SQL part 1. Basic Queries

1. Show information about all departments.

```
dept_id |       dept_name        |    address
---------+-----------------------+-----------------
     10 | ADMINISTRATION         | GRANT AVE 2
     20 | DISTRIBUTED SYSTEMS    | GRANT AVE 3
     30 | EXPERT SYSTEMS         | 47TH STR
     40 | ALGORITHMS             | 45TH STR
     50 | OPERATIONAL RESEARCH   | PLAINFIELD ROAD
```

2. Show all employees.

```
emp_id | surname  | name   |    job      | boss_id | hire_date  | salary  | add_salary | dept_id
--------+----------+--------+-------------+---------+------------+---------+------------+---------
   100 | Smith    | John   | PRINCIPAL   |         | 1968-01-01 | 4730.00 |    980.50 |      10
   110 | Jones    | Carl   | PROFESSOR   |     100 | 1973-05-01 | 3350.00 |    610.00 |      40
   120 | Williams | Andrew | PROFESSOR   |     100 | 1977-09-01 | 3070.00 |           |      30
   130 | Wilson   | Peter  | PROFESSOR   |     100 | 1968-07-01 | 3960.00 |           |      20
   140 | Johnson  | Chris  | PROFESSOR   |     130 | 1975-09-15 | 3230.00 |    805.00 |      20
   150 | White    | Mary   | LECTURER    |     130 | 1977-09-01 | 2845.50 |           |      20
   160 | Edwards  | Ana    | SECRETARY   |     130 | 1985-03-01 | 1590.00 |           |      20
   170 | Green    | Ian    | ASSISTANT   |     130 | 1992-10-01 | 1839.70 |    480.50 |      20
   190 | Lewis    | Arnold | ASSISTANT   |     140 | 1993-09-01 | 1971.00 |           |      20
   180 | Clark    | Mark   | LECTURER    |     100 | 1985-02-20 | 2610.20 |           |      10
   200 | Wood     | Adam   | PHD STUDENT |     140 | 1994-07-15 |  900.00 |           |      30
   210 | Jackson  | Peter  | PHD STUDENT |     130 | 1993-10-15 |  900.00 |    570.60 |      30
   220 | Young    | Wayne  | ASSISTANT   |     110 | 1993-10-01 | 1889.00 |           |      20
   230 | Bell     | Tom    | ASSISTANT   |     120 | 1992-09-01 | 1850.00 |    390.00 |
```

3. Show surnames, jobs and yearly incomes of all employees (build an expression with *salary* column, a *salary* column is a monthly pay).

```
surname  |     job     | ?column?
---------+-------------+----------
Smith    | PRINCIPAL   | 56760.00
Jones    | PROFESSOR   | 40200.00
Williams | PROFESSOR   | 36840.00
Wilson   | PROFESSOR   | 47520.00
Johnson  | PROFESSOR   | 38760.00
White    | LECTURER    | 34146.00
Edwards  | SECRETARY   | 19080.00
Green    | ASSISTANT   | 22076.40
Lewis    | ASSISTANT   | 23652.00
Clark    | LECTURER    | 31322.40
Wood     | PHD STUDENT | 10800.00
Jackson  | PHD STUDENT | 10800.00
Young    | ASSISTANT   | 22668.00
Bell     | ASSISTANT   | 22200.00
```

4. Modify previous query to change name last column to a „yearly_income".

```
surname   |      job      | yearly_income
----------+--------------+---------------
Smith     | PRINCIPAL    |      56760.00
Jones     | PROFESSOR    |      40200.00
Williams  | PROFESSOR    |      36840.00
Wilson    | PROFESSOR    |      47520.00
Johnson   | PROFESSOR    |      38760.00
White     | LECTURER     |      34146.00
Edwards   | SECRETARY    |      19080.00
Green     | ASSISTANT    |      22076.40
Lewis     | ASSISTANT    |      23652.00
Clark     | LECTURER     |      31322.40
Wood      | PHD STUDENT  |      10800.00
Jackson   | PHD STUDENT  |      10800.00
Young     | ASSISTANT    |      22668.00
Bell      | ASSISTANT    |      22200.00
```

5. Show surnames, jobs and total monthly incomes of all employees (sum values of columns *salary* and *add_salary*). Order the result according to monthly income.

```
surname   |      job      | monthly_income
----------+--------------+----------------
Wood      | PHD STUDENT  |          900.00
Jackson   | PHD STUDENT  |         1470.60
Edwards   | SECRETARY    |         1590.00
Young     | ASSISTANT    |         1889.00
Lewis     | ASSISTANT    |         1971.00
Bell      | ASSISTANT    |         2240.00
Green     | ASSISTANT    |         2320.20
Clark     | LECTURER     |         2610.20
White     | LECTURER     |         2845.50
Williams  | PROFESSOR    |         3070.00
Jones     | PROFESSOR    |         3960.00
Wilson    | PROFESSOR    |         3960.00
Johnson   | PROFESSOR    |         4035.00
Smith     | PRINCIPAL    |         5710.50
```

6. Show names and surnames of all assistants. Names and surnames should appear in one column, Order them according to their surnames and names.

```
 assistants
-------------
Arnold Lewis
Ian Green
Tom Bell
Wayne Young
```

7. Display data shown below. Choose only those employees who work in department 30 or 40. Order them according to their salaries in descending order.

```
   employee       |      job      | salary  | dept_id
------------------+--------------+---------+---------
Carl Jones        | PROFESSOR    | 3350.00 |      40
Andrew Williams   | PROFESSOR    | 3070.00 |      30
Adam Wood         | PHD STUDENT  |  900.00 |      30
Peter Jackson     | PHD STUDENT  |  900.00 |      30
```

8. Display data shown below. Choose only those employees whose salaries are greater than or equal to 1000 and lower than or equal to 2000. Order the result set according to salaries.

```
   employee    |    job     |  salary
--------------+-----------+---------
 Ana Edwards  | SECRETARY | 1590.00
 Ian Green    | ASSISTANT | 1839.70
 Tom Bell     | ASSISTANT | 1850.00
 Wayne Young  | ASSISTANT | 1889.00
 Arnold Lewis | ASSISTANT | 1971.00
```

9. Show names and surnames of employees whose surnames end with string „son".

```
name    surname
------  -------
Peter   Wilson
Chris   Johnson
Peter   Jackson
```

10. Show names and surnames of employees who do not belong to any department.

```
 name | surname
------+---------
 Tom  | Bell
```

11. Display information shown below. Choose only those employees who have boss and earn more than 2000 (an identifier of employee's boss is a value of column *boss_id*).

```
  name   | surname  | boss_id | salary
--------+----------+---------+---------
 Carl   | Jones    |     100 | 3350.00
 Andrew | Williams |     100 | 3070.00
 Peter  | Wilson   |     100 | 3960.00
 Chris  | Johnson  |     130 | 3230.00
 Mary   | White    |     130 | 2845.50
 Mark   | Clark    |     100 | 2610.20
```

12. Show names, surnames and departments of employees who belong to department 20 and their surnames start with capital „W" or end with „son".

```
 name  | surname | dept_id
-------+---------+---------
 Peter | Wilson  |    20
 Chris | Johnson |    20
 Mary  | White   |    20
```

13. Display names, surnames and monthly salaries (sum of salary and additional salary). Choose only those employees whose monthly salaries are greater than 4000.

```
 name  | surname | monthly_salary
-------+---------+----------------
 John  | Smith   |        5710.50
 Chris | Johnson |        4035.00
```

14. Build a query which will produce following result set (data are ordered by surname and name).

```
                            employees
 ----------------------------------------------------------------
 Employee Tom Bell works as ASSISTANT and earns 2240.00
 Employee Mark Clark works as LECTURER and earns 2610.20
 Employee Ana Edwards works as SECRETARY and earns 1590.00
 Employee Ian Green works as ASSISTANT and earns 2320.20
 Employee Peter Jackson works as PHD STUDENT and earns 1470.60
 Employee Chris Johnson works as PROFESSOR and earns 4035.00
 Employee Carl Jones works as PROFESSOR and earns 3960.00
 Employee Arnold Lewis works as ASSISTANT and earns 1971.00
 Employee John Smith works as PRINCIPAL and earns 5710.50
 Employee Mary White works as LECTURER and earns 2845.50
 Employee Andrew Williams works as PROFESSOR and earns 3070.00
 Employee Peter Wilson works as PROFESSOR and earns 3960.00
 Employee Adam Wood works as PHD STUDENT and earns 900.00
 Employee Wayne Young works as ASSISTANT and earns 1889.00
```