

# **SQL/XML**

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# SQL/XML(ISO/IEC 9075–14:2005(E))

## ▫ Функции:

▫ XMLELEMENT

▫ XMLATTRIBUTES

▫ XMLFOREST

▫ XMLCONCAT

▫ XMLAGG

▫ XMLCOMMENT

XMLROOT

и т.д.

# Пример (XMLElement)

```
-- With standard XML date format:  
SELECT XMLElement("Date", hire_date)  
FROM hr.employees  
WHERE employee_id = 203;
```

```
XMLEMENT ("DATE", HIRE_DATE)
```

```
-----
```

```
<Date>1994-06-07</Date>
```

```
1 row selected.
```

# Пример (XMLElement)

```
-- With an alternative date format:  
SELECT XMLElement("Date", to_char(hire_date))  
FROM hr.employees  
WHERE employee_id = 203;  
  
XMLELEMENT("DATE", TO_CHAR(HIRE_DATE))  
-----  
<Date>07-JUN-94</Date>
```

# Пример (XMLElement)

```
SELECT e.employee_id,  
       XMLELEMENT ("Emp", e.first_name || ' ' || e.last_name) AS "RESULT"  
FROM hr.employees e  
WHERE employee_id > 200;
```

```
EMPLOYEE_ID RESULT  
-----
```

```
201 <Emp>Michael Hartstein</Emp>  
202 <Emp>Pat Fay</Emp>  
203 <Emp>Susan Mavris</Emp>  
204 <Emp>Hermann Baer</Emp>  
205 <Emp>Shelley Higgins</Emp>  
206 <Emp>William Gietz</Emp>
```

```
6 rows selected.
```

# Пример (XMLElement)

```
SELECT XMLElement("Emp",
                 XMLElement("name", e.first_name || ' ' || e.last_name),
                 XMLElement("hiredate", e.hire_date)) AS "RESULT"
FROM hr.employees e
WHERE employee_id > 200 ;
```

RESULT

```
-----
<Emp><name>Michael Hartstein</name><hiredate>1996-02-17</hiredate></Emp>
<Emp><name>Pat Fay</name><hiredate>1997-08-17</hiredate></Emp>
<Emp><name>Susan Mavris</name><hiredate>1994-06-07</hiredate></Emp>
<Emp><name>Hermann Baer</name><hiredate>1994-06-07</hiredate></Emp>
<Emp><name>Shelley Higgins</name><hiredate>1994-06-07</hiredate></Emp>
<Emp><name>William Gietz</name><hiredate>1994-06-07</hiredate></Emp>
```

6 rows selected.

# Пример (XMLElement, XMLAttributes)

```
SELECT XMLElement("Emp", XMLAttributes(  
    e.employee_id as "ID",  
    e.first_name || ' ' || e.last_name AS "name"))  
AS "RESULT"  
FROM hr.employees e  
WHERE employee_id > 200;
```

RESULT

```
-----  
<Emp ID="201" name="Michael Hartstein"></Emp>  
<Emp ID="202" name="Pat Fay"></Emp>  
<Emp ID="203" name="Susan Mavris"></Emp>  
<Emp ID="204" name="Hermann Baer"></Emp>  
<Emp ID="205" name="Shelley Higgins"></Emp>  
<Emp ID="206" name="William Gietz"></Emp>
```

6 rows selected.

# Пример (XMLElement, XMLAttributes)

```
SELECT XMLElement("Emp->Special",
                XMLAttributes(e.last_name || ', ' || e.first_name
                             AS "Last,First"))
AS "RESULT"
FROM hr.employees e
WHERE employee_id = 201;
```

RESULT

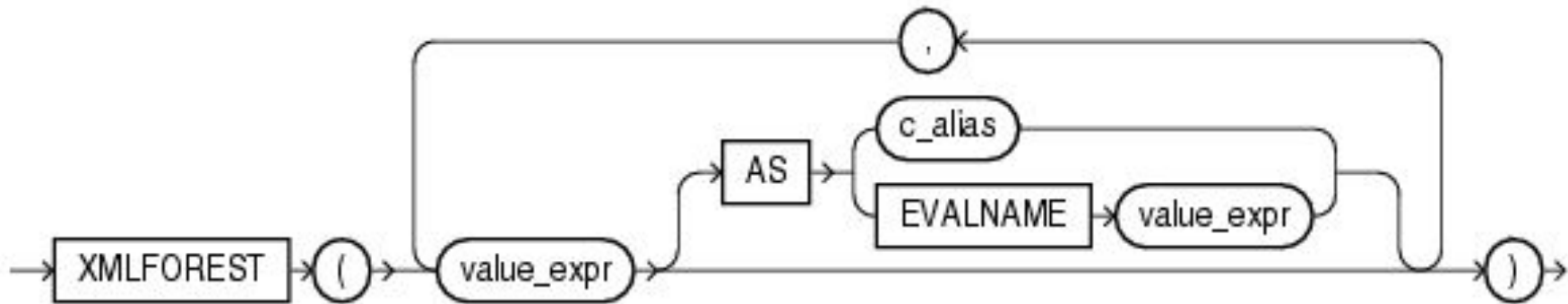
---

```
<Emp->Special Last,First="Hartstein, Michael"></Emp->Special>
```

1 row selected.



# Синтаксис XMLFOREST



# Пример(XMLForest)

```
SELECT XMLElement("Emp",
                 XMLAttributes(e.first_name || ' ' || e.last_name AS "name"),
                 XMLForest(e.hire_date, e.department AS "department"))
AS "RESULT"
FROM employees e WHERE e.department_id = 20;
```

RESULT

```
-----
<Emp name="Michael Hartstein">
  <HIRE_DATE>1996-02-17</HIRE_DATE>
  <department>20</department>
</Emp>
<Emp name="Pat Fay">
  <HIRE_DATE>1997-08-17</HIRE_DATE>
  <department>20</department>
</Emp>
```

2 rows selected.

# Пример (XMLCONCAT)

```
SELECT XMLConcat(XMLElement("first", e.first_name),
                 XMLElement("last", e.last_name))
       AS "RESULT"
FROM employees e;
```

RESULT

```
-----
<first>Den</first><last>Raphaely</last>
<first>Alexander</first><last>Khoo</last>
<first>Shelli</first><last>Baida</last>
<first>Sigal</first><last>Tobias</last>
<first>Guy</first><last>Himuro</last>
<first>Karen</first><last>Colmenares</last>
```

6 rows selected.

# Синтаксис XMLAGG



# Пример (XMLAGG)

```
SELECT XMLElement("Department", XMLAgg(XMLElement("Employee",
                                             e.job_id||' '||e.last_name)
                                       ORDER BY e.last_name))
AS "Dept_list"
FROM hr.employees e
WHERE e.department_id = 30 OR e.department_id = 40;
```

Dept\_list

-----

```
<Department>
  <Employee>PU_CLERK Baida</Employee>
  <Employee>PU_CLERK Colmenares</Employee>
  <Employee>PU_CLERK Himuro</Employee>
  <Employee>PU_CLERK Khoo</Employee>
  <Employee>HR_REP Mavris</Employee>
  <Employee>PU_MAN Raphaely</Employee>
  <Employee>PU_CLERK Tobias</Employee>
</Department>
```

1 row selected.

# Пример (XMLAGG)

```
SELECT XMLElement("Department", XMLAttributes(department_id AS "deptno"),
              XMLAgg(XMLElement("Employee", e.job_id||' '||e.last_name)))
   AS "Dept_list"
  FROM hr.employees e
 GROUP BY e.department_id;
```

Dept\_list

```
-----
<Department deptno="30">
  <Employee>PU_MAN Raphaely</Employee>
  <Employee>PU_CLERK Khoo</Employee>
  <Employee>PU_CLERK Baida</Employee>
  <Employee>PU_CLERK Himuro</Employee>
  <Employee>PU_CLERK Colmenares</Employee>
  <Employee>PU_CLERK Tobias</Employee>
</Department>
```

```
<Department deptno="40">
  <Employee>HR_REP Mavris</Employee>
</Department>
```

2 rows selected.

# Пример (XMLAGG)

```
SELECT
  XMLElement (
    "Department",
    XMLAttributes(d.department_name AS "name"),
    (SELECT
      XMLAgg (XMLElement ("emp",
        XMLAttributes(e.last_name AS name),
        (SELECT XMLAgg (XMLElement ("dependent",
          XMLAttributes(de.name AS "name"))))
        FROM dependents de
        WHERE de.employee_id = e.employee_id)))
      FROM employees e
      WHERE e.department_id = d.department_id) AS "dept_list"
    FROM departments d
    WHERE department_id = 30;
```

dept\_list

---

```
<Department name="Purchasing">
  <emp NAME="Raphaely">
    <dependent name="MARK"></dependent>
    <dependent name="JACK"></dependent>
  </emp><emp NAME="Khoo">
    <dependent name="JANE"></dependent>
```