Accounting Analytics Project Report
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**Part II – Question 1**

Once the data is loaded, you are to display the structure along with the first 20 rows of each table in your report.

```
SELECT
*
FROM payroll_2015_org
LIMIT 20;
```

| pay_date | payroll_id | emp_no | home_div | work_div | first_name | last_name | job | reg_hrs | ot_hrs | reg_pay | ot_pay | futa | suta | fica_medc | work_comp |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015-01-02 | 27310001 | 195 | 1 | 1 | Al | Ramos | 14005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.34 | 1.07 | 0.04 |
| 2015-01-02 | 27310001 | 195 | 1 | 1 | Al | Ramos | 14H002 | 25.00 | 0.00 | 705.58 | 0.00 | 3.96 | 15.83 | 50.47 | 1.83 |
| 2015-01-02 | 27310001 | 195 | 1 | 1 | Al | Ramos | 14H010 | 0.00 | 0.00 | 0.00 | 0.00 | 2.53 | 10.13 | 32.29 | 1.17 |
| 2015-01-02 | 27310001 | 106 | 1 | 1 | Allan | Wood | 14002 | 11.00 | 0.00 | 220.00 | 0.00 | 1.32 | 5.28 | 16.83 | 3.52 |
| 2015-01-02 | 27310001 | 106 | 1 | 1 | Allan | Wood | 14005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.36 | 1.15 | 0.24 |
| 2015-01-02 | 27310001 | 106 | 1 | 1 | Allan | Wood | 14010 | 0.00 | 0.00 | 0.00 | 0.00 | 1.92 | 7.68 | 24.48 | 5.12 |
| 2015-01-02 | 27310001 | 106 | 1 | 1 | Allan | Wood | 14012 | 0.00 | 0.00 | 0.00 | 0.00 | 1.56 | 6.24 | 19.89 | 4.16 |
| 2015-01-02 | 27310001 | 304 | 1 | 1 | Allen | Price | 14H010 | 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 8.34 | 26.58 | 5.89 |
| 2015-01-02 | 27310001 | 304 | 1 | 1 | Allen | Price | 14H012 | 0.00 | 0.00 | 0.00 | 0.00 | 3.13 | 12.51 | 39.88 | 8.83 |
| 2015-01-02 | 27310001 | 274 | 1 | 1 | Angel | Watts | 14005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.14 | 0.46 | 0.10 |
| 2015-01-02 | 27310001 | 274 | 1 | 1 | Angel | Watts | 14H010 | 0.00 | 0.00 | 0.00 | 0.00 | 2.40 | 9.60 | 30.60 | 6.40 |
| 2015-01-02 | 27310001 | 274 | 1 | 1 | Angel | Watts | 14H012 | 0.00 | 0.00 | 0.00 | 0.00 | 1.21 | 4.80 | 15.30 | 3.20 |
| 2015-01-02 | 27310001 | 1 | 1 | 1 | Antonio | Torres | 14H001 | 11.00 | 0.00 | 306.50 | 0.00 | 1.62 | 6.46 | 20.58 | 0.40 |
| 2015-01-02 | 27310001 | 1 | 1 | 1 | Antonio | Torres | 14H010 | 0.00 | 0.00 | 0.00 | 0.00 | 2.35 | 9.39 | 29.93 | 0.58 |
| 2015-01-02 | 27310001 | 1 | 1 | 1 | Antonio | Torres | 14S001 | 11.00 | 0.00 | 306.50 | 0.00 | 1.61 | 6.46 | 20.58 | 0.40 |
| 2015-01-02 | 27310001 | 391 | 2 | 2 | Barry | Mckenzie | 14005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.39 | 0.62 | 0.18 |
| 2015-01-02 | 27310001 | 391 | 2 | 2 | Barry | Mckenzie | 14H001B | 5.00 | 0.00 | 128.75 | 0.00 | 0.70 | 5.58 | 8.90 | 2.58 |
| 2015-01-02 | 27310001 | 391 | 2 | 2 | Barry | Mckenzie | 14H010B | 0.00 | 0.00 | 0.00 | 0.00 | 2.23 | 17.85 | 28.45 | 8.24 |
| 2015-01-02 | 27310001 | 259 | 1 | 1 | Beulah | Gibbs | 14005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.21 | 0.66 | 0.14 |
| 2015-01-02 | 27310001 | 259 | 1 | 1 | Beulah | Gibbs | 14S004 | 5.00 | 0.00 | 128.75 | 0.00 | 0.74 | 2.97 | 9.48 | 2.06 |

20 rows in set (0.03 sec)

```
SELECT
*
FROM payroll_2016_org
LIMIT 20;
```

| project | employee_id | employee_nbr | employee_name | hours | ot_hours | gross_wages | socsec_medicare | futa | suta | work_comp |
|---|---|---|---|---|---|---|---|---|---|---|
| 15001 | W05781 | 44 | Dale Hamilton | 40.00 | 0.00 | 3850.00 | 294.53 | 23.10 | 92.40 | 4.81 |
| 15002 | U05779 | 45 | Ernesto Todd | 40.00 | 0.00 | 4225.64 | 309.84 | 24.30 | 97.21 | 5.28 |
| 15005 | I07737 | 422 | Afton Call | 1.00 | 0.00 | 3.00 | 0.24 | 0.01 | 0.08 | 0.05 |
| 15005 | S05921 | 269 | Jo Manning | 1.00 | 0.00 | 9.00 | 0.61 | 0.04 | 0.20 | 0.14 |
| 15005 | Z06120 | 357 | Jesus Peterson | 1.00 | 0.00 | 12.00 | 0.81 | 0.07 | 0.24 | 0.21 |
| 15005 | U05971 | 314 | Marianne Baldwin | 1.00 | 0.00 | 3.00 | 0.23 | 0.03 | 0.06 | 0.07 |
| 15005 | S06809 | 400 | Roberto Ortega | 1.00 | 0.00 | 15.00 | 0.93 | 0.08 | 0.30 | 0.05 |
| 15005 | V07604 | 415 | Floyd Hunter | 1.00 | 0.00 | 15.00 | 1.00 | 0.08 | 0.32 | 0.26 |
| 15005 | V05780 | 34 | Sheryl Hill | 1.00 | 0.00 | 15.00 | 1.05 | 0.09 | 0.33 | 0.24 |
| 15005 | R07120 | 281 | Marcia Neal | 1.00 | 0.00 | 6.00 | 0.42 | 0.03 | 0.13 | 0.10 |
| 15005 | L05892 | 179 | Cassandra Poole | 1.00 | 0.00 | 9.00 | 0.66 | 0.06 | 0.21 | 0.14 |
| 15005 | NULL | NULL | NULL | 1.00 | 0.00 | 12.00 | 0.92 | 0.08 | 0.27 | 0.19 |
| 15005 | E05885 | 192 | Mike Briggs | 1.00 | 0.00 | 9.00 | 0.61 | 0.05 | 0.27 | 0.08 |
| 15005 | F05886 | 195 | Al Ramos | 1.00 | 0.00 | 15.00 | 1.07 | 0.09 | 0.34 | 0.02 |
| 15005 | D06172 | 199 | Nettie Stevens | 1.00 | 0.00 | 12.00 | 0.81 | 0.05 | 0.27 | 0.22 |
| 15005 | U05923 | 274 | Angel Watts | 1.00 | 0.00 | 15.00 | 1.14 | 0.09 | 0.36 | 0.24 |
| 15005 | L05796 | 27 | Cindy Lunt | 1.00 | 0.00 | 6.00 | 0.42 | 0.05 | 0.12 | 0.10 |
| 15005 | I05889 | 201 | Michele Lee | 1.00 | 0.00 | 9.00 | 0.69 | 0.05 | 0.22 | 0.15 |
| 15005 | J05890 | 203 | Helen Paul | 1.00 | 0.00 | 21.00 | 1.51 | 0.14 | 0.46 | 0.06 |
| 15005 | L05916 | 259 | Beulah Gibbs | 1.00 | 0.00 | 9.00 | 0.68 | 0.06 | 0.21 | 0.14 |

20 rows in set (0.02 sec)

**Part II – Question 3**

Write one query that extracts the job code for 2015 payroll data and a second query that extracts the job code for 2016 payroll data. In each query, include all of the other fields from the data import for each year; add a new field that has the extracted job code; and, for the 2015 data, add the employee's full name in the same format as it is listed in 2016.

```
SELECT
pay_date,
payroll_id,
emp_no,
home_div,
work_div,
CONCAT(first_name, ' ', last_name) employee_name,
IF(MID(job,3,1) RLIKE '[[:alpha:]]+', MID(job,4,3),MID(job, 3,3))
job_extract,
reg_hrs,
ot_hrs,
reg_pay,
ot_pay,
futa,
suta,
fica_medc,
work_comp
FROM payroll_2015_org
LIMIT 20;
```

| pay_date | payroll_id | emp_no | home_div | work_div | employee_name | job_extract | reg_hrs | ot_hrs | reg_pay | ot_pay | futa | suta | fica_medc | work_comp |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015-01-02 | 27310001 | 195 | 1 | 1 | Al Ramos | 005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.34 | 1.07 | 0.04 |
| 2015-01-02 | 27310001 | 195 | 1 | 1 | Al Ramos | 002 | 25.00 | 0.00 | 705.58 | 0.00 | 3.96 | 15.83 | 50.47 | 1.83 |
| 2015-01-02 | 27310001 | 195 | 1 | 1 | Al Ramos | 010 | 0.00 | 0.00 | 0.00 | 0.00 | 2.53 | 10.13 | 32.29 | 1.17 |
| 2015-01-02 | 27310001 | 106 | 1 | 1 | Allan Wood | 002 | 11.00 | 0.00 | 220.00 | 0.00 | 1.32 | 5.28 | 16.83 | 3.52 |
| 2015-01-02 | 27310001 | 106 | 1 | 1 | Allan Wood | 005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.36 | 1.15 | 0.24 |
| 2015-01-02 | 27310001 | 106 | 1 | 1 | Allan Wood | 010 | 0.00 | 0.00 | 0.00 | 0.00 | 1.92 | 7.68 | 24.48 | 5.12 |
| 2015-01-02 | 27310001 | 106 | 1 | 1 | Allan Wood | 012 | 0.00 | 0.00 | 0.00 | 0.00 | 1.56 | 6.24 | 19.89 | 4.16 |
| 2015-01-02 | 27310001 | 304 | 1 | 1 | Allen Price | 010 | 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 8.34 | 26.58 | 5.89 |
| 2015-01-02 | 27310001 | 304 | 1 | 1 | Allen Price | 012 | 0.00 | 0.00 | 0.00 | 0.00 | 3.13 | 12.51 | 39.88 | 8.83 |
| 2015-01-02 | 27310001 | 274 | 1 | 1 | Angel Watts | 005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.14 | 0.46 | 0.10 |
| 2015-01-02 | 27310001 | 274 | 1 | 1 | Angel Watts | 010 | 0.00 | 0.00 | 0.00 | 0.00 | 2.40 | 9.60 | 30.60 | 6.40 |
| 2015-01-02 | 27310001 | 274 | 1 | 1 | Angel Watts | 012 | 0.00 | 0.00 | 0.00 | 0.00 | 1.21 | 4.80 | 15.30 | 3.20 |
| 2015-01-02 | 27310001 | 1 | 1 | 1 | Antonio Torres | 001 | 11.00 | 0.00 | 306.50 | 0.00 | 1.62 | 6.46 | 20.58 | 0.40 |
| 2015-01-02 | 27310001 | 1 | 1 | 1 | Antonio Torres | 010 | 0.00 | 0.00 | 0.00 | 0.00 | 2.35 | 9.39 | 29.93 | 0.58 |
| 2015-01-02 | 27310001 | 1 | 1 | 1 | Antonio Torres | 001 | 11.00 | 0.00 | 306.50 | 0.00 | 1.61 | 6.46 | 20.58 | 0.40 |
| 2015-01-02 | 27310001 | 391 | 2 | 2 | Barry Mckenzie | 005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.39 | 0.62 | 0.18 |
| 2015-01-02 | 27310001 | 391 | 2 | 2 | Barry Mckenzie | 001 | 5.00 | 0.00 | 128.75 | 0.00 | 0.70 | 5.58 | 8.90 | 2.58 |
| 2015-01-02 | 27310001 | 391 | 2 | 2 | Barry Mckenzie | 010 | 0.00 | 0.00 | 0.00 | 0.00 | 2.23 | 17.85 | 28.45 | 8.24 |
| 2015-01-02 | 27310001 | 259 | 1 | 1 | Beulah Gibbs | 005 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.21 | 0.66 | 0.14 |
| 2015-01-02 | 27310001 | 259 | 1 | 1 | Beulah Gibbs | 004 | 5.00 | 0.00 | 128.75 | 0.00 | 0.74 | 2.97 | 9.48 | 2.06 |

20 rows in set (0.02 sec)

```
SELECT
IF(MID(project,3,1) RLIKE '[[:alpha:]]+', MID(project,4,3),MID(project, 3,3))
job_extract,
employee_id,
employee_nbr,
employee_name,
hours,
ot_hours,
gross_wages,
socsec_medicare,
futa,
suta,
work_comp
FROM payroll_2016_org
LIMIT 20;
```

| job_extract | employee_id | employee_nbr | employee_name | hours | ot_hours | gross_wages | socsec_medicare | futa | suta | work_comp |
|---|---|---|---|---|---|---|---|---|---|---|
| 001 | W05781 | 44 | Dale Hamilton | 40.00 | 0.00 | 3850.00 | 294.53 | 23.10 | 92.40 | 4.81 |
| 002 | U05779 | 45 | Ernesto Todd | 40.00 | 0.00 | 4225.64 | 309.84 | 24.30 | 97.21 | 5.28 |
| 005 | I07737 | 422 | Afton Call | 1.00 | 0.00 | 3.00 | 0.24 | 0.01 | 0.08 | 0.05 |
| 005 | S05921 | 269 | Jo Manning | 1.00 | 0.00 | 9.00 | 0.61 | 0.04 | 0.20 | 0.14 |
| 005 | Z06120 | 357 | Jesus Peterson | 1.00 | 0.00 | 12.00 | 0.81 | 0.07 | 0.24 | 0.21 |
| 005 | U05971 | 314 | Marianne Baldwin | 1.00 | 0.00 | 3.00 | 0.23 | 0.03 | 0.06 | 0.07 |
| 005 | S06809 | 400 | Roberto Ortega | 1.00 | 0.00 | 15.00 | 0.93 | 0.08 | 0.30 | 0.05 |
| 005 | V07604 | 415 | Floyd Hunter | 1.00 | 0.00 | 15.00 | 1.00 | 0.08 | 0.32 | 0.26 |
| 005 | V05780 | 34 | Sheryl Hill | 1.00 | 0.00 | 15.00 | 1.05 | 0.09 | 0.33 | 0.24 |
| 005 | R07120 | 281 | Marcia Neal | 1.00 | 0.00 | 6.00 | 0.42 | 0.03 | 0.13 | 0.10 |
| 005 | L05892 | 179 | Cassandra Poole | 1.00 | 0.00 | 9.00 | 0.66 | 0.06 | 0.21 | 0.14 |
| 005 | NULL | NULL | NULL | 1.00 | 0.00 | 12.00 | 0.92 | 0.08 | 0.27 | 0.19 |
| 005 | E05885 | 192 | Mike Briggs | 1.00 | 0.00 | 9.00 | 0.61 | 0.05 | 0.27 | 0.08 |
| 005 | F05886 | 195 | Al Ramos | 1.00 | 0.00 | 15.00 | 1.07 | 0.09 | 0.34 | 0.02 |
| 005 | D06172 | 199 | Nettie Stevens | 1.00 | 0.00 | 12.00 | 0.81 | 0.05 | 0.27 | 0.22 |
| 005 | U05923 | 274 | Angel Watts | 1.00 | 0.00 | 15.00 | 1.14 | 0.09 | 0.36 | 0.24 |
| 005 | L05796 | 27 | Cindy Lunt | 1.00 | 0.00 | 6.00 | 0.42 | 0.05 | 0.12 | 0.10 |
| 005 | I05889 | 201 | Michele Lee | 1.00 | 0.00 | 9.00 | 0.69 | 0.05 | 0.22 | 0.15 |
| 005 | J05890 | 203 | Helen Paul | 1.00 | 0.00 | 21.00 | 1.51 | 0.14 | 0.46 | 0.06 |
| 005 | L05916 | 259 | Beulah Gibbs | 1.00 | 0.00 | 9.00 | 0.68 | 0.06 | 0.21 | 0.14 |

20 rows in set (0.01 sec)

**Part III – Question 1**

Using your cleaned data for 2015 and 2016 write a query to output the following:
job code, job description, hours 2015, gross pay 2015, gross pay per hour 2015, hours 2016, gross pay 2016, gross pay per hour 2016, hours difference, gross pay difference, and gross pay per hour difference

```
SELECT DISTINCT
job_code,
job_description,
2015_hrs,
2015_gross_pay,
2015_gross_pay_per_hr,
2016_hrs,
2016_gross_pay,
2016_gross_pay_per_hr,
SUM(2016_hrs - 2015_hrs) hrs_diff,
SUM(2016_gross_pay - 2015_gross_pay) gross_pay_diff,
SUM(2016_gross_pay_per_hr - 2015_gross_pay_per_hr) gross_pay_per_hr_diff
FROM 2015_jobtotal LEFT JOIN 2016_jobtotal USING(job_code)
LEFT JOIN jobcodes USING(job_code)
GROUP BY
job_code,
2015_hrs,
2015_gross_pay,
2015_gross_pay_per_hr,
2016_hrs,
2016_gross_pay,
2016_gross_pay_per_hr
ORDER BY job_code;
```

| job_code | job_description | 2015_hrs | 2015_gross_pay | 2015_gross_pay_per_hr | 2016_hrs | 2016_gross_pay | 2016_gross_pay_per_hr | hrs_diff | gross_pay_diff | gross_pay_per_hr_diff |
|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Office | 11967.75 | 397979.46 | 28639.75 | 11644.15 | 408802.19 | 2704.89 | -323.60 | 10822.73 | -25934.86 |
| 002 | Sales | 12240.75 | 431972.96 | 20400.08 | 11731.75 | 442132.52 | 7437.77 | -509.00 | 10159.56 | -12962.31 |
| 003 | Travel | 942.50 | 32674.78 | 5234.46 | 719.25 | 34339.93 | 809.56 | -223.25 | 1665.15 | -4424.90 |
| 004 | Proj Management | 1580.00 | 54440.05 | 11052.32 | 1583.75 | 53279.06 | 708.18 | 3.75 | -1160.99 | -10344.14 |
| 005 | Installation | 926.00 | 8947.52 | 1250.60 | 1980.50 | 24682.20 | 1849.79 | 1054.50 | 15734.68 | 599.19 |
| 006 | Service | 3361.25 | 102721.73 | 16053.05 | 3807.25 | 125850.06 | 1285.11 | 446.00 | 23128.33 | -14767.94 |
| 007 | Customer Training | 473.50 | 26263.56 | 1332.71 | 348.50 | 21444.31 | 172.35 | -125.00 | -4819.25 | -1160.36 |
| 008 | Employee Training | 1386.00 | 31702.63 | 8042.06 | 1692.50 | 43518.21 | 1692.86 | 306.50 | 11815.58 | -6349.20 |
| 009 | New Foreign Manufacturing Plant | 0.00 | 0.00 | NULL | 4682.25 | 132294.35 | 3761.44 | 4682.25 | 132294.35 | NULL |
| 010 | New Foreign Manufacturing Oversight | 0.00 | 0.00 | NULL | 1300.00 | 35264.94 | 2842.52 | 1300.00 | 35264.94 | NULL |
| 011 | Internal Projects | 0.00 | 0.00 | NULL | 100.00 | 2254.32 | 169.33 | 100.00 | 2254.32 | NULL |
| 012 | Internal Auditing | 0.00 | 0.00 | NULL | 1152.50 | 28927.66 | 2426.45 | 1152.50 | 28927.66 | NULL |
| 144 | NULL | 1.00 | 31.50 | 31.50 | NULL | NULL | NULL | NULL | NULL | NULL |

13 rows in set (0.04 sec)

If you use any queries and/or create views to develop your final query, name them as part3_q1_description, where "description" provides a brief, useful description of what you are doing in that query. You would include sample output from each additional query/view, no more than 20 rows.

VIEW 1- 2015_jobtotal:

```
SELECT DISTINCT
job_code,
SUM(reg_hrs + ot_hrs) 2015_hrs,
SUM(reg_pay + ot_pay) 2015_gross_pay,
ROUND(SUM((reg_pay + ot_pay)/ (reg_hrs + ot_hrs)), 2)
2015_gross_pay_per_hr
FROM payroll_2015
GROUP BY job_code;
```

| job_code | 2015_hrs | 2015_gross_pay | 2015_gross_pay_per_hr |
|---|---|---|---|
| 005 | 926.00 | 8947.52 | 1250.60 |
| 002 | 12240.75 | 431972.96 | 20400.08 |
| 010 | 0.00 | 0.00 | NULL |
| 012 | 0.00 | 0.00 | NULL |
| 001 | 11967.75 | 397979.46 | 28639.75 |
| 004 | 1580.00 | 54440.05 | 11052.32 |
| 008 | 1386.00 | 31702.63 | 8042.06 |
| 009 | 0.00 | 0.00 | NULL |
| 006 | 3361.25 | 102721.73 | 16053.05 |
| 003 | 942.50 | 32674.78 | 5234.46 |
| 007 | 473.50 | 26263.56 | 1332.71 |
| 011 | 0.00 | 0.00 | NULL |
| 144 | 1.00 | 31.50 | 31.50 |

13 rows in set (0.04 sec)

VIEW 2 - 2016_jobtotal:

```
SELECT DISTINCT
job_code,
SUM(hours + ot_hours) 2016_hrs,
SUM(gross_wages) 2016_gross_pay,
ROUND(SUM((gross_wages)/ (hours + ot_hours)), 2) 2016_gross_pay_per_hr
FROM payroll_2016
GROUP BY job_code;
```

| job_code | 2016_hrs | 2016_gross_pay | 2016_gross_pay_per_hr |
|---|---|---|---|
| 001 | 11644.15 | 408802.19 | 2704.89 |
| 002 | 11731.75 | 442132.52 | 7437.77 |
| 005 | 1980.50 | 24682.20 | 1849.79 |
| 003 | 719.25 | 34339.93 | 809.56 |
| 004 | 1583.75 | 53279.06 | 708.18 |
| 006 | 3807.25 | 125850.06 | 1285.11 |
| 008 | 1692.50 | 43518.21 | 1692.86 |
| 009 | 4682.25 | 132294.35 | 3761.44 |
| 012 | 1152.50 | 28927.66 | 2426.45 |
| 011 | 100.00 | 2254.32 | 169.33 |
| 007 | 348.50 | 21444.31 | 172.35 |
| 010 | 1300.00 | 35264.94 | 2842.52 |

12 rows in set (0.02 sec)

**Part III - Question 2**

Design the query so that the user can easily change the job code and the results are only returned for that job code. Specifically set a variable at the beginning of the query for desired job code so that when the query is run only results for the entered job code are returned. Only return results for employees who have more than zero hours and zero wages in a job code for both 2015 and 2016. Investigate the three job codes with the largest positive wage differences found in the previous query that had wages and hours for both 2015 and 2016.

```
SET @desired_jobcode = '005'; #'type_desired_jobcode_here'

SELECT
2015_emp_job.job_code,
2015_emp_job.employee_name,
2015_emp_job.employee_nbr,
2015_hrs,
2015_gross_pay,
2015_gross_pay_per_hr,
2016_hrs,
2016_gross_pay,
2016_gross_pay_per_hr,
SUM(2016_hrs - 2015_hrs) hrs_diff,
ROUND(SUM(2016_gross_pay - 2015_gross_pay),2) gross_pay_diff,
SUM(2016_gross_pay_per_hr - 2015_gross_pay_per_hr) gross_pay_per_hr_diff
FROM 2015_emp_job LEFT JOIN 2016_emp_job USING(job_code, employee_nbr)
WHERE job_code = @desired_jobcode
AND 2015_hrs > 0
AND 2016_hrs > 0
AND 2015_gross_pay > 0
AND 2016_gross_pay > 0
```

```
GROUP BY
2015_emp_job.job_code,
2015_emp_job.employee_name,
2015_emp_job.employee_nbr,
2015_gross_pay,
2015_gross_pay_per_hr,
2016_hrs,
2016_gross_pay,
2016_gross_pay_per_hr
ORDER BY gross_pay_diff ASC;
```

```
Query OK, 0 rows affected (0.01 sec)
```

| job_code | employee_name | employee_nbr | 2015_hrs | 2015_gross_pay | 2015_gross_pay_per_hr | 2016_hrs | 2016_gross_pay | 2016_gross_pay_per_hr | hrs_diff | gross_pay_diff | gross_pay_per_hr_diff |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 005 | Geneva Moody | 133 | 23.50 | 699.13 | 89.25 | 23.00 | 333.00 | 14.48 | -0.50 | -366.13 | -74.77 |
| 005 | Deborah Bennett | 204 | 8.00 | 362.76 | 45.35 | 9.00 | 90.00 | 10.00 | 1.00 | -272.76 | -35.35 |
| 005 | Mona Howard | 398 | 44.00 | 528.00 | 180.00 | 22.00 | 309.00 | 28.95 | -22.00 | -219.00 | -151.05 |
| 005 | Marie Hudson | 39 | 780.00 | 5655.00 | 188.50 | 750.00 | 5437.50 | 14.50 | -30.00 | -217.50 | -174.00 |
| 005 | Kirk Byrd | 37 | 12.50 | 306.25 | 196.00 | 19.00 | 291.50 | 39.33 | 6.50 | -14.75 | -156.67 |
| 005 | Sally Bailey | 409 | 10.00 | 294.00 | 85.75 | 22.00 | 331.00 | 38.60 | 12.00 | 37.00 | -47.15 |
| 005 | Nichole Fox | 260 | 11.50 | 284.63 | 49.50 | 26.00 | 416.25 | 39.62 | 14.50 | 131.62 | -9.88 |
| 005 | Shirley Parker | 336 | 6.00 | 171.50 | 85.75 | 26.00 | 403.00 | 39.25 | 20.00 | 231.50 | -46.50 |
| 005 | Claire Edwards | 411 | 2.50 | 56.25 | 22.50 | 25.00 | 370.50 | 46.24 | 22.50 | 314.25 | 23.74 |
| 005 | Lynne Soto | 153 | 2.00 | 29.00 | 14.50 | 26.00 | 372.00 | 42.77 | 24.00 | 343.00 | 28.27 |
| 005 | Myra Vega | 352 | 4.00 | 76.00 | 57.00 | 26.50 | 422.50 | 34.14 | 22.50 | 346.50 | -22.86 |
| 005 | Marianne Baldwin | 314 | 10.00 | 217.50 | 43.50 | 37.00 | 573.75 | 80.77 | 27.00 | 356.25 | 37.27 |
| 005 | Cesar Greene | 368 | 5.00 | 122.50 | 98.00 | 63.00 | 1294.50 | 38.63 | 58.00 | 1172.00 | -59.37 |

```
13 rows in set (0.03 sec)
```

```
SET @desired_jobcode = '006'
```

| job_code | employee_name | employee_nbr | 2015_hrs | 2015_gross_pay | 2015_gross_pay_per_hr | 2016_hrs | 2016_gross_pay | 2016_gross_pay_per_hr | hrs_diff | gross_pay_diff | gross_pay_per_hr_diff |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 006 | Levi Christensen | 287 | 297.00 | 4232.31 | 370.51 | 223.50 | 3184.92 | 28.50 | -73.50 | -1047.39 | -342.01 |
| 006 | Helen Paul | 203 | 466.00 | 30202.19 | 4925.68 | 453.00 | 29205.71 | 258.54 | -13.00 | -996.48 | -4667.14 |
| 006 | Tommy Graves | 343 | 91.50 | 2281.50 | 897.50 | 69.00 | 1687.00 | 47.47 | -22.50 | -594.50 | -850.03 |
| 006 | Richard Wood | 117 | 233.00 | 3495.00 | 375.00 | 186.00 | 2902.50 | 15.60 | -47.00 | -592.50 | -359.40 |
| 006 | Elisa Warren | 180 | 83.00 | 2139.06 | 860.28 | 54.50 | 1553.13 | 28.50 | -28.50 | -585.93 | -831.78 |
| 006 | Melvin Strickland | 374 | 417.50 | 8723.00 | 1045.00 | 388.00 | 8148.00 | 84.00 | -29.50 | -575.00 | -961.00 |
| 006 | Sheryl Hill | 34 | 6.00 | 257.09 | 42.85 | 4.00 | 201.45 | 50.36 | -2.00 | -55.64 | 7.51 |
| 006 | Fannie Parks | 375 | 9.00 | 190.50 | 64.00 | 10.00 | 239.00 | 23.90 | 1.00 | 48.50 | -40.10 |
| 006 | Kenny Robertson | 210 | 20.00 | 475.60 | 214.02 | 19.00 | 558.83 | 29.41 | -1.00 | 83.23 | -184.61 |
| 006 | Stanley Peterson | 357 | 122.00 | 2745.00 | 930.00 | 106.50 | 2981.25 | 53.08 | -15.50 | 236.25 | -876.92 |
| 006 | Sue Riley | 99 | 953.00 | 20233.50 | 1332.00 | 912.00 | 20520.00 | 90.00 | -41.00 | 286.50 | -1242.00 |
| 006 | Cindy Lunt | 27 | 83.00 | 2889.89 | 1433.52 | 96.00 | 3263.52 | 64.57 | 13.00 | 373.63 | -1368.95 |
| 006 | Frank Diaz | 19 | 49.00 | 1323.00 | 513.00 | 69.00 | 1866.49 | 54.05 | 20.00 | 543.49 | -458.95 |
| 006 | Preston Robinson | 380 | 8.50 | 193.00 | 91.50 | 42.00 | 882.00 | 21.00 | 33.50 | 689.00 | -70.50 |
| 006 | Marcia Neal | 281 | 20.00 | 702.00 | 273.00 | 101.00 | 2866.50 | 60.71 | 81.00 | 2164.50 | -212.29 |
| 006 | Nettie Stevens | 199 | 203.50 | 7934.33 | 1731.44 | 267.00 | 10595.98 | 115.67 | 63.50 | 2661.65 | -1615.77 |
| 006 | Grant Daniel | 406 | 286.25 | 14367.04 | 853.11 | 553.25 | 27977.55 | 103.40 | 267.00 | 13610.51 | -749.71 |

```
17 rows in set (0.03 sec)
```

```
SET @desired_jobcode = '008'
```

| job_code | employee_name | employee_nbr | 2015_hrs | 2015_gross_pay | 2015_gross_pay_per_hr | 2016_hrs | 2016_gross_pay | 2016_gross_pay_per_hr | hrs_diff | gross_pay_diff | gross_pay_per_hr_diff |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 008 | Gwendolyn Alvarado | 402 | 398.00 | 7164.00 | 432.00 | 30.50 | 610.00 | 40.00 | -367.50 | -6554.00 | -392.00 |
| 008 | Alberta Gill | 404 | 177.00 | 3829.37 | 302.88 | 18.50 | 432.15 | 23.36 | -158.50 | -3397.22 | -279.52 |
| 008 | Elisa Warren | 180 | 52.50 | 1220.68 | 372.09 | 14.00 | 346.60 | 24.76 | -38.50 | -874.08 | -347.33 |
| 008 | Marcia Neal | 281 | 38.00 | 988.00 | 26.00 | 15.50 | 403.00 | 26.00 | -22.50 | -585.00 | 0.00 |
| 008 | Tommy Graves | 343 | 39.00 | 895.00 | 182.00 | 13.50 | 311.50 | 46.08 | -25.50 | -583.50 | -135.92 |
| 008 | Myra Vega | 352 | 55.00 | 1045.00 | 342.00 | 27.00 | 513.00 | 19.00 | -28.00 | -532.00 | -323.00 |
| 008 | Richard Wood | 117 | 14.50 | 362.50 | 175.00 | 1.50 | 39.38 | 26.25 | -13.00 | -323.12 | -148.75 |
| 008 | Mary Waters | 23 | 10.00 | 358.82 | 71.24 | 2.00 | 72.12 | 36.06 | -8.00 | -286.70 | -35.18 |
| 008 | Maxine Tyler | 407 | 21.50 | 344.00 | 224.00 | 6.50 | 115.50 | 17.77 | -15.00 | -228.50 | -206.23 |
| 008 | Nettie Stevens | 199 | 31.50 | 1124.55 | 892.50 | 24.50 | 930.85 | 73.74 | -7.00 | -193.70 | -818.76 |
| 008 | Shirley Parker | 336 | 7.00 | 171.50 | 122.50 | 2.00 | 49.00 | 24.50 | -5.00 | -122.50 | -98.00 |
| 008 | Joe Perry | 30 | 5.00 | 121.83 | 73.10 | 1.00 | 25.10 | 25.10 | -4.00 | -96.73 | -48.00 |
| 008 | Hector Wright | 194 | 5.50 | 123.75 | 90.00 | 2.00 | 45.00 | 22.50 | -3.50 | -78.75 | -67.50 |
| 008 | Cindy Lunt | 27 | 49.50 | 1639.38 | 655.75 | 48.00 | 1570.76 | 32.72 | -1.50 | -68.62 | -623.03 |
| 008 | Nichole Fox | 260 | 8.50 | 210.39 | 148.51 | 6.00 | 148.50 | 24.75 | -2.50 | -61.89 | -123.76 |
| 008 | Clarence Padilla | 239 | 2.50 | 58.76 | 94.01 | 1.00 | 23.50 | 47.00 | -1.50 | -35.26 | -47.01 |
| 008 | Delia Lopez | 53 | 2.00 | 50.00 | 25.00 | 1.00 | 25.00 | 25.00 | -1.00 | -25.00 | 0.00 |
| 008 | Deborah Bennett | 204 | 2.00 | 60.46 | 60.46 | 2.00 | 62.96 | 31.48 | 0.00 | 2.50 | -28.98 |
| 008 | Cornelius Gibson | 169 | 6.50 | 212.89 | 163.76 | 6.50 | 218.38 | 33.60 | 0.00 | 5.49 | -130.16 |
| 008 | Renee Armstrong | 408 | 2.00 | 30.00 | 15.00 | 2.50 | 40.00 | 16.00 | 0.50 | 10.00 | 1.00 |
| 008 | Allen Price | 304 | 5.50 | 126.50 | 92.00 | 7.00 | 164.00 | 23.43 | 1.50 | 37.50 | -68.57 |
| 008 | Michele Lee | 201 | 4.50 | 139.50 | 93.00 | 6.00 | 189.00 | 31.50 | 1.50 | 49.50 | -61.50 |
| 008 | Morris Glover | 276 | 4.00 | 93.00 | 46.50 | 6.00 | 144.50 | 24.08 | 2.00 | 51.50 | -22.42 |
| 008 | Katie Hodges | 376 | 2.00 | 37.40 | 18.70 | 5.00 | 93.50 | 18.70 | 3.00 | 56.10 | 0.00 |
| 008 | Sidney Hansen | 345 | 6.00 | 137.00 | 91.00 | 8.50 | 197.00 | 23.18 | 2.50 | 60.00 | -67.82 |
| 008 | Lynne Soto | 153 | 6.00 | 87.00 | 43.50 | 8.00 | 160.00 | 20.00 | 2.00 | 73.00 | -23.50 |
| 008 | Sally Bailey | 409 | 2.00 | 49.00 | 24.50 | 5.00 | 122.50 | 24.50 | 3.00 | 73.50 | 0.00 |
| 008 | Preston Robinson | 380 | 7.00 | 140.00 | 40.00 | 12.50 | 262.50 | 21.00 | 5.50 | 122.50 | -19.00 |
| 008 | Kirk Byrd | 37 | 4.00 | 98.00 | 73.50 | 10.00 | 245.00 | 24.50 | 6.00 | 147.00 | -49.00 |
| 008 | Mona Howard | 398 | 21.50 | 258.00 | 264.00 | 31.50 | 472.50 | 15.00 | 10.00 | 214.50 | -249.00 |
| 008 | Floyd Hunter | 415 | 32.00 | 923.08 | 28.85 | 41.00 | 1182.71 | 57.69 | 9.00 | 259.63 | 28.84 |
| 008 | Cesar Greene | 368 | 27.50 | 673.75 | 465.50 | 46.50 | 1139.25 | 24.50 | 19.00 | 465.50 | -441.00 |
| 008 | Cary Foster | 249 | 40.00 | 1634.62 | 40.87 | 54.00 | 2265.87 | 41.96 | 14.00 | 631.25 | 1.09 |
| 008 | Darryl Burgess | 396 | 21.00 | 672.00 | 32.00 | 38.00 | 1364.50 | 35.91 | 17.00 | 692.50 | 3.91 |
| 008 | Stanley Peterson | 357 | 76.00 | 1520.00 | 220.00 | 89.00 | 2225.00 | 50.00 | 13.00 | 705.00 | -170.00 |
| 008 | Geneva Moody | 133 | 8.00 | 238.00 | 29.75 | 37.00 | 1100.75 | 29.75 | 29.00 | 862.75 | 0.00 |
| 008 | Kenny Robertson | 210 | 7.00 | 166.46 | 47.56 | 43.00 | 1073.76 | 24.97 | 36.00 | 907.30 | -22.59 |
| 008 | Terry Moreno | 320 | 2.00 | 71.63 | 71.63 | 31.00 | 1192.34 | 38.46 | 29.00 | 1120.71 | -33.17 |
| 008 | Frank Diaz | 19 | 3.00 | 81.00 | 27.00 | 46.00 | 1242.72 | 27.02 | 43.00 | 1161.72 | 0.02 |
| 008 | Barry Mckenzie | 391 | 12.00 | 309.00 | 25.75 | 74.50 | 1917.63 | 25.74 | 62.50 | 1608.63 | -0.01 |
| 008 | Beulah Gibbs | 259 | 18.50 | 476.47 | 643.93 | 81.50 | 2253.46 | 54.42 | 63.00 | 1776.99 | -589.51 |
| 008 | Earnest Drake | 11 | 8.00 | 303.85 | 37.98 | 59.00 | 2183.01 | 37.00 | 51.00 | 1879.16 | -0.98 |

42 rows in set (0.06 sec)

VIEW 1: 2015_emp_job

```
SELECT DISTINCT
job_code,
emp_no employee_nbr,
employee_name,
SUM(reg_hrs + ot_hrs) 2015_hrs,
SUM(reg_pay + ot_pay) 2015_gross_pay,
ROUND(SUM((reg_pay + ot_pay)/ (reg_hrs + ot_hrs)), 2) 2015_gross_pay_per_hr
FROM payroll_2015
GROUP BY job_code, employee_nbr, employee_name
LIMIT 20;
```

| job_code | employee_nbr | employee_name | 2015_hrs | 2015_gross_pay | 2015_gross_pay_per_hr |
|---|---|---|---|---|---|
| 005 | 195 | Al Ramos | 0.00 | 0.00 | NULL |
| 002 | 195 | Al Ramos | 896.50 | 25656.52 | 716.68 |
| 010 | 195 | Al Ramos | 0.00 | 0.00 | NULL |
| 002 | 106 | Allan Wood | 185.00 | 3717.00 | 184.25 |
| 005 | 106 | Allan Wood | 0.00 | 0.00 | NULL |
| 010 | 106 | Allan Wood | 0.00 | 0.00 | NULL |
| 012 | 106 | Allan Wood | 0.00 | 0.00 | NULL |
| 010 | 304 | Allen Price | 0.00 | 0.00 | NULL |
| 012 | 304 | Allen Price | 0.00 | 0.00 | NULL |
| 005 | 274 | Angel Watts | 0.00 | 0.00 | NULL |
| 010 | 274 | Angel Watts | 0.00 | 0.00 | NULL |
| 012 | 274 | Angel Watts | 0.00 | 0.00 | NULL |
| 001 | 1 | Antonio Torres | 911.00 | 23873.14 | 1453.01 |
| 010 | 1 | Antonio Torres | 0.00 | 0.00 | NULL |
| 005 | 391 | Barry Mckenzie | 0.00 | 0.00 | NULL |
| 001 | 391 | Barry Mckenzie | 328.50 | 8458.88 | 489.25 |
| 010 | 391 | Barry Mckenzie | 0.00 | 0.00 | NULL |
| 005 | 259 | Beulah Gibbs | 0.00 | 0.00 | NULL |
| 004 | 259 | Beulah Gibbs | 195.50 | 5034.19 | 669.51 |
| 008 | 259 | Beulah Gibbs | 18.50 | 476.47 | 643.93 |

20 rows in set (0.04 sec)

View 2: 2016_emp_job

```
SELECT DISTINCT
job_code,
employee_nbr,
employee_name,
SUM(hours + ot_hours) 2016_hrs,
SUM(gross_wages) 2016_gross_pay,
ROUND(SUM((gross_wages)/ (hours + ot_hours)), 2) 2016_gross_pay_per_hr
FROM payroll_2016
GROUP BY job_code, employee_nbr, employee_name
LIMIT 20;
```

| job_code | employee_nbr | employee_name | 2016_hrs | 2016_gross_pay | 2016_gross_pay_per_hr |
|---|---|---|---|---|---|
| 001 | 44 | Dale Hamilton | 1000.00 | 96250.00 | 192.50 |
| 002 | 45 | Ernesto Todd | 1000.00 | 105641.00 | 211.28 |
| 005 | 422 | Afton Call | 13.50 | 172.00 | 30.00 |
| 005 | 269 | Jo Manning | 23.00 | 339.00 | 24.00 |
| 005 | 357 | Jesus Peterson | 25.00 | 351.00 | 26.13 |
| 005 | 314 | Marianne Baldwin | 37.00 | 573.75 | 80.77 |
| 005 | 400 | Roberto Ortega | 3.00 | 45.00 | 30.00 |
| 005 | 415 | Floyd Hunter | 39.00 | 1000.39 | 87.69 |
| 005 | 34 | Sheryl Hill | 25.00 | 375.00 | 30.00 |
| 005 | 281 | Marcia Neal | 25.00 | 354.00 | 20.50 |
| 005 | 179 | Cassandra Poole | 25.00 | 333.00 | 22.50 |
| 005 | NULL | NULL | 61.00 | 1105.00 | 147.29 |
| 005 | 192 | Mike Briggs | 23.00 | 321.00 | 23.18 |
| 005 | 195 | Al Ramos | 24.00 | 360.00 | 30.00 |
| 005 | 199 | Nettie Stevens | 25.00 | 345.00 | 25.88 |
| 005 | 274 | Angel Watts | 1.00 | 15.00 | 15.00 |
| 005 | 27 | Cindy Lunt | 24.00 | 321.00 | 19.70 |
| 005 | 201 | Michele Lee | 24.00 | 333.00 | 23.09 |
| 005 | 203 | Helen Paul | 25.00 | 513.00 | 41.50 |
| 005 | 259 | Beulah Gibbs | 25.00 | 336.00 | 28.96 |

20 rows in set (0.02 sec)

**Part III – Question 3**

Write a succinct memo to Charlotte about what you have learned. Make sure to reference the queries from above in the memo. Discuss any discrepancies that you observed and make suggestions about what you recommend Charlotte should do next.

**Looking at the data sets (2015_jobtotal and 2016_job_total) that we created, on the hrs_diff column, it seems that 2015 workers are working more hours. According to gross_pay_diff column, 2016 workers got paid more on average but were paid less on a per hourly rate. This counterintuitive result should be investigated more closely.**

**I would recommend looking into specific departments that have particularly high spreads in the pay per hour columns and also look into specific employees in each department with high spreads and research why some employees' pay per hour is larger than other employees in the same department.**

**Part IV – Question 1**

Which employees are earning the most overtime pay and how much did they earn in the first six months of 2015? Prepare a query that displays the employee number, employee name (in one field list as FirstName LastName), the number of hours of overtime and the total amount of overtime pay.

```
SELECT
emp_no,
employee_name,
SUM(ot_hrs) ot_hrs_total,
SUM(ot_pay) ot_pay_total
FROM payroll_2015
WHERE MONTH(pay_date) BETWEEN 1 AND 6
#WHERE pay_date BETWEEN '2015-01-01' AND '2015-06-30'
GROUP BY
emp_no,
employee_name
HAVING SUM(ot_hrs)> 0
ORDER BY ot_pay_total DESC;
```

| emp_no | employee_name | ot_hrs_total | ot_pay_total |
|---|---|---|---|
| 27 | Cindy Lunt | 91.50 | 4186.24 |
| 269 | Jo Manning | 62.00 | 2604.00 |
| 199 | Nettie Stevens | 45.00 | 2409.75 |
| 239 | Clarence Padilla | 27.75 | 928.87 |
| 357 | Stanley Peterson | 30.50 | 915.00 |
| 180 | Elisa Warren | 20.50 | 714.94 |
| 343 | Tommy Graves | 19.50 | 666.75 |
| 281 | Marcia Neal | 16.00 | 624.00 |
| 204 | Deborah Bennett | 8.00 | 362.76 |
| 405 | Lynn Perkins | 8.00 | 204.00 |
| 99 | Sue Riley | 5.00 | 157.50 |
| 401 | Maryann Cohen | 4.00 | 156.00 |
| 409 | Sally Bailey | 4.00 | 147.00 |
| 412 | Norman Ruiz | 5.50 | 132.00 |
| 380 | Preston Robinson | 4.00 | 126.00 |
| 210 | Kenny Robertson | 2.50 | 89.18 |
| 336 | Shirley Parker | 2.00 | 73.50 |
| 358 | Marc Wallace | 1.25 | 29.54 |

18 rows in set (0.04 sec)

**Part IV – Question 2**

To reduce overtime pay, Charlotte is considering shuffling employees from one job code to another. Which job codes have the most overtime pay in 2015? Display job code, job code descriptions, the number of overtime hours, and the amount of overtime pay. Make sure to list all job codes that are in the job code table, even if they do not show any overtime hours. Do not list any job codes that are not listed in the job code table.

```
SELECT
job_code,
job_description,
SUM(ot_hrs) total_ot_hrs,
SUM(ot_pay) total_ot_pay
#FROM payroll_2015 LEFT JOIN jobcodes USING(job_code)
FROM jobcodes LEFT JOIN payroll_2015 USING(job_code)
GROUP BY
job_code,
job_description
ORDER BY total_ot_pay DESC, job_description;
```

| job_code | job_description | total_ot_hrs | total_ot_pay |
|---|---|---|---|
| 006 | Service | 148.50 | 6007.52 |
| 001 | Office | 80.00 | 2899.16 |
| 004 | Proj Management | 66.50 | 2836.15 |
| 002 | Sales | 37.50 | 1727.01 |
| 005 | Installation | 14.00 | 589.26 |
| 008 | Employee Training | 8.50 | 388.88 |
| 003 | Travel | 1.00 | 53.55 |
| 007 | Customer Training | 0.00 | 0.00 |
| 012 | Internal Auditing | 0.00 | 0.00 |
| 011 | Internal Projects | 0.00 | 0.00 |
| 010 | New Foreign Manufacturing Oversight | 0.00 | 0.00 |
| 009 | New Foreign Manufacturing Plant | 0.00 | 0.00 |

12 rows in set (0.03 sec)

**Part IV – Question 3**

Charlotte knows there are some errors with the new system used in 2016. What is the total number of transactions entered in 2016 without an employee number? What was the total gross wage amount for these "phantom" entries? Make sure to use a descriptive title for each column

```
SELECT
COUNT(*) total_missing_transactions,
ROUND(SUM(gross_wages)) missing_emp_wages
FROM payroll_2016
WHERE employee_id IS NULL;
```

```
+---------------------------+-------------------+
| total_missing_transactions | missing_emp_wages |
+---------------------------+-------------------+
|                         68 | 32951             |
+---------------------------+-------------------+
1 row in set (0.01 sec)
```

**Part IV – Question 4**

In 2015, were there any employees who incurred overtime when they had not already worked 40 regular work hours during the pay period (assume, for this problem, that all pay on the same date is for the same pay period)? Return the name of the employee (in one field, list it as FirstName LastName), the pay date, the total number of regular hours worked and the total number if overtime hours worked. Make sure only to list values if an employee worked less than 40 hours but listed some overtime hours.

```
SELECT
employee_name,
pay_date,
SUM(reg_hrs) total_reg_hrs,
SUM(ot_hrs) total_ot_hrs
FROM payroll_2015
GROUP BY
employee_name,
pay_date
HAVING SUM(reg_hrs) < 40
AND SUM(ot_hrs) > 0
ORDER BY employee_name, pay_date;
```

| employee_name | pay_date | total_reg_hrs | total_ot_hrs |
|---|---|---|---|
| Cindy Lunt | 2015-01-23 | 13.00 | 4.50 |
| Cindy Lunt | 2015-01-30 | 18.00 | 4.00 |
| Cindy Lunt | 2015-02-06 | 11.50 | 4.50 |
| Cindy Lunt | 2015-02-13 | 9.00 | 4.50 |
| Cindy Lunt | 2015-02-20 | 12.00 | 4.50 |
| Cindy Lunt | 2015-02-27 | 14.00 | 4.00 |
| Cindy Lunt | 2015-03-06 | 2.00 | 2.50 |
| Cindy Lunt | 2015-03-13 | 11.50 | 1.50 |
| Cindy Lunt | 2015-03-20 | 11.50 | 2.50 |
| Cindy Lunt | 2015-03-27 | 15.00 | 5.50 |
| Cindy Lunt | 2015-04-03 | 15.50 | 3.50 |
| Cindy Lunt | 2015-04-10 | 18.50 | 4.50 |
| Cindy Lunt | 2015-04-17 | 23.00 | 4.00 |
| Cindy Lunt | 2015-04-24 | 12.00 | 2.50 |
| Cindy Lunt | 2015-05-01 | 20.00 | 3.50 |
| Cindy Lunt | 2015-05-08 | 13.00 | 1.50 |
| Cindy Lunt | 2015-05-15 | 18.00 | 4.00 |
| Cindy Lunt | 2015-05-22 | 15.50 | 4.50 |
| Cindy Lunt | 2015-05-29 | 13.00 | 3.00 |
| Cindy Lunt | 2015-06-12 | 16.00 | 5.00 |
| Cindy Lunt | 2015-06-19 | 28.50 | 9.00 |
| Cindy Lunt | 2015-06-26 | 6.50 | 8.50 |
| Deborah Bennett | 2015-05-08 | 0.00 | 8.00 |
| Elisa Warren | 2015-01-16 | 3.00 | 2.00 |
| Elisa Warren | 2015-01-23 | 5.50 | 2.00 |
| Elisa Warren | 2015-02-06 | 4.00 | 2.50 |
| Elisa Warren | 2015-02-27 | 1.00 | 2.00 |
| Elisa Warren | 2015-03-06 | 2.00 | 2.00 |

| Elisa Warren | 2015-04-10 | 2.50 | 2.00 |
| --- | --- | --- | --- |
| Elisa Warren | 2015-04-17 | 5.00 | 2.00 |
| Elisa Warren | 2015-05-29 | 9.50 | 2.00 |
| Elisa Warren | 2015-06-05 | 1.50 | 4.00 |
| Jo Manning | 2015-01-16 | 10.00 | 2.00 |
| Jo Manning | 2015-01-23 | 12.00 | 3.00 |
| Jo Manning | 2015-01-30 | 6.00 | 2.00 |
| Jo Manning | 2015-02-13 | 8.00 | 4.00 |
| Jo Manning | 2015-02-20 | 6.00 | 3.00 |
| Jo Manning | 2015-02-27 | 6.00 | 3.00 |
| Jo Manning | 2015-03-06 | 3.00 | 4.00 |
| Jo Manning | 2015-03-13 | 8.00 | 4.00 |
| Jo Manning | 2015-03-20 | 4.00 | 3.00 |
| Jo Manning | 2015-03-27 | 6.00 | 6.00 |
| Jo Manning | 2015-04-03 | 9.00 | 6.00 |
| Jo Manning | 2015-04-10 | 8.00 | 4.00 |
| Jo Manning | 2015-04-17 | 6.00 | 3.00 |
| Jo Manning | 2015-04-24 | 4.00 | 2.00 |
| Jo Manning | 2015-05-08 | 7.00 | 3.00 |
| Jo Manning | 2015-05-15 | 6.00 | 2.00 |
| Jo Manning | 2015-06-05 | 10.00 | 2.00 |
| Jo Manning | 2015-06-12 | 6.00 | 3.00 |
| Jo Manning | 2015-06-19 | 7.00 | 1.00 |
| Jo Manning | 2015-06-26 | 7.00 | 2.00 |
| Kenny Robertson | 2015-01-16 | 3.00 | 2.50 |
| Marcia Neal | 2015-02-27 | 3.00 | 4.00 |
| Marcia Neal | 2015-04-03 | 1.50 | 2.00 |
| Marcia Neal | 2015-04-10 | 5.50 | 2.00 |
| Marcia Neal | 2015-05-08 | 2.50 | 2.00 |
| Marcia Neal | 2015-05-15 | 2.00 | 2.00 |
| Marcia Neal | 2015-06-26 | 0.00 | 4.00 |
| Maryann Cohen | 2015-01-16 | 4.00 | 4.00 |
| Nettie Stevens | 2015-01-02 | 4.50 | 6.00 |
| Nettie Stevens | 2015-01-09 | 9.00 | 2.00 |

| Nettie Stevens | 2015-01-30 | 4.00 | 5.50 |
| --- | --- | --- | --- |
| Nettie Stevens | 2015-02-06 | 12.00 | 2.00 |
| Nettie Stevens | 2015-02-20 | 8.50 | 4.00 |
| Nettie Stevens | 2015-03-13 | 8.50 | 2.00 |
| Nettie Stevens | 2015-03-20 | 5.50 | 2.00 |
| Nettie Stevens | 2015-03-27 | 8.00 | 3.00 |
| Nettie Stevens | 2015-04-10 | 8.50 | 3.00 |
| Nettie Stevens | 2015-04-24 | 5.50 | 2.00 |
| Nettie Stevens | 2015-05-01 | 8.50 | 2.50 |
| Nettie Stevens | 2015-05-08 | 11.00 | 1.50 |
| Nettie Stevens | 2015-06-05 | 2.00 | 2.00 |
| Nettie Stevens | 2015-06-12 | 7.00 | 5.00 |
| Nettie Stevens | 2015-06-26 | 7.50 | 2.50 |
| Preston Robinson | 2015-06-19 | 1.00 | 2.00 |
| Preston Robinson | 2015-06-26 | 0.00 | 2.00 |
| Sally Bailey | 2015-04-24 | 4.00 | 4.00 |
| Shirley Parker | 2015-04-24 | 2.00 | 2.00 |
| Stanley Peterson | 2015-01-09 | 3.50 | 4.00 |
| Stanley Peterson | 2015-01-16 | 4.50 | 2.00 |
| Stanley Peterson | 2015-01-23 | 2.50 | 2.00 |
| Stanley Peterson | 2015-01-30 | 6.00 | 2.00 |
| Stanley Peterson | 2015-02-06 | 2.00 | 2.00 |
| Stanley Peterson | 2015-02-20 | 22.50 | 1.00 |
| Stanley Peterson | 2015-03-06 | 3.50 | 2.00 |
| Stanley Peterson | 2015-03-13 | 5.00 | 2.00 |
| Stanley Peterson | 2015-04-17 | 4.00 | 2.00 |
| Stanley Peterson | 2015-04-24 | 4.50 | 2.00 |
| Stanley Peterson | 2015-05-15 | 8.00 | 1.50 |
| Stanley Peterson | 2015-05-22 | 3.50 | 3.00 |
| Stanley Peterson | 2015-06-19 | 6.00 | 0.50 |
| Stanley Peterson | 2015-06-26 | 6.50 | 2.50 |
| Tommy Graves | 2015-01-02 | 5.00 | 2.00 |
| Tommy Graves | 2015-02-06 | 35.00 | 2.00 |
| Tommy Graves | 2015-02-13 | 8.00 | 2.00 |

```
| Tommy Graves     | 2015-03-20 | 3.00          | 2.00         |
| Tommy Graves     | 2015-03-27 | 3.00          | 2.00         |
| Tommy Graves     | 2015-05-01 | 5.00          | 2.00         |
| Tommy Graves     | 2015-05-08 | 1.50          | 2.00         |
| Tommy Graves     | 2015-05-15 | 4.50          | 1.50         |
| Tommy Graves     | 2015-06-12 | 7.00          | 2.00         |
| Tommy Graves     | 2015-06-19 | 5.00          | 2.00         |
+------------------+------------+---------------+--------------+
103 rows in set (0.04 sec)
```

**Part IV – Question 5**

What was the total employee cost for all projects in 2016? The total employee cost should include everything paid for wages, Social Security and Medicaid, FUTA, SUTA and workers' compensation.

```
SELECT
ROUND(SUM(gross_wages + futa + suta + socsec_medicare + work_comp))
total_emp_cost
FROM payroll_2016;
```

```
+----------------+
| total_emp_cost |
+----------------+
| 1486455        |
+----------------+
1 row in set (0.01 sec)
```

**Part IV – Question 6**

Charlotte wants to better understand monthly cash flows. To do this, she wants to know the monthly pattern of expenses for gross wages in 2015 (monthly wages are not available for 2016). That is, prepare a query that shows each month (sorted so January is listed first) and how much the amount of gross wages for that month differs from the average of the *monthly* gross wages for the first six months. Which month or months should Charlotte plan to have extra cash for higher-than-normal wage expenses?

```
SELECT
extract_month,
2015_gross_wage,
ROUND((SELECT AVG(2015_gross_wage) FROM monthly_wage_calc),2) 2015_avg_wage,
ROUND(2015_gross_wage - (SELECT AVG(2015_gross_wage) FROM
monthly_wage_calc),2) diff_from_avg
FROM monthly_wage_calc;
```

```
+---------------+-----------------+---------------+---------------+
| extract_month | 2015_gross_wage | 2015_avg_wage | diff_from_avg |
+---------------+-----------------+---------------+---------------+
|             1 | 178365.77       | 181122.37     | -2756.60      |
|             2 | 172077.31       | 181122.37     | -9045.06      |
|             3 | 177246.39       | 181122.37     | -3875.98      |
|             4 | 174235.29       | 181122.37     | -6887.08      |
|             5 | 221517.17       | 181122.37     | 40394.81      |
|             6 | 163292.26       | 181122.37     | -17830.11     |
+---------------+-----------------+---------------+---------------+
```

```
6 rows in set (0.04 sec)
```

VIEW: monthly_wage_calc

```
SELECT
MONTH(pay_date) AS extract_month,
ROUND(SUM(reg_pay + ot_pay),2) 2015_gross_wage
FROM payroll_2015
GROUP BY MONTH(pay_date);
```

```
+---------------+-----------------+
| extract_month | 2015_gross_wage |
+---------------+-----------------+
|             1 | 178365.77       |
|             2 | 172077.31       |
|             3 | 177246.39       |
|             4 | 174235.29       |
|             5 | 221517.17       |
|             6 | 163292.26       |
+---------------+-----------------+
6 rows in set (0.02 sec)
```

Charlotte should plan to have extra cash for May, as the gross wages for 2015 is much higher than the other months.

**Part IV – Question 7**

Charlotte wants to predict her likely gross wage expenses for the first six months for each job code in 2017. That is, Charlotte wants the query to prompt her to enter the job code number (e.g., 001, 002, 003) so the query will compute the expected gross wages for that job code in 2017. To make the prediction, the query will use the following formula:

*(Gross wages for the job code in 2016 / Gross wages for the job code in 2015) * Gross wages for the job code in 2016)*

The query should display the job code, the predicted 2017 gross wages for the job code, the percentage increase from 2015 to 2016, the gross wages for 2016 and the gross wages for 2015. Output the data for job codes: 005, 006, & 008.

```
SET @job_code = '005'; -- input desired jobcode

SELECT
job_code,
ROUND((2016_gross_pay / 2015_gross_pay) * 2016_gross_pay, 2)
2017_gross_wage_prediction,
ROUND(((2016_gross_pay - 2015_gross_pay) / 2015_gross_pay), 2)
pct_change_from_2015_2016,
2016_gross_pay,
2015_gross_pay
FROM 2015_jobtotal JOIN 2016_jobtotal USING(job_code)
WHERE job_code = @job_code;
```

```
+----------+-----------------------------+---------------------------+----------------+----------------+
| job_code | 2017_gross_wage_prediction | pct_change_from_2015_2016 | 2016_gross_pay | 2015_gross_pay |
+----------+-----------------------------+---------------------------+----------------+----------------+
| 005      | 68087.13                    | 1.76                      | 24682.20       | 8947.52        |
+----------+-----------------------------+---------------------------+----------------+----------------+
1 row in set (0.02 sec)

+----------+-----------------------------+---------------------------+----------------+----------------+
| job_code | 2017_gross_wage_prediction | pct_change_from_2015_2016 | 2016_gross_pay | 2015_gross_pay |
+----------+-----------------------------+---------------------------+----------------+----------------+
| 006      | 154185.85                   | 0.23                      | 125850.06      | 102721.73      |
+----------+-----------------------------+---------------------------+----------------+----------------+
1 row in set (0.02 sec)

+----------+-----------------------------+---------------------------+----------------+----------------+
| job_code | 2017_gross_wage_prediction | pct_change_from_2015_2016 | 2016_gross_pay | 2015_gross_pay |
+----------+-----------------------------+---------------------------+----------------+----------------+
| 008      | 59737.46                    | 0.37                      | 43518.21       | 31702.63       |
+----------+-----------------------------+---------------------------+----------------+----------------+
1 row in set (0.02 sec)
```

## Part IV – Question 8

The 2016 data is not broken down by month. Charlotte wants to estimate what the monthly gross wages are by month. To do so, Charlotte requests that you apply the percentage of gross wages earned each month in 2015 to the 2016 total gross wages to estimate the monthly expenditures in 2016. Display the month (sorted so January is listed first) and the predicted gross wages per month for 2016 (round this number to two decimal points).

```
SELECT
extract_month,
pct_gross_wage,
ROUND(pct_gross_wage * (SELECT (SUM(2016_gross_pay)) FROM 2016_jobtotal),2)
2016_monthly_spending
FROM monthly_wage;
```

```
+---------------+---------------------------------+-----------------------+
| extract_month | ROUND(pct_gross_wage * 100,3) | 2016_monthly_spending |
+---------------+---------------------------------+-----------------------+
|             1 | 16.410                          | 221992.80             |
|             2 | 15.830                          | 214146.62             |
|             3 | 16.310                          | 220640.01             |
|             4 | 16.030                          | 216852.20             |
|             5 | 20.380                          | 275698.55             |
|             6 | 15.030                          | 203324.30             |
+---------------+---------------------------------+-----------------------+
6 rows in set (0.03 sec)
```

VIEW: monthly_wage

```
CREATE VIEW monthly_wage AS

SELECT
extract_month,
2015_gross_wage,
ROUND(2015_gross_wage / (SELECT SUM(2015_gross_wage) FROM
monthly_wage_calc),3) * 100 pct_gross_wage
FROM monthly_wage_calc;
```

| extract_month | 2015_gross_wage | pct_gross_wage |
|---|---|---|
| 1 | 178365.77 | 16.400 |
| 2 | 172077.31 | 15.800 |
| 3 | 177246.39 | 16.300 |
| 4 | 174235.29 | 16.000 |
| 5 | 221517.17 | 20.400 |
| 6 | 163292.26 | 15.000 |

6 rows in set (0.07 sec)

Monthly_wage_calc view is found on part 4 question 6

**Project Log:**

Date/Time: 03/19/2024; In-Class (1:30-3 pm)
Person Asked: Sambridhi Tuldahar
Question: I asked if she could help with my error in part 3 question 1.
Answer: We talked about the JOINS and figured out that using a LEFT join would work.

Date/Time: 03/19/2024; In-Class (1:30-3 pm)
Person Asked: Sambridhi Tuldahar
Question: I asked if she could explain the thought-process in going about understanding part 4 question 2.
Answer: She explained the question and told me that using a view would make the question easier to solve.

Date/Time: 03/19/2024; In-Class (1:30-3 pm)
Person Asked: Sambridhi Tuldahar
Question: I asked if she could explain the thought-process in going about looking at my syntax error in part 4 question 6.
Answer: She pointed out that I was using my SELECT statement subquery incorrectly and that using a view to solve this would be easier.

**The Pledge:**

I pledge on my honor that I have neither given nor received any unacknowledged aid on this exam.

Chaeyon Jang
03/25/2024