 10275 10285
2 3 4 5 6 7	10255 10258 10263 10270 10275 10285 10292
2 3 4 5 6 7 8	10255 10258 10263 10270 10275 10285 10292 10293
2 3 4 5 6 7 8	10255 10258 10263 10270 10275 10285 10292 10293 10304
2 3 4 5 6 7 8 9	10255 10258 10263 10270 10275 10285 10292 10293 10304 10306

```
USE TSQLV4;
187
188
      -- Orders placed by US customers
189
      SELECT custid, orderid, orderdate, empid
190
      FROM Sales.Orders
191
      WHERE custid IN
192
        (SELECT C.custid
193
         FROM Sales.Customers AS C
194
195
         WHERE C.country = N'USA');
196
197
      -- Predicate: Orders placed by US customers
198
199
      USE Northwinds2022TSQLV7;
200
      SELECT CustomerId, orderid, orderdate, EmployeeId
201
202
      FROM Sales.[Order]
203
      WHERE CustomerId IN
        (SELECT C.CustomerId
204
         FROM Sales.Customer AS C
205
         WHERE C.CustomerCountry = N'USA');
206
207
```

	custid 🗸	ord	erid 🗸	ord	erdate 🗸	emp	id 🗸	•	
1	65	102	262	201	L4-07-22	8			
2	89	102	269	201	L4-07-31	5			
3	75	102	271	201	L4-08-01	6			
4	65	102	272	201	L4-08-02	6			
5	65	102	294	201	L4-08-30	4			
6	55	103	305	201	14-09-13	8			
7	48	103	307	201	14-09-17	2			
8	77	103	310	201	L4-09-20	8			
9	65	103	314	201	L4-09-25	1			
10	65	103	316	201	L4-09-27	1			
11	48	103	317	201	L4-09-30	6			
12	71	103	324	201	L4-10-08	9			
	CustomerId	~	orderid	~	orderdate	~	Emplo	yeeId	~
1	65		10262		2014-07-22	2	8		
2	89								
			10269		2014-07-31	L	5		
3	75		10269 10271		2014-07-31 2014-08-01		5 6		
4	75 65		4			L			
			10271		2014-08-01	L 2	6		
4	65		10271 10272		2014-08-01 2014-08-02	2	6		
5	65 65		10271 10272 10294		2014-08-01 2014-08-02 2014-08-30	2	6 6 4		
4 5 6	65 65 55		10271 10272 10294 10305		2014-08-01 2014-08-02 2014-08-30 2014-09-13	2	6 6 4 8		
4 5 6 7	65 65 55 48		10271 10272 10294 10305 10307		2014-08-01 2014-08-02 2014-08-30 2014-09-13 2014-09-17	3	6 6 4 8 2		

2014-09-30

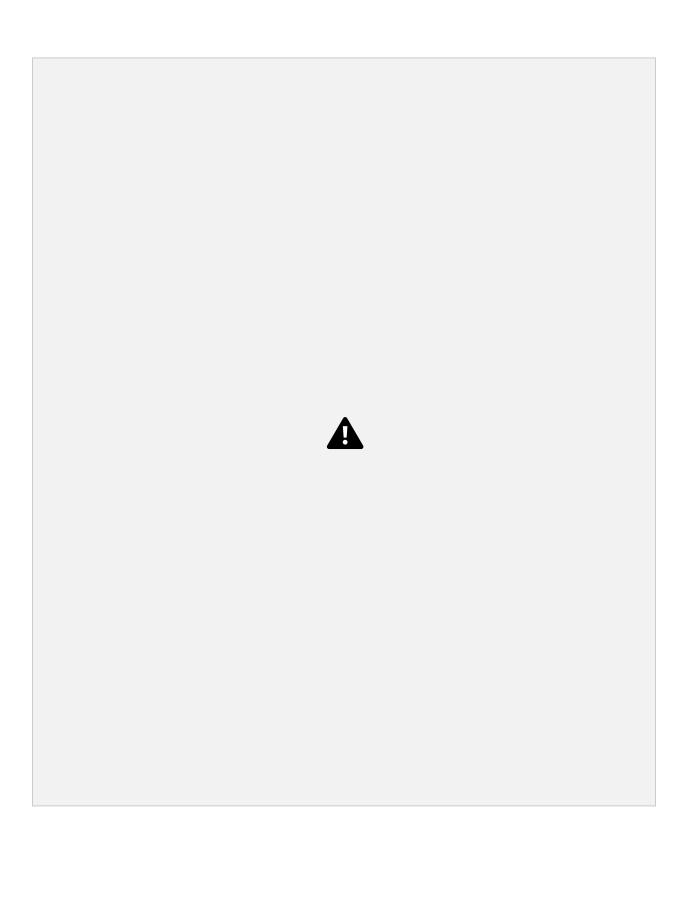
```
207
      USE TSQLV4;
208
209
     -- Customers who placed no orders
      SELECT custid, companyname
210
211
     FROM Sales.Customers
212
      WHERE custid NOT IN
213
        (SELECT 0.custid
214
        FROM Sales.Orders AS 0);
215
216
      -- Predicate: Customers who placed no orders
      USE Northwinds2022TSQLV7;
217
218
219
      SELECT CustomerId, CustomerCompanyName
      FROM Sales Customer
220
221
      WHERE CustomerId NOT IN
222
        (SELECT O.CustomerId
        FROM Sales.[Order] AS 0);
223
224
225
226
```

	custid	~	companyname 🗸
1	22		Customer DTDMN
2	57		Customer WVAXS

	CustomerId	~	CustomerCompanyName	~
1	22		Customer DTDMN	
2	57		Customer WVAXS	

```
206
      USe TSQLV4;
207
208
      -- Missing order IDs
209
      USE TSQLV4;
210
      DROP TABLE IF EXISTS dbo.Orders;
211
      CREATE TABLE dbo.Orders(orderid INT NOT NULL CONSTRAINT PK_Orders PRIMARY KEY);
212
213
      INSERT INTO dbo.Orders(orderid)
214
       SELECT orderid
215
        FROM Sales.Orders
        WHERE orderid % 2 = 0;
216
217
218
      SELECT n
      FROM dbo.Nums
219
220
      WHERE n BETWEEN (SELECT MIN(0.orderid) FROM dbo.Orders AS 0)
221
          AND (SELECT MAX(0.orderid) FROM dbo.Orders AS 0)
222
        AND n NOT IN (SELECT 0.orderid FROM dbo.Orders AS 0);
223
224
      -- CLeanup
      -- DROP TABLE IF EXISTS dbo.Orders;
225
226
227
      -- Predicate: Missing order IDs
228
      USE Northwinds2022TSQLV7;
229
      DROP TABLE IF EXISTS dbo.Orders;
230
      CREATE TABLE dbo.Orders(orderid INT NOT NULL CONSTRAINT PK_Orders PRIMARY KEY);
231
232
     INSERT INTO dbo.Orders(orderid)
233
        SELECT orderid
234
        FROM Sales.[Order]
235
       WHERE orderid % 2 = 0;
236
237
      SELECT n
238
      FROM dbo.Nums
      WHERE n BETWEEN (SELECT MIN(0.orderid) FROM dbo.Orders AS 0)
239
240
                 AND (SELECT MAX(0.orderid) FROM dbo.Orders AS 0)
241
        AND n NOT IN (SELECT 0.orderid FROM dbo.Orders AS 0);
242
      -- Cleanup
243
244
      -- DROP TABLE IF EXISTS dbo.Orders;
245
```

	n	~
1	10	249
2	10	251
3	10	253
4	10	255
5	10	257
6	10	259
7	10	261
8	10	263
9	10	265
10	10	267
11	10	269
12	10	271
13	10	273
14	10	275
15	10	277
	n	~
1		249
1 2	10	249 251
	10	
2	10 10 10	251
3	10 10 10	251 253
3 4	10 10 10 10	251 253 255 257 259
2 3 4 5	10 10 10 10 10	251 253 255 257 259
2 3 4 5 6	10 10 10 10 10 10	251 253 255 257 259
2 3 4 5 6 7	10 10 10 10 10 10	251 253 255 257 259
2 3 4 5 6 7 8	100 100 100 100 100 100 100 100 100 100	251 253 255 257 259
2 3 4 5 6 7 8	10 10 10 10 10 10 10 10 10 10 10 10 10	251 253 255 257 259
2 3 4 5 6 7 8 9 10	10 10 10 10 10 10 10 10 10 10 10 10 10 1	251 253 255 257 259
2 3 4 5 6 7 8 9 10 11	100 100 100 100 100 100 100 100 100 100	251 253 255 257 259
2 3 4 5 6 7 8 9 10 11 12	100 100 100 100 100 100 100 100 100 100	251 253 255 257 259 261 263 265 267 269 271



Resu	Results Messages							
	custid 🗸	orderid 🗸	orderdate 🗸	empid 🗸				
1	91	11044	2016-04-23	4				
2	90	11005	2016-04-07	2				
3	89	11066	2016-05-01	7				
4	88	10935	2016-03-09	4				
5	87	11025	2016-04-15	6				
6	86	11046	2016-04-23	8				
7	85	10739	2015-11-12	3				
8	84	10850	2016-01-23	1				
9	83	10994	2016-04-02	2				
10	82	10822	2016-01-08	6				
	(No column r	name) 🗸	:	:				

	orderid 🗸	cu	stid	~	val	~	pct	~
1	10643	1			814	1.50	19.0	96
2	10692	1			878	8.00	20.5	55
3	10702	1			330	0.00	7.72	2
4	10835	1			845	80	19.7	79
5	10952	1			471	L.20	11.6	93
6	11011	1			933	3.50	21.8	35
7	10308	2			88.	80	6.33	3
8	10625	2			479	75	34.2	20
9	10759	2			320	00.0	22.8	31
10	10926	2			514	1.40	36.6	57
	CustomerId	~	orderi	ld	~	orde	rdate	~
1	91		11044			2016	5-04-2	23
2	90		11005		2016-04-07		97	
3	89		11066			2016	5-05-0	)1

	CustomerId ~	orderid 🗸	orderdate 🗸	EmployeeId ~
1	91	11044	2016-04-23	4
2	90	11005	2016-04-07	2
3	89	11066	2016-05-01	7
4	88	10935	2016-03-09	4
5	87	11025	2016-04-15	6
6	86	11046	2016-04-23	8
7	85	10739	2015-11-12	3
8	84	10850	2016-01-23	1
9	83	10994	2016-04-02	2
10	82	10822	2016-01-08	6

	(No column name)	~
1	10739	

```
299
300
      USE TSQLV4;
301
      -- Customers from Spain who placed orders
302
      SELECT custid, companyname
303
      FROM Sales.Customers AS C
304
      WHERE country = N'Spain'
305
        AND EXISTS
306
          (SELECT * FROM Sales.Orders AS 0
307
          WHERE 0.custid = C.custid);
308
       -- Customers from Spain who didn't place Orders
309
      SELECT custid, companyname
310
311
      FROM Sales.Customers AS C
312
      WHERE country = N'Spain'
313
        AND NOT EXISTS
314
          (SELECT * FROM Sales.Orders AS 0
315
          WHERE 0.custid = C.custid);
316
317
      USE Northwinds2022TSQLV7;
318
319
      -- Predicate: Customers from Spain who placed orders
320
     SELECT CustomerId, CustomerCompanyName
321
      FROM Sales.Customer AS C
322
      WHERE CustomerCountry = N'Spain'
323
        AND EXISTS
324
          (SELECT * FROM Sales.[Order] AS 0
325
           WHERE 0.CustomerId = C.CustomerId);
326
      -- Predicate: Customers from Spain who didn't place Orders
327
      SELECT CustomerId, CustomerCompanyName
328
329
      FROM Sales.Customer AS C
330
      WHERE CustomerCountry = N'Spain'
331
        AND NOT EXISTS
          (SELECT * FROM Sales.[Order] AS 0
332
333
          WHERE 0.CustomerId = C.CustomerId);
334
335
336
```

	custid 🗸	companyname 🗸
1	8	Customer QUHWH
2	29	Customer MDLWA
3	30	Customer KSLQF
4	69	Customer SIUIH

	custid	~	companyname 🗸
1	22		Customer DTDMN

	CustomerId ✓	CustomerCompanyName ∨
1	8	Customer QUHWH
2	29	Customer MDLWA
3	30	Customer KSLQF
4	69	Customer SIUIH

	CustomerId	~	CustomerCompanyName	~
1	22		Customer DTDMN	

```
341
342
      -- Returning "Previous" or "Next" Value
343
344
     USE TSQLV4;
345
346
347
     SELECT orderid, orderdate, empid, custid,
348
       (SELECT MAX(02.orderid)
349
        FROM Sales.Orders AS 02
350
        WHERE 02.orderid < 01.orderid) AS prevorderid
351
     FROM Sales.Orders AS 01;
352
353
     SELECT orderid, orderdate, empid, custid,
354
      (SELECT MIN(02.orderid)
355
       FROM Sales.Orders AS 02
        WHERE 02.orderid > 01.orderid) AS nextorderid
     FROM Sales.Orders AS 01;
357
358
359
360
     USE Northwinds2022TSQLV7;
361
      -- Predicate: for each order, information about the current order and also the previous order ID
363
364
     SELECT orderid, orderdate, EmployeeId, CustomerId,
365
      (SELECT MAX(02.orderid)
       FROM Sales.[Order] AS 02
366
367
        WHERE 02.orderid < 01.orderid) AS prevorderid
    FROM Sales.[Order] AS 01;
369
370
     -- Predicate: for each order, information about the current order and also the next order ID
371
372
     SELECT orderid, orderdate, EmployeeId, CustomerId,
373
       (SELECT MIN(02.orderid)
374
        FROM Sales.[Order] AS 02
        WHERE 02.orderid > 01.orderid) AS nextorderid
375
376
     FROM Sales.[Order] AS 01;
377
```

Resu	ılts Mes	sage	s									
	orderid	~	orderdate	~	empid 🗸	cus	tid	~	prevorde	rid 🗸		
1	10248		2014-07-04		5	85			NULL			
2	10249		2014-07-05		6	79			10248			
3	10250		2014-07-08		4	34			10249			
4	10251		2014-07-08		3	84			10250			
5	10252		2014-07-09		4	76			10251			
6	10253		2014-07-10		3	34			10252			
7	10254		2014-07-11		5	14			10253			
8	10255		2014-07-12		9	68			10254			
9	10256		2014-07-15		3	88			10255			
10	10257		2014-07-16		4	35			10256			
	orderid	~	orderdate	~	empid 🗸	cus	tid	~	nextorde	rid 🗸		
1	10248		2014-07-04		5	85			10249			
2	10249		2014-07-05		6	79			10250			
3	10250		2014-07-08		4	34			10251			
4	10251		2014-07-08		3	84			10252			
5	10252		2014-07-09		4	76			10253			
6	10253		2014-07-10		3	34			10254			
7	10254		2014-07-11		5	14			10255			
8	10255		2014-07-12		9	68			10256			
9	10256		2014-07-15		3	88			10257			
10	10257		2014-07-16		4	35			10258			
	orderid	~	orderdate	~	EmployeeI	d ~	Cu	ıstome	erId 🗸	prevorde	erid	~
1	10248		2014-07-04		5		8	5		NULL		
2	10249		2014-07-05		6		7	9		10248		
3	10250		2014-07-08		4		3	4		10249		
4	10251		2014-07-08		3		8	4		10250		
5	10252		2014-07-09		4		7	6		10251		
6	10253		2014-07-10		3		3	4		10252		
7	10254		2014-07-11		5		1	4		10253		
8	10255		2014-07-12		9		6	8		10254		
9	10256		2014-07-15		3		8	8		10255		
10	10257		2014-07-16		4		3	5		10256		
	orderid	~	orderdate	~	EmployeeI	d ~	Cu	stome	erId 🗸	nextorde	erid	~
1	10248		2014-07-04		5		8	5		10249		
2	10249		2014-07-05		6		7	9		10250		
3	10250		2014-07-08		4		3	4		10251		
4	10251		2014-07-08		3		8	4		10252		
5	10252		2014-07-09		4		7	6		10253		
6	10253		2014-07-10		3		3	4		10254		
7	10254		2014-07-11		5		1	4		10255		
8	10255		2014-07-12		9		6	8		10256		
9	10256		2014-07-15		3		8	8		10257		
10	10257		2014-07-16		4		3	5		10258		

```
-- Running Aggregates
USE TSQLV4;
G0
SELECT orderyear, qty
FROM Sales.OrderTotalsByYear;
SELECT orderyear, qty,
  (SELECT SUM(02.qty)
  FROM Sales.OrderTotalsByYear AS 02
  WHERE 02.orderyear <= 01.orderyear) AS runqty</pre>
FROM Sales.OrderTotalsByYear AS 01
ORDER BY orderyear;
-- USE Northwinds2022TSQLV7;
-- GO
-- SELECT orderyear, qty
-- FROM Sales.OrderTotalsByYear;
-- SELECT orderyear, qty,
-- (SELECT SUM(02.qty)
     FROM Sales.OrderTotalsByYear AS 02
-- WHERE 02.orderyear <= 01.orderyear) AS runqty
-- FROM Sales.OrderTotalsByYear AS 01
-- ORDER BY orderyear;
```

	orderyear	~	qty	~
1	2016		1624	<b>1</b> 7
2	2014		9581	L
3	2015		2548	39

	orderyear 🗸	qty 🗸	runqty 🗸
1	2014	9581	9581
2	2015	25489	35070
3	2016	16247	51317

```
453
        (SELECT *
454
         FROM Sales.Orders AS 0
455
        WHERE 0.custid = C.custid);
456
457
      -- Cleanup
      DELETE FROM Sales.Orders WHERE custid IS NULL;
458
459
      GO
460
461
462
      USE Northwinds2022TSQLV7;
463
      -- Predicate: customers who did not place any orders
464
465
466
      SELECT CustomerId, CustomerCompanyName
467
      FROM Sales.Customer
      WHERE CustomerId NOT IN(SELECT O.CustomerId
468
469
        FROM Sales.[Order] AS 0);
470
471
       -- Predicate: Add a row to the Orders table with a NULL custid
472
      INSERT INTO Sales.[Order]
473
        (CustomerId, EmployeeId, orderdate, RequiredDate, ShipToDate, shipperid,
474
        freight, ShipToName, ShipToAddress, ShipToCity, ShipToRegion,
475
        ShipToPostalCode, ShipToCountry)
476
        VALUES(NULL, 1, '20160212', '20160212',
477
               '20160212', 1, 123.00, N'abc', N'abc', N'abc',
478
              N'abc', N'abc', N'abc');
479
      --Predicate: returns an empty set because we're asking to return customerIds that are not in the Sales.Order table
480
481
      SELECT CustomerId, CustomerCompanyName
482
      FROM Sales.Customer
483
      WHERE CustomerId NOT IN(SELECT O.CustomerId
             FROM Sales.[Order] AS 0);
484
485
486
      -- Predicate: Exclude NULLs explicitly/return customerIDs that are not in the Sales.Order table ie have not placed an order
487
      SELECT CustomerId, CustomerCompanyName
488
      FROM Sales.Customer
489
      WHERE CustomerId NOT IN(SELECT O.CustomerId
                         FROM Sales.[Order] AS 0
490
491
                         WHERE O.CustomerId IS NOT NULL);
492
493
      -- Predicate: Using NOT EXISTS to return customers that have not placed an order
494
      SELECT CustomerId, CustomerCompanyName
495
      FROM Sales.Customer AS C
      WHERE NOT EXISTS
496
497
       (SELECT *
498
         FROM Sales.[Order] AS 0
499
        WHERE 0.CustomerId = C.CustomerId);
500
501
502
     DELETE FROM Sales.[Order] WHERE CustomerId IS NULL;
503
504
```

	custid	~	companyname 🗸
1	22		Customer DTDMN
2	57		Customer WVAXS

custid	companyname

	custid	~	companyname ~
1	22		Customer DTDMN
2	57		Customer WVAXS

	custid	~	companyname 🗸
1	22		Customer DTDMN
2	57		Customer WVAXS

	CustomerId	~	CustomerCompanyName	~
1	22		Customer DTDMN	
2	57		Customer WVAXS	

	CustomerId	CustomerCompan
--	------------	----------------

	CustomerId	~	CustomerCompanyName	~
1	22		Customer DTDMN	
2	57		Customer WVAXS	

	CustomerId	~	CustomerCompanyName	~
1	22		Customer DTDMN	
2	57		Customer WVAXS	

```
560
      -- Create and populate table Sales.MyShippers
      USE Northwinds2022TSQLV7;
561
562
563
      DROP TABLE IF EXISTS Sales.MyShippers;
564
565
      CREATE TABLE Sales.MyShippers
566
567
        shipper_id INT
                                 NOT NULL,
        companyname NVARCHAR(40) NOT NULL,
568
569
                   NVARCHAR(24) NOT NULL,
570
        CONSTRAINT PK_MyShippers PRIMARY KEY(shipper_id)
571
572
573
      INSERT INTO Sales.MyShippers(shipper_id, companyname, phone)
574
        VALUES(1, N'Shipper GVSUA', N'(503) 555-0137'),
575
             (2, N'Shipper ETYNR', N'(425) 555-0136'),
576
          (3, N'Shipper ZHISN', N'(415) 555-0138');
      GO
577
578
579
      -- Shippers who shipped orders to customer 43
580
581
      -- -- Bug
582
      -- SELECT shipper_id, companyname
583
      -- FROM Sales.MyShippers
584
      -- WHERE shipper_id IN
585
      -- (SELECT shipper_id
586
            FROM Sales.[Order]
587
            WHERE CustomerId = 43);
588
      -- GO
589
590
      -- -- The safe way using aliases, bug identified
591
      -- SELECT shipper_id, companyname
592
      -- FROM Sales.MyShippers
593
      -- WHERE shipper_id IN
      -- (SELECT 0.shipper_id
594
595
            FROM Sales.[Order] AS 0
596
            WHERE 0.CustomerId = 43);
597
      -- GO
598
599
      -- Bug corrected
600
      SELECT shipper_id, companyname
601
      FROM Sales.MyShippers
602
      WHERE shipper_id IN
603
        (SELECT O.shipperid
604
         FROM Sales.[Order] AS 0
605
         WHERE 0.CustomerId = 43);
606
607
       -- Cleanup
608
      DROP TABLE IF EXISTS Sales.MyShippers;
609
```

Resu	ılts Messag	es		
	shipper_id	~	companyname 🗸	
1	2		Shipper ETYNR	
2	3		Shipper ZHISN	