## Write a query in SQL to display the ID for those employees who did two or more jobs in the past.

+-------------+------------+------------+------------+---------------+

| EMPLOYEE\_ID | START\_DATE | END\_DATE | JOB\_ID | DEPARTMENT\_ID |

+-------------+------------+------------+------------+---------------+

| 102 | 2001-01-13 | 2006-07-24 | IT\_PROG | 60 |

| 101 | 1997-09-21 | 2001-10-27 | AC\_ACCOUNT | 110 |

| 101 | 2001-10-28 | 2005-03-15 | AC\_MGR | 110 |

| 201 | 2004-02-17 | 2007-12-19 | MK\_REP | 20 |

| 114 | 2006-03-24 | 2007-12-31 | ST\_CLERK | 50 |

| 122 | 2007-01-01 | 2007-12-31 | ST\_CLERK | 50 |

| 200 | 1995-09-17 | 2001-06-17 | AD\_ASST | 90 |

| 176 | 2006-03-24 | 2006-12-31 | SA\_REP | 80 |

| 176 | 2007-01-01 | 2007-12-31 | SA\_MAN | 80 |

| 200 | 2002-07-01 | 2006-12-31 | AC\_ACCOUNT | 90 |

+-------------+------------+------------+------------+---------------+

SELECT employee\_id

FROM job\_history

GROUP BY employee\_id

HAVING COUNT(\*) >=2;

employee\_id

-------------

101

176

200

(3 rows)

## Write a query in SQL to display job ID, number of employees, sum of salary, and difference between highest salary and lowest salary for a job.

EMPLOYEE\_ID | FIRST\_NAME | LAST\_NAME | EMAIL | PHONE\_NUMBER | HIRE\_DATE | JOB\_ID | SALARY | COMMISSION\_PCT | MANAGER\_ID | DEPARTMENT\_ID |

+-------------+-------------+-------------+----------+--------------------+------------+------------+----------+----------------+------------+---------------+

| 100 | Steven | King | SKING | 515.123.4567 | 2003-06-17 | AD\_PRES | 24000.00 | 0.00 | 0 | 90 |

| 101 | Neena | Kochhar | NKOCHHAR | 515.123.4568 | 2005-09-21 | AD\_VP | 17000.00 | 0.00 | 100 | 90 |

| 102 | Lex | De Haan | LDEHAAN | 515.123.4569 | 2001-01-13 | AD\_VP | 17000.00 | 0.00 | 100 | 90 |

| 103 | Alexander | Hunold | AHUNOLD | 590.423.4567 | 2006-01-03 | IT\_PROG | 9000.00 | 0.00 | 102 | 60 |

| 104 | Bruce | Ernst | BERNST | 590.423.4568 | 2007-05-21 | IT\_PROG | 6000.00 | 0.00 | 103 | 60 |

| 105 | David | Austin | DAUSTIN | 590.423.4569 | 2005-06-25 | IT\_PROG | 4800.00 | 0.00 | 103 | 60 |

| 106 | Valli | Pataballa | VPATABAL | 590.423.4560 | 2006-02-05 | IT\_PROG | 4800.00 | 0.00 | 103 | 60 |

| 107 | Diana | Lorentz | DLORENTZ | 590.423.5567 | 2007-02-07 | IT\_PROG | 4200.00 | 0.00 | 103 | 60 |

| 108 | Nancy | Greenberg | NGREENBE | 515.124.4569 | 2002-08-17 | FI\_MGR | 12008.00 | 0.00 | 101 | 100 |

| 109 | Daniel | Faviet | DFAVIET | 515.124.4169 | 2002-08-16 | FI\_ACCOUNT | 9000.00 | 0.00 | 108 | 100 |

| 110 | John | Chen | JCHEN | 515.124.4269 | 2005-09-28 | FI\_ACCOUNT | 8200.00 | 0.00 | 108 | 100 |

| 111 | Ismael | Sciarra | ISCIARRA | 515.124.4369 | 2005-09-30 | FI\_ACCOUNT | 7700.00 | 0.00 | 108 | 100 |

| 112 | Jose Manuel | Urman | JMURMAN | 515.124.4469 | 2006-03-07 | FI\_ACCOUNT | 7800.00 | 0.00 | 108 | 100 |

| 113 | Luis | Popp | LPOPP | 515.124.4567 | 2007-12-07 | FI\_ACCOUNT | 6900.00 | 0.00 | 108 | 100 |

| 114 | Den | Raphaely | DRAPHEAL | 515.127.4561 | 2002-12-07 | PU\_MAN | 11000.00 | 0.00 | 100 | 30 |

| 115 | Alexander | Khoo | AKHOO | 515.127.4562 | 2003-05-18 | PU\_CLERK | 3100.00 | 0.00 | 114 | 30 |

| 116 | Shelli | Baida | SBAIDA | 515.127.4563 | 2005-12-24 | PU\_CLERK | 2900.00 | 0.00 | 114 | 30 |

| 117 | Sigal | Tobias | STOBIAS | 515.127.4564 | 2005-07-24 | PU\_CLERK | 2800.00 | 0.00 | 114 | 30 |

| 118 | Guy | Himuro | GHIMURO | 515.127.4565 | 2006-11-15 | PU\_CLERK | 2600.00 | 0.00 | 114 | 30 |

| 119 | Karen | Colmenares | KCOLMENA | 515.127.4566 | 2007-08-10 | PU\_CLERK | 2500.00 | 0.00 | 114 | 30 |

| 120 | Matthew | Weiss | MWEISS | 650.123.1234 | 2004-07-18 | ST\_MAN | 8000.00 | 0.00 | 100 | 50 |

| 121 | Adam | Fripp | AFRIPP | 650.123.2234 | 2005-04-10 | ST\_MAN | 8200.00 | 0.00 | 100 | 50 |

| 122 | Payam | Kaufling | PKAUFLIN | 650.123.3234 | 2003-05-01 | ST\_MAN | 7900.00 | 0.00 | 100 | 50 |

| 123 | Shanta | Vollman | SVOLLMAN | 650.123.4234 | 2005-10-10 | ST\_MAN | 6500.00 | 0.00 | 100 | 50 |

| 124 | Kevin | Mourgos | KMOURGOS | 650.123.5234 | 2007-11-16 | ST\_MAN | 5800.00 | 0.00 | 100 | 50 |

| 125 | Julia | Nayer | JNAYER | 650.124.1214 | 2005-07-16 | ST\_CLERK | 3200.00 | 0.00 | 120 | 50 |

| 126 | Irene | Mikkilineni | IMIKKILI | 650.124.1224 | 2006-09-28 | ST\_CLERK | 2700.00 | 0.00 | 120 | 50 |

| 127 | James | Landry | JLANDRY | 650.124.1334 | 2007-01-14 | ST\_CLERK | 2400.00 | 0.00 | 120 | 50 |

| 128 | Steven | Markle | SMARKLE | 650.124.1434 | 2008-03-08 | ST\_CLERK | 2200.00 | 0.00 | 120 | 50 |

| 129 | Laura | Bissot | LBISSOT | 650.124.5234 | 2005-08-20 | ST\_CLERK | 3300.00 | 0.00 | 121 | 50 |

| 130 | Mozhe | Atkinson | MATKINSO | 650.124.6234 | 2005-10-30 | ST\_CLERK | 2800.00 | 0.00 | 121 | 50 |

| 131 | James | Marlow | JAMRLOW | 650.124.7234 | 2005-02-16 | ST\_CLERK | 2500.00 | 0.00 | 121 | 50 |

| 132 | TJ | Olson | TJOLSON | 650.124.8234 | 2007-04-10 | ST\_CLERK | 2100.00 | 0.00 | 121 | 50 |

| 133 | Jason | Mallin | JMALLIN | 650.127.1934 | 2004-06-14 | ST\_CLERK | 3300.00 | 0.00 | 122 | 50 |

| 134 | Michael | Rogers | MROGERS | 650.127.1834 | 2006-08-26 | ST\_CLERK | 2900.00 | 0.00 | 122 | 50 |

| 135 | Ki | Gee | KGEE | 650.127.1734 | 2007-12-12 | ST\_CLERK | 2400.00 | 0.00 | 122 | 50 |

| 136 | Hazel | Philtanker | HPHILTAN | 650.127.1634 | 2008-02-06 | ST\_CLERK | 2200.00 | 0.00 | 122 | 50 |

| 137 | Renske | Ladwig | RLADWIG | 650.121.1234 | 2003-07-14 | ST\_CLERK | 3600.00 | 0.00 | 123 | 50 |

| 138 | Stephen | Stiles | SSTILES | 650.121.2034 | 2005-10-26 | ST\_CLERK | 3200.00 | 0.00 | 123 | 50 |

| 139 | John | Seo | JSEO | 650.121.2019 | 2006-02-12 | ST\_CLERK | 2700.00 | 0.00 | 123 | 50 |

| 140 | Joshua | Patel | JPATEL | 650.121.1834 | 2006-04-06 | ST\_CLERK | 2500.00 | 0.00 | 123 | 50 |

| 141 | Trenna | Rajs | TRAJS | 650.121.8009 | 2003-10-17 | ST\_CLERK | 3500.00 | 0.00 | 124 | 50 |

| 142 | Curtis | Davies | CDAVIES | 650.121.2994 | 2005-01-29 | ST\_CLERK | 3100.00 | 0.00 | 124 | 50 |

| 143 | Randall | Matos | RMATOS | 650.121.2874 | 2006-03-15 | ST\_CLERK | 2600.00 | 0.00 | 124 | 50 |

| 144 | Peter | Vargas | PVARGAS | 650.121.2004 | 2006-07-09 | ST\_CLERK | 2500.00 | 0.00 | 124 | 50 |

| 145 | John | Russell | JRUSSEL | 011.44.1344.429268 | 2004-10-01 | SA\_MAN | 14000.00 | 0.40 | 100 | 80 |

| 146 | Karen | Partners | KPARTNER | 011.44.1344.467268 | 2005-01-05 | SA\_MAN | 13500.00 | 0.30 | 100 | 80 |

| 147 | Alberto | Errazuriz | AERRAZUR | 011.44.1344.429278 | 2005-03-10 | SA\_MAN | 12000.00 | 0.30 | 100 | 80 |

| 148 | Gerald | Cambrault | GCAMBRAU | 011.44.1344.619268 | 2007-10-15 | SA\_MAN | 11000.00 | 0.30 | 100 | 80 |

| 149 | Eleni | Zlotkey | EZLOTKEY | 011.44.1344.429018 | 2008-01-29 | SA\_MAN | 10500.00 | 0.20 | 100 | 80 |

| 150 | Peter | Tucker | PTUCKER | 011.44.1344.129268 | 2005-01-30 | SA\_REP | 10000.00 | 0.30 | 145 | 80 |

| 151 | David | Bernstein | DBERNSTE | 011.44.1344.345268 | 2005-03-24 | SA\_REP | 9500.00 | 0.25 | 145 | 80 |

| 152 | Peter | Hall | PHALL | 011.44.1344.478968 | 2005-08-20 | SA\_REP | 9000.00 | 0.25 | 145 | 80 |

| 153 | Christopher | Olsen | COLSEN | 011.44.1344.498718 | 2006-03-30 | SA\_REP | 8000.00 | 0.20 | 145 | 80 |

| 154 | Nanette | Cambrault | NCAMBRAU | 011.44.1344.987668 | 2006-12-09 | SA\_REP | 7500.00 | 0.20 | 145 | 80 |

| 155 | Oliver | Tuvault | OTUVAULT | 011.44.1344.486508 | 2007-11-23 | SA\_REP | 7000.00 | 0.15 | 145 | 80 |

| 156 | Janette | King | JKING | 011.44.1345.429268 | 2004-01-30 | SA\_REP | 10000.00 | 0.35 | 146 | 80 |

| 157 | Patrick | Sully | PSULLY | 011.44.1345.929268 | 2004-03-04 | SA\_REP | 9500.00 | 0.35 | 146 | 80 |

| 158 | Allan | McEwen | AMCEWEN | 011.44.1345.829268 | 2004-08-01 | SA\_REP | 9000.00 | 0.35 | 146 | 80 |

| 159 | Lindsey | Smith | LSMITH | 011.44.1345.729268 | 2005-03-10 | SA\_REP | 8000.00 | 0.30 | 146 | 80 |

| 160 | Louise | Doran | LDORAN | 011.44.1345.629268 | 2005-12-15 | SA\_REP | 7500.00 | 0.30 | 146 | 80 |

| 161 | Sarath | Sewall | SSEWALL | 011.44.1345.529268 | 2006-11-03 | SA\_REP | 7000.00 | 0.25 | 146 | 80 |

| 162 | Clara | Vishney | CVISHNEY | 011.44.1346.129268 | 2005-11-11 | SA\_REP | 10500.00 | 0.25 | 147 | 80 |

| 163 | Danielle | Greene | DGREENE | 011.44.1346.229268 | 2007-03-19 | SA\_REP | 9500.00 | 0.15 | 147 | 80 |

| 164 | Mattea | Marvins | MMARVINS | 011.44.1346.329268 | 2008-01-24 | SA\_REP | 7200.00 | 0.10 | 147 | 80 |

| 165 | David | Lee | DLEE | 011.44.1346.529268 | 2008-02-23 | SA\_REP | 6800.00 | 0.10 | 147 | 80 |

| 166 | Sundar | Ande | SANDE | 011.44.1346.629268 | 2008-03-24 | SA\_REP | 6400.00 | 0.10 | 147 | 80 |

| 167 | Amit | Banda | ABANDA | 011.44.1346.729268 | 2008-04-21 | SA\_REP | 6200.00 | 0.10 | 147 | 80 |

| 168 | Lisa | Ozer | LOZER | 011.44.1343.929268 | 2005-03-11 | SA\_REP | 11500.00 | 0.25 | 148 | 80 |

| 169 | Harrison | Bloom | HBLOOM | 011.44.1343.829268 | 2006-03-23 | SA\_REP | 10000.00 | 0.20 | 148 | 80 |

| 170 | Tayler | Fox | TFOX | 011.44.1343.729268 | 2006-01-24 | SA\_REP | 9600.00 | 0.20 | 148 | 80 |

| 171 | William | Smith | WSMITH | 011.44.1343.629268 | 2007-02-23 | SA\_REP | 7400.00 | 0.15 | 148 | 80 |

| 172 | Elizabeth | Bates | EBATES | 011.44.1343.529268 | 2007-03-24 | SA\_REP | 7300.00 | 0.15 | 148 | 80 |

| 173 | Sundita | Kumar | SKUMAR | 011.44.1343.329268 | 2008-04-21 | SA\_REP | 6100.00 | 0.10 | 148 | 80 |

| 174 | Ellen | Abel | EABEL | 011.44.1644.429267 | 2004-05-11 | SA\_REP | 11000.00 | 0.30 | 149 | 80 |

| 175 | Alyssa | Hutton | AHUTTON | 011.44.1644.429266 | 2005-03-19 | SA\_REP | 8800.00 | 0.25 | 149 | 80 |

| 176 | Jonathon | Taylor | JTAYLOR | 011.44.1644.429265 | 2006-03-24 | SA\_REP | 8600.00 | 0.20 | 149 | 80 |

| 177 | Jack | Livingston | JLIVINGS | 011.44.1644.429264 | 2006-04-23 | SA\_REP | 8400.00 | 0.20 | 149 | 80 |

| 178 | Kimberely | Grant | KGRANT | 011.44.1644.429263 | 2007-05-24 | SA\_REP | 7000.00 | 0.15 | 149 | 0 |

| 179 | Charles | Johnson | CJOHNSON | 011.44.1644.429262 | 2008-01-04 | SA\_REP | 6200.00 | 0.10 | 149 | 80 |

| 180 | Winston | Taylor | WTAYLOR | 650.507.9876 | 2006-01-24 | SH\_CLERK | 3200.00 | 0.00 | 120 | 50 |

| 181 | Jean | Fleaur | JFLEAUR | 650.507.9877 | 2006-02-23 | SH\_CLERK | 3100.00 | 0.00 | 120 | 50 |

| 182 | Martha | Sullivan | MSULLIVA | 650.507.9878 | 2007-06-21 | SH\_CLERK | 2500.00 | 0.00 | 120 | 50 |

| 183 | Girard | Geoni | GGEONI | 650.507.9879 | 2008-02-03 | SH\_CLERK | 2800.00 | 0.00 | 120 | 50 |

| 184 | Nandita | Sarchand | NSARCHAN | 650.509.1876 | 2004-01-27 | SH\_CLERK | 4200.00 | 0.00 | 121 | 50 |

| 185 | Alexis | Bull | ABULL | 650.509.2876 | 2005-02-20 | SH\_CLERK | 4100.00 | 0.00 | 121 | 50 |

| 186 | Julia | Dellinger | JDELLING | 650.509.3876 | 2006-06-24 | SH\_CLERK | 3400.00 | 0.00 | 121 | 50 |

| 187 | Anthony | Cabrio | ACABRIO | 650.509.4876 | 2007-02-07 | SH\_CLERK | 3000.00 | 0.00 | 121 | 50 |

| 188 | Kelly | Chung | KCHUNG | 650.505.1876 | 2005-06-14 | SH\_CLERK | 3800.00 | 0.00 | 122 | 50 |

| 189 | Jennifer | Dilly | JDILLY | 650.505.2876 | 2005-08-13 | SH\_CLERK | 3600.00 | 0.00 | 122 | 50 |

| 190 | Timothy | Gates | TGATES | 650.505.3876 | 2006-07-11 | SH\_CLERK | 2900.00 | 0.00 | 122 | 50 |

| 191 | Randall | Perkins | RPERKINS | 650.505.4876 | 2007-12-19 | SH\_CLERK | 2500.00 | 0.00 | 122 | 50 |

| 192 | Sarah | Bell | SBELL | 650.501.1876 | 2004-02-04 | SH\_CLERK | 4000.00 | 0.00 | 123 | 50 |

| 193 | Britney | Everett | BEVERETT | 650.501.2876 | 2005-03-03 | SH\_CLERK | 3900.00 | 0.00 | 123 | 50 |

| 194 | Samuel | McCain | SMCCAIN | 650.501.3876 | 2006-07-01 | SH\_CLERK | 3200.00 | 0.00 | 123 | 50 |

| 195 | Vance | Jones | VJONES | 650.501.4876 | 2007-03-17 | SH\_CLERK | 2800.00 | 0.00 | 123 | 50 |

| 196 | Alana | Walsh | AWALSH | 650.507.9811 | 2006-04-24 | SH\_CLERK | 3100.00 | 0.00 | 124 | 50 |

| 197 | Kevin | Feeney | KFEENEY | 650.507.9822 | 2006-05-23 | SH\_CLERK | 3000.00 | 0.00 | 124 | 50 |

| 198 | Donald | OConnell | DOCONNEL | 650.507.9833 | 2007-06-21 | SH\_CLERK | 2600.00 | 0.00 | 124 | 50 |

| 199 | Douglas | Grant | DGRANT | 650.507.9844 | 2008-01-13 | SH\_CLERK | 2600.00 | 0.00 | 124 | 50 |

| 200 | Jennifer | Whalen | JWHALEN | 515.123.4444 | 2003-09-17 | AD\_ASST | 4400.00 | 0.00 | 101 | 10 |

| 201 | Michael | Hartstein | MHARTSTE | 515.123.5555 | 2004-02-17 | MK\_MAN | 13000.00 | 0.00 | 100 | 20 |

| 202 | Pat | Fay | PFAY | 603.123.6666 | 2005-08-17 | MK\_REP | 6000.00 | 0.00 | 201 | 20 |

| 203 | Susan | Mavris | SMAVRIS | 515.123.7777 | 2002-06-07 | HR\_REP | 6500.00 | 0.00 | 101 | 40 |

| 204 | Hermann | Baer | HBAER | 515.123.8888 | 2002-06-07 | PR\_REP | 10000.00 | 0.00 | 101 | 70 |

| 205 | Shelley | Higgins | SHIGGINS | 515.123.8080 | 2002-06-07 | AC\_MGR | 12008.00 | 0.00 | 101 | 110 |

| 206 | William | Gietz | WGIETZ | 515.123.8181 | 2002-06-07 | AC\_ACCOUNT | 8300.00 | 0.00 | 205 | 110 |

+-------------+-------------+-------------+----------+--------------------+------------+------------+----------+-----

SELECT job\_id, COUNT(\*), SUM(salary),

MAX(salary)-MIN(salary) AS salary\_difference

FROM employees

GROUP BY job\_id;

job\_id | count | sum | salary\_difference

------------+-------+-----------+-------------------

AC\_ACCOUNT | 1 | 8300.00 | 0.00

ST\_MAN | 5 | 36400.00 | 2400.00

IT\_PROG | 5 | 28800.00 | 4800.00

SA\_MAN | 5 | 61000.00 | 3500.00

AD\_PRES | 1 | 24000.00 | 0.00

AC\_MGR | 1 | 12000.00 | 0.00

FI\_MGR | 1 | 12000.00 | 0.00

AD\_ASST | 1 | 4400.00 | 0.00

MK\_MAN | 1 | 13000.00 | 0.00

PU\_CLERK | 5 | 13900.00 | 600.00

HR\_REP | 1 | 6500.00 | 0.00

PR\_REP | 1 | 10000.00 | 0.00

FI\_ACCOUNT | 5 | 39600.00 | 2100.00

SH\_CLERK | 20 | 64300.00 | 1700.00

AD\_VP | 2 | 34000.00 | 0.00

SA\_REP | 30 | 250500.00 | 5400.00

ST\_CLERK | 20 | 55700.00 | 1500.00

MK\_REP | 1 | 6000.00 | 0.00

PU\_MAN | 1 | 11000.00 | 0.00

(19 rows)

## Write a query in SQL to display the first and last name and salary for those employees who earn less than the employee earn whose number is 182.

There are two ways to handle this

select first\_name,salary from employees where salary < (select salary from employees where employee\_id=182)

SELECT E.first\_name, E.last\_name, E.salary

FROM employees E

JOIN employees S

ON E.salary < S.salary

AND S.employee\_id = 182;

## USING keyword instead of equal comparison

SELECT department\_name, AVG(salary), COUNT(commission\_pct)

FROM departments JOIN employees **on departments.department\_id= employees.department\_id**

GROUP BY department\_name;

SELECT department\_name, AVG(salary), COUNT(commission\_pct)

FROM departments

JOIN employees **USING (department\_id)**

GROUP BY department\_name;

## **NATURAL JOIN**

SELECT job\_title, first\_name || ' ' || last\_name AS Employee\_name,

max\_salary-salary AS salary\_difference

FROM employees

NATURAL JOIN jobs

WHERE department\_id = 80;

A **NATURAL JOIN** is a **JOIN** operation that creates an implicit **join** clause for you based on the common columns in the two tables being joined. Common columns are columns that have the same name in both tables. A **NATURAL JOIN** can be an INNER **join**, a LEFT OUTER **join**, or a RIGHT OUTER **join**. The default is INNER **join**.

## To get all details from a table with conditions on other table

SELECT a.\*

FROM job\_history a

JOIN employees m

ON (a.employee\_id = m.employee\_id)

WHERE salary >= 12000

## GROUP BY HAVING example

**Sample table: Customer**

customer\_id cust\_name city grade salesman\_id

----------- ------------ ---------- ---------- -----------

3002 Nick Rimando New York 100 5001

3005 Graham Zusi California 200 5002

3001 Brad Guzan London 5005

3004 Fabian Johns Paris 300 5006

3007 Brad Davis New York 200 5001

3009 Geoff Camero Berlin 100 5003

3008 Julian Green London 300 5002

3003 Jozy Altidor Moscow 200 5007

Write a query to count the customers with grades above New York's average.

SELECT grade, COUNT (DISTINCT customer\_id)

FROM customer

GROUP BY grade

HAVING grade >

(SELECT AVG(grade)

FROM customer

WHERE city = 'New York');

grade count

200 3

300 2

## where exists

SELECT customer\_id,cust\_name, city

FROM customer

WHERE EXISTS

(SELECT \*

FROM customer

WHERE city='London');

## USING ANY

SELECT \*

FROM Orders

WHERE purch\_amt > ANY

(SELECT purch\_amt

FROM orders

WHERE ord\_date='2012/09/10');

Write a query to get all the information for those customers whose grade is not as the grade of customer who belongs to the city London.

SELECT \*

FROM customer

WHERE grade <> ANY

(SELECT grade

FROM customer

WHERE city='London');