

## BCI433 Lab 9 (Summer 2018)

### Lab objectives:

- Embed SQL statements in two RPGLE programs
- Provide related RPGLE code for the embedded SQL statements

### Requirements to pass the lab:

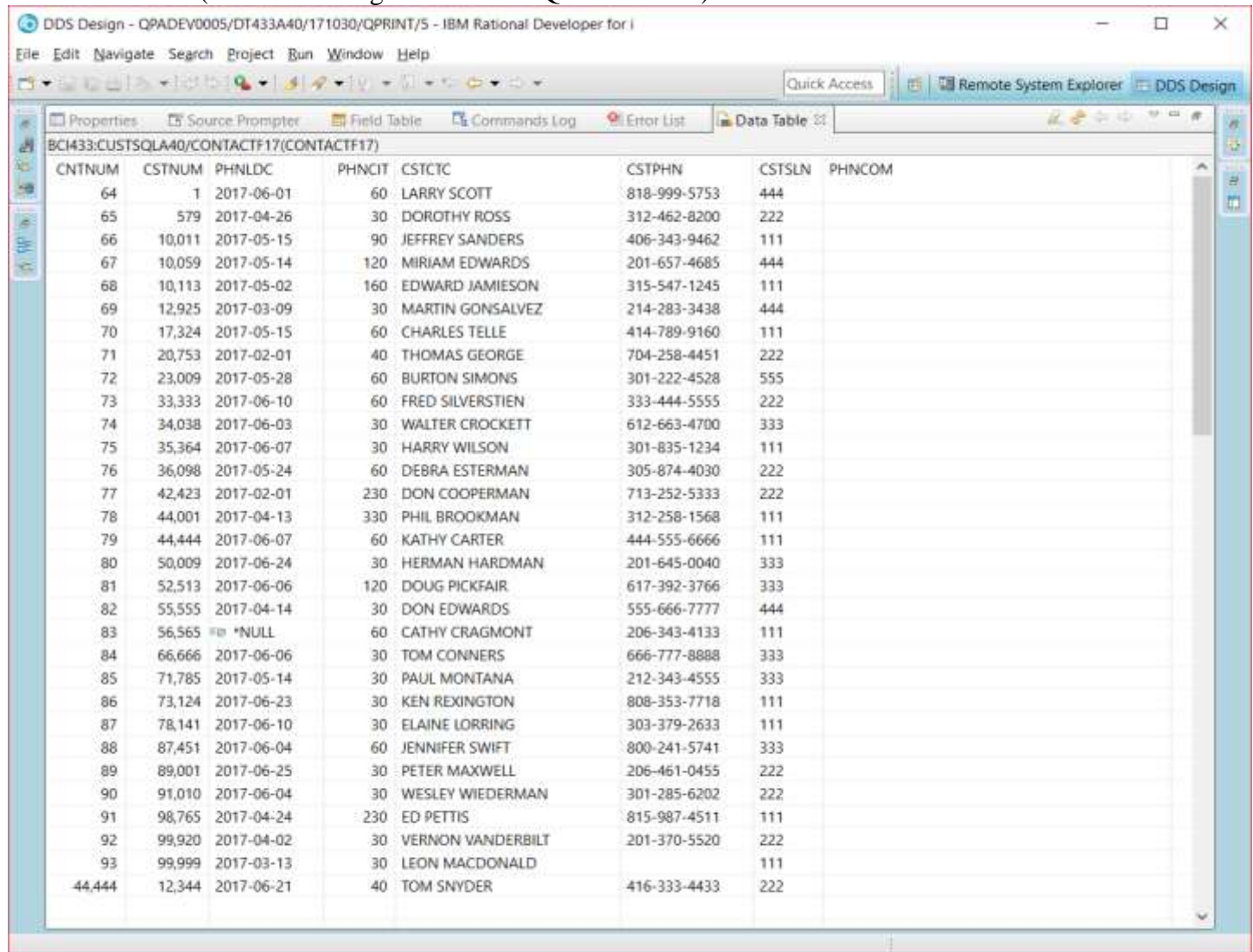
Successfully run the PhoneSQL program after copying supplied code and then adding the embedded SQL code and related RPGLE code that was given out in class.

Successfully run the ProvSQL SQL cursor program after copying supplied code and then adding the embedded SQL code and related RPGLE code that was given out in class.

## PhoneSQL

### Input:

CONTACTW18 (accessed through embedded SQL statements)



The screenshot shows the IBM Rational Developer for i interface. The 'Data Table' tab is active, displaying a table with 8 columns: CNTNUM, CSTNUM, PHNLDC, PHNCIT, CSTCTC, CSTPHN, CSTSLN, and PHNCOM. The table contains 33 rows of data, representing contact records. The data is as follows:

CNTNUM	CSTNUM	PHNLDC	PHNCIT	CSTCTC	CSTPHN	CSTSLN	PHNCOM
64	1	2017-06-01	60	LARRY SCOTT	818-999-5753	444	
65	579	2017-04-26	30	DOROTHY ROSS	312-462-8200	222	
66	10,011	2017-05-15	90	JEFFREY SANDERS	406-343-9462	111	
67	10,059	2017-05-14	120	MIRIAM EDWARDS	201-657-4685	444	
68	10,113	2017-05-02	160	EDWARD JAMIESON	315-547-1245	111	
69	12,925	2017-03-09	30	MARTIN GONSALVEZ	214-283-3438	444	
70	17,324	2017-05-15	60	CHARLES TELLE	414-789-9160	111	
71	20,753	2017-02-01	40	THOMAS GEORGE	704-258-4451	222	
72	23,009	2017-05-28	60	BURTON SIMONS	301-222-4528	555	
73	33,333	2017-06-10	60	FRED SILVERSTIEN	333-444-5555	222	
74	34,038	2017-06-03	30	WALTER CROCKETT	612-663-4700	333	
75	35,364	2017-06-07	30	HARRY WILSON	301-835-1234	111	
76	36,098	2017-05-24	60	DEBRA ESTERMAN	305-874-4030	222	
77	42,423	2017-02-01	230	DON COOPERMAN	713-252-5333	222	
78	44,001	2017-04-13	330	PHIL BROOKMAN	312-258-1568	111	
79	44,444	2017-06-07	60	KATHY CARTER	444-555-6666	111	
80	50,009	2017-06-24	30	HERMAN HARDMAN	201-645-0040	333	
81	52,513	2017-06-06	120	DOUG PICKFAIR	617-392-3766	333	
82	55,555	2017-04-14	30	DON EDWARDS	555-666-7777	444	
83	56,565	*NULL	60	CATHY CRAGMONT	206-343-4133	111	
84	66,666	2017-06-06	30	TOM CONNERS	666-777-8888	333	
85	71,785	2017-05-14	30	PAUL MONTANA	212-343-4555	333	
86	73,124	2017-06-23	30	KEN REXINGTON	808-353-7718	111	
87	78,141	2017-06-10	30	ELAINE LORRING	303-379-2633	111	
88	87,451	2017-06-04	60	JENNIFER SWIFT	800-241-5741	333	
89	89,001	2017-06-25	30	PETER MAXWELL	206-461-0455	222	
90	91,010	2017-06-04	30	WESLEY WIEDERMAN	301-285-6202	222	
91	98,765	2017-04-24	230	ED PETTIS	815-987-4511	111	
92	99,920	2017-04-02	30	VERNON VANDERBILT	201-370-5520	222	
93	99,999	2017-03-13	30	LEON MACDONALD		111	
44,444	12,344	2017-06-21	40	TOM SNYDER	416-333-4433	222	

## BCI433 Lab 9 (Summer 2018)

CUSTOMER18 (accessed by RPGLE read statement)

DDS Design - QPADEV0005/DT433A40/171030/QPRINT/5 - IBM Rational Developer for i

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Quick Access Remote System Explorer DDS Design

Properties Source Prompter Field Table Commands Log Error List Data Table

BCI433:CUSTSQLA40/CUSTOMER17(CUSTOMER17)

*RCDNBR	CSTNUM	CSTNAM	CSTADR	CSTPRV	PSTCDE	CSTCTY
1	1	WARLOCK SYSTEMS	176 QUEEN ST.	... ONTARIO	L3R4W2	TORONTO ...
2	579	QUEENSTON COMPANY	3309 KING BLVD.	... ONTARIO	T5R4Y7	MISSISSAUGA ...
3	10,011	BENSONS COMPUTER GROUP	22 ASHLEY AVE.	... ALBERTA	K6Y8R4	CALGARY ...
4	10,059	PANGBORN GRAPHICS	2625 MINEFIELD ROAD	... NEWFOUNDLAND	U7Y6T4	GANDER ...
5	10,113	HOPE ENTERPRISES	44 ST HELENE	... QUEBEC	Y6T5D4	MONTREAL ...
6	12,925	HIPTAX INC.	180 SEAFARE AVE.	... BC	T642L3	VANCOUVER ...
7	17,324	WASTEFULL SYSTEMS	2625 BLAKELOCK ROAD	... ALBERTA	R8Y6W3	EDMONTON ...
8	20,753	PETERSON SECURITY	P.O. BOX 6020	... MANITOBA	W3R5Q2	WINNIPEG ...
9	23,009	EMERALD DATA GROUP	BOX 240947	... ONTARIO	L542E4	OAKVILLE ...
10	34,038	YOUNGES SMALL SYSTEMS	P.O. BOX 3438	... NOVA SCOTIA	Y5T7R4	HALIFAX ...
11	35,364	CAPSTONE SOFTWARE	22 GROVE ST	... NEW BRUNSWICK	U6T5R3	MONCTON ...
12	36,098	GRAND GRAPHICS	120 RAYMOND ST	... ONTARIO	R4T5W3	THUNDER BAY ...
13	42,423	BROTHER COMPUTER SYSTEMS	88 PINE AVE.	... SASKATCHEWAN	T5R9J7	REGINA ...
14	44,001	AMANDA'S CONSULTING	OAK BLVD.	... ONTARIO	L3E5R6	KINGSTON ...
15	50,009	CATCHY PHRASES	228 WHITCOMB AVENUE	... NOVA SCOTIA	H4U3W6	SYDNEY ...
16	52,513	LIGHTFOOT INFORMATION	4312 KINGSMEER STREET	... ONTARIO	L4P3L1	TRENTON ...
17	56,565	OVERCAST SECURITY	144 BELL ST.	... ONTARIO	R5T3Y7	OSHAWA ...
18	71,785	CAN DO 700	84 BISCAVNE AVE.	... MANITOBA	P6T9E3	BRANDON ...
19	73,124	ABACUS CONSULTING	1725 ALAMEDA CT.	... ONTARIO	K3R6Y7	WINDSOR ...
20	78,141	TELLERMAN OFFICES	133 RUE ST CATHERINES	... QUEBEC	Y6R9L4	HULL ...
21	87,451	OVERDONE SOFTWARE	19 PINNACLE ST.	... ONTARIO	T3R5W2	OTTAWA ...
22	89,001	TRMASON'S	ELM ST.	... NEW BRUNSWICK	T5R3W2	ST. JOHN ...
23	91,010	WESTMORLAND SYSTEMS	1818 WESTLAKE AVE. N.	... ONTARIO		OTTAWA ...
24	98,765	TED'S ELECTRONICS	245 YONGE ST.	... ONTARIO	L4T6R3	WINDSOR ...
25	99,920	KEYMARK DEVELOPMENT LABS	52 BROOKHAVEN LANE	... ALBERTA	Y3R7Y2	CALGARY ...
26	99,999	Miscellaneous Sales				
27	13,876	UNIQUE SOLUTIONS	22 QUEEN ST.	... ONTARIO	L5T6Y7	TORONTO ...
28	12,344	COSTLY SOFTWARE	132 STONE RD.	... ONTARIO	L4R5T6	TORONTO ...
29	33,333	NOT A PROBLEM SYSTEMS	122 KING ST. E	... ONTARIO	L6Y7T5	TORONTO ...
30	44,444	EVERGREEN TECHNOLOGIES	122 ROWAN AVE.	... QUEBEC	P4R5T6	MONTREAL ...
31	55,555	WHITESIDE	122 MAIN ST.	... ALBERTA	T5R4T6	CALGARY ...
32	66,666	BLODELL GROUP	144 PINE ST.	... ONTARIO	L4T56Y	OAKVILLE ...

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Output:

DDS Design - QPADEV0005/DT433A40/171030/QPRINT/5 - IBM Rational Developer for i

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Quick Access Remote System Explorer DDS Design

QPRINT

Text Image

USER: DT433A40    TIMESTAMP: 2017-12-04-10.14.53.827689    SERVER: S10A04C2    PAGE 1

Phone Log Report    12/04/17

Sales ID	Customer Number	Customer Name	Telephone	Last Call Date	Oldest Call Date	Next Call Date
444	00001	WARLOCK SYSTEMS	818-999-5753	2017-06-01		2017-07-31
222	00579	QUEENSTON COMPANY	312-462-8200	2017-04-26		2017-05-26
111	10011	BENSONS COMPUTER GROUP	406-343-9462	2017-05-15		2017-08-13
444	10059	PANGBORN GRAPHICS	201-657-4685	2017-05-14		2017-09-11
111	10113	HOPE ENTERPRISES	315-547-1245	2017-05-02		2017-10-09
444	12925	HIPTAX INC.	214-283-3438	2017-03-09		2017-04-08
111	17324	WASTEFULL SYSTEMS	414-789-9160	2017-05-15		2017-07-14
222	20753	PETERSON SECURITY	704-258-4451	2017-02-01	<-----	2017-03-13
555	23009	EMERALD DATA GROUP	301-222-4528	2017-05-28		2017-07-27
333	34038	YOUNGES SMALL SYSTEMS	612-663-4700	2017-06-03		2017-07-03
111	35364	CAPSTONE SOFTWARE	301-835-1234	2017-06-07		2017-07-07
222	36098	GRAND GRAPHICS	305-874-4030	2017-05-24		2017-07-23
222	42423	BROTHER COMPUTER SYSTEMS	713-252-5333	2017-02-01	<-----	2017-09-19
111	44001	AMANDA'S CONSULTING	312-258-1568	2017-04-13		2018-03-09
333	50009	CATCHY PHRASES	201-645-0040	2017-06-24		2017-07-24
333	52513	LIGHTFOOT INFORMATION	617-392-3766	2017-06-06		2017-10-04
111	56565	OVERCAST SECURITY	UNKNOWN DATE	9999-09-09		9999-09-09
333	71785	CAN DO TOO	212-343-4555	2017-05-14		2017-06-13
111	73124	ABACUS CONSULTING	808-353-7718	2017-06-23		2017-07-23
111	78141	TELLERMAN OFFICES	303-379-2633	2017-06-10		2017-07-10
333	87451	OVERDONE SOFTWARE	800-241-5741	2017-06-04		2017-08-03
222	89001	TRMASONS	206-461-0455	2017-06-25		2017-07-25

DDS Design - QPADEV0005/DT433A40/171030/QPRINT/5 - IBM Rational Developer for i

File Edit Navigate Search Project Run Window Help

Quick Access Remote System Explorer DDS Design

QPRINT

Text Image

USER: DT433A40    TIMESTAMP: 2017-12-04-10.14.53.827689    SERVER: S10A04C2    PAGE 2

Phone Log Report    12/04/17

Sales ID	Customer Number	Customer Name	Telephone	Last Call Date	Oldest Call Date	Next Call Date
222	91010	WESTMORLAND SYSTEMS	301-285-6202	2017-06-04		2017-07-04
111	98765	TED'S ELECTRONICS	815-987-4511	2017-04-24		2017-12-10
222	99920	KEYMARK DEVELOPMENT LABS	201-370-5520	2017-04-02		2017-05-02
111	99999	Miscellaneous Sales		2017-03-13		2017-04-12
***	13876	UNIQUE SOLUTIONS	Not Found	9999-09-09		9999-09-09
222	12344	COSTLY SOFTWARE	416-333-4433	2017-06-21		2017-07-31
222	33333	NOT A PROBLEM SYSTEMS	333-444-5555	2017-06-10		2017-08-09
111	44444	EVERGREEN TECHNOLOGIES	444-555-6666	2017-06-07		2017-08-06
444	55555	WHITESIDE	555-666-7777	2017-04-14		2017-05-14
333	66666	BLODELL GROUP	666-777-8888	2017-06-06		2017-07-06

Summary Information

CONTACT17 Total Records: 31  
CUSTOMER17 Total Records: 32

Oldest Last Callback Date: 2017-02-01  
Most Recent Callback Date: 2017-06-25

Total Records with an Unknown Last Date Called in CONTACT17: 00001

## BCI433 Lab 9 (Summer 2018)

```
F*****
F*  CUSTOMER18 READ BY NATIVE LANGUAGE (ILE RPG)
F*  CONTACTW18 ROW RETRIEVED WITH EMBEDDED SQL
F*  DETAIL REPORT LINE INCLUDES INFORMATION FROM CUSTOMER18 AND CONTACTW18
F*  SUMMARY REPORT INFORMATION RETRIEVED WITH EMBEDDED SQL STATEMENTS
F*****
```

```
FCUSTOMER18IF  E          DISK      RENAME(CUSTOMER18:CUSTOMERRF)
FQPRINT      O    F  132      PRINTER OFLIND(*INOF) FORMOFL(30) FORMLEN(66)
```

D\* H O S T V A R I A B L E S

```
D*  _____ ??
D ContactTotal      S          5  0
D CustomerTotal     S          5  0
D UnknownTotal      S          5  0
D OldestDate        S          D
D MostRecentDate    S          D
D User              S          10
D Server            S          10
D TimeStamp         S          Z
D DateIn            S          5  0
```

D\* I N D I C A T O R V A R I A B L E S

```
D*  _____ ??
```

```
D*  _____ ??
```

```
D Dummy           S          1  0
D Flag            S          7
D NextCallDate     S          D
```

C/EJECT

```
C*****
```

```
C*          ***  M A I N   R O U T I N E  ***
```

```
C*****
```

/FREE

```
    EXSR SummaryInfo;
    EXCEPT HEADINGS;
    READ CUSTOMER18;
    DOW NOT %EOF;
        EXSR SQLSelect;
        IF *INOF = *ON;
            EXCEPT HEADINGS;
            *INOF = *OFF;
        ENDIF;
        EXCEPT DETAIL;
        READ CUSTOMER18;
    ENDDO;
    EXCEPT TOTALS;
    *INLR = *ON;
    RETURN;
```

## BCI433 Lab 9 (Summer 2018)

```
//*****  
//  S Q L S E L E C T    S U B R O U T I N E  
//*****  
// A row from the contacts table has the same customer number found in the record  
// read from the CUSTOMER18 file. That row is retrieved to find out the last date  
// called, phone number, comments and the salesperson number.  
  
// The call back interval is added to the last date called to determine the  
// next date to call. Since null values may be stored in the last date called  
// indicator variables are used.
```

ENDSR ;

## BCI433 Lab 9 (Summer 2018)

```
//*****  
// SUMMARY INFO SUBROUTINE  
//*****  
      BEGSR SummaryInfo;  
// DETERMINE TOTALS FOR CONTACTW18 & CUSTOMER18
```

```
// DETERMINE NUMBER OF UNKNOWN LAST DATE  
// CALLED RECORDS
```

```
// DETERMINE OLDEST & MOST RECENT LAST  
// CALLBACK DATES
```

```
// DETERMINE THE USER, SERVER, & TIMESTAMP
```

## BCI433 Lab 9 (Summer 2018)

```

/END-FREE
OQPRINT      E          HEADINGS      2 02
O
O          USER          16
O          28 'TIMESTAMP:'
O          55
O          64 'SERVER:'
O          75
O          87 'PAGE:'
O          90
O          E          HEADINGS      2
O          54 'Phone Log Report'
O          UPDATE      Y          89
O          E          HEADINGS      1
O          5 'Sales'
O          15 'Customer'
O          31 'Customer Name'
O          59 'Telephone'
O          75 'Last Call'
O          88 'Oldest Call'
O          101 'Next Call'
O          E          HEADINGS      2
O          3 'ID'
O          13 'Number'
O          73 'Date'
O          85 'Date'
O          98 'Date'
O          E          DETAIL      1
O          CSTSLN      3
O          CSTNUM      13
O          CSTNAM      48
O          CSTPHN      64
O          PHNLDC      75
O          FLAG      86
O          NextCallDate 101
O          E          TOTALS      2 2
O          32 'Summary Information'
O          E          TOTALS      1
O          26 'CONTACTW18 Total Records:'
O          ContactTotal 1          34
O          E          TOTALS      1
O          26 'CUSTOMER18 Total Records:'
O          CustomerTotal 1          34
O          E          TOTALS      1 1
O          27 'Oldest Last Callback Date:'
O          OldestDate      42
O          E          TOTALS      1
O          27 'Most Recent Callback Date:'
O          MostRecentDate 42
O          E          TOTALS      2 1
O          22 'Total Records with an'
O          47 'Unknown Last Date Called'
O          62 'in CONTACTW18:'
O          UnknownTotal      70

```



## BCI433 Lab 9 (Summer 2018)

### ProvSQL

INPUT (from three tables)

Manitoba Customers

Line	1	2	3	4	5	6	7	8	9
	CUSTOMER ID	FIRST NAME	LAST NAME		CITY		PURCHASE AMOUNT	PURCHASE DATE	
000001	544444	Ronald	Wing		Winnipeg		9,845.65	2017-09-10	
000002	555555	Bill	Smith		Brandon		126.33	2017-10-04	
000003	233333	Gordon	Switzer		Winnipeg		122.99	2017-09-10	
***** End of report *****									

Ontario Customers

Line	1	2	3	4	5	6	7	8	9
	CUSTOMER ID	FIRST NAME	LAST NAME		CITY		PURCHASE AMOUNT	PURCHASE DATE	
000001	432222	Fred	Atkins		Mississauga		444.66	2017-10-02	
000002	344444	Ted	Snowden		Mississauga		2,734.55	2017-10-01	
000003	234313	Gordon	Wong		Toronto		123.32	2017-09-23	
000004	145678	Ken	Stafford		Toronto		95.00	2017-10-24	
***** End of report *****									

Quebec Customers

Line	1	2	3	4	5	6	7	8	9
	CUSTOMER ID	FIRST NAME	LAST NAME		CITY		PURCHASE AMOUNT	PURCHASE DATE	
000001	111111	Jacques	Trembley		Montreal		122.33	2017-09-22	
000002	122222	Sarah	Singh		Dorval		233.66	2017-09-21	
000003	133333	Rene	Lemieux		Quebec City		336.66	2017-10-06	
000004	222222	Sandy	Thomas		Lachine		445.54	2017-09-04	
***** End of report *****									

OUTPUT:

*..*..1..*..2..*..3..*..4..*..5..*..6..*..7..*..8..*..9..*..0..*..1..*..2..	Customers > \$150.00						Page: 1
Province	Customer ID	Full Name	City	Purchase Amount	Purchase Date		
Ontario	432222	Fred Atkins	Mississauga	444.66	2017-10-02		
	344444	Ted Snowden	Mississauga	2,734.55	2017-10-01		
Quebec	122222	Sarah Singh	Dorval	233.66	2017-09-21		
	133333	Rene Lemieux	Quebec City	336.66	2017-10-06		
	222222	Sandy Thomas	Lachine	445.54	2017-09-04		
Manitoba	544444	Ronald Wing	Winnipeg	9,845.65	2017-09-10		
				Total Amount:	14,040.72		
Total Customers: 6		Customers <= \$150.00				Page: 2	
Ontario	Quebec	Manitoba					
2	1	2					



## BCI433 Lab 9 (Summer 2018)

PROGRAM:

```
F*****
F* THIS PROGRAM USES A CURSOR TO LOAD A TEMPORARY RESULT TABLE THAT JOINS THE ORDERS,
F* ORDERLINE, CUSTOMER, PART AND SALESREP TABLES. ORDER NUMBER IS USED AS A CONTROL*
F* BREAK FIELD WHERE CUSTOMER TOTALS ARE PRINTED ON NEW ORDER NUMBERS
F*****
```

```
FQPRINT    O    F  132          PRINTER OFLIND(*INOF) FORMOFL(60) FORMLEN(66)
D CustomerRecord  DS
D CustId          6
D FullName        31
D City            20
D Purchase        7  2
D PDate           D
D Province        10
D ProvinceH       S    10
D TotalCost       S    8  2
D TotalRecords   S    5  0
D TotalExtended  S    9  2
D OntarioTot     S    3  0
D QuebecTot      S    3  0
D ManitobaTot    S    3  0
D EndOfFile      S    N
C/EJECT
```

```
C*****
C*          ***  M A I N  R O U T I N E  ***
C*****
```

/FREE

```
EXSR PrepareFiles;
EXCEPT HEADINGS;
EXSR GetRow;
Except NewProv;
ProvinceH = Province;
DOW NOT EndOfFile;
    IF *INOF = *ON;
        EXCEPT HEADINGS;
        *INOF = *OFF;
    ENDIF;
    If ProvinceH = Province;
        Except Detail;
    Else;
        ProvinceH = Province;
        Except NewProv;
        Except Detail;
    EndIf;
    TotalCost      = TotalCost      + Purchase;
    TotalRecords= TotalRecords + 1;
    EXSR GetRow;
ENDDO;
EXSR WRAPUP;
EXCEPT Totals;
*INLR = *ON;
RETURN;
```

## BCI433 Lab 9 (Summer 2018)

```
// O P E N F I L E S   S U B R O U T I N E
```

```
    BEGSR   PrepareFiles;  
// S E T   U P   T H E   T E M P O R A R Y   R E S U L T   S T R U C T U R E
```

```
// A   T E M P O R A R Y   R E S U L T   T A B L E   I S   C R E A T E D
```

```
    ENDSR;
```

```
//   G E T       R O W       S U B R O U T I N E
```

```
    BEGSR       GETROW;
```

```
    ENDSR;
```

## BCI433 Lab 9 (Summer 2018)

```
// W R A P U P      S U B R O U T I N E
```

```
BEGSR WRAPUP;
```

```
ENDSR;
```

## BCI433 Lab 9 (Summer 2018)

/END-FREE

```
OQPRINT      E      HEADINGS      2 02
O
O      67 'Customers > $150.00'
O      110 'Page:'
O      115
O      E      PAGE
O      HEADINGS      1
O      8 'Province'
O      23 'Customer ID'
O      42 'Full Name'
O      64 'City'
O      90 'Purchase'
O      101 'Purchase'
O      E      HEADINGS      2
O      89 'Amount'
O      99 'Date'
O      E      NewProv      1
O      Province      10
O      E      DETAIL      1
O      CustID      20
O      FullName      61
O      City      74
O      Purchase      1 90
O      PDate      103
O      E      Totals      2 1
O      79 'Total Amount:'
O      TotalCost      1 90
O      E      Totals      1 1
O      17 'Total Customers:'
O      TotalRecords      1 24
O      E      TOTALS      2 02
O      67 'Customers <= $150.00'
O      110 'Page:'
O      115
O      E      PAGE
O      Totals      2
O      18 'Ontario'
O      41 'Quebec'
O      69 'Manitoba'
O      E      Totals      1
O      OntarioTot      1 15
O      QuebecTot      1 38
O      ManitobaTot      1 66
```