First Scope of Json Cheat Sheet

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What's JSON?

Java**S**cript **O**bject **N**otation

Language independent data format for storing and sharing

Lightweight,human readable,easy parsed/generated

Name is misleading somehow

JSON vs XML

Shorter,more lightweight

Wirteable, more readable

More easier to parse by programming

Easier to work with arrays

No namespace, comments not allowed

XML like a truck, suitable for large scale file based data exchange, while JSON like a compact car, good for small flexible data exchange over network, such as ajax

Examples XML vs JSON

```
<departments>
<de par tme nt>
    <de pt_ id>1 </d ept _id>
    <ma nag er> Jos h</ man age -
r>
    <em plo yee s>
        <em plo yee>
            <id >78 39< /id>
            <na me> Joh n</ -
nam e>
            <jo bs>
```

Examples XML vs JSON (cont)

```
>        <job>
          <Title>Clerk</Tile>
        </job>
        <job>
          <Title>dba</Tile>
        </job>
      </jobs>
    </employee>
    <employee>
      <id>7698</id>
      <name>Tom</name>
      <jobs>
       <job>
         <Title>Clerk</Tile>
       </job>
        <job>
         <Title>Analyst</Tile>
       </job>
      </jobs>
   </employee>
 </employees>
</department>
</departments>
{departments:[{
 "department":{
  "dept_id":"1",
  "employees":[{
```

Examples XML vs JSON (cont)

```
>    "employee":{
      "id":66",
      "name":"John",
      {jobs:["Clerk","dba"]}},
    "employee":{
      "id":88,
      "name":"Tom",
      {jobs:["Analyst"]}}
    ]}
}]}
```

JSON Structure

Object	{string1:value1,string2:value2,...}
array	[value1,value2,...]
value	string,number,true/false,null,object,array

Oracle JSON Support

12.1.0.2	store in varchar2,clob,blob w/ check constraint
Apex 5.0	Apex_JSON
pljson	github.com/pljson/pljson

NoSql - RDBMS - blender with JSON support

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Load JSON By External Table

```
CREATE TABLE JSON_DEMO( id
number, json_data clob)
ORGANI ZATION EXTERNAL
   ( TYPE ORACLE _LOADER
         DEFAULT DIRECTORY
EXT_DIR
         ACCESS PARAMETERS
        ( records delimited by
newline
              fields terminated
by 0X'09'
              missing field
values are null
             ( id,fname )
              COLUMN TRANSFORMS
(
                   jso n_data
FROM LOBFIL E(f name) FROM
(EXT_DIR) )
        )
         LOC ATION (EXT_D -
IR: 'js on_ fil e_l ist _to -
_be _lo ad.t xt')
   ) REJECT LIMIT UNLIMITED;
```

Content in json_file_list_to_be_load.txt

1 jason_data.json

Parse with APEX_JSON

1 select json_clob into v_json_data from json_demo where id=1;

2 APEX_JSON.parse(v_json_data); -- g_value variable hold the data

3 APEX_JSON.get_varchar2(v_json_data,'-dept');

4. APEX_JSON.get_count(v_json_data,'dep-t.emp');

5 loop based on count

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Oracle JSON Dot Notation

```
select
jd.json_doc.departments[0].employees[0].name
from json_demo jd;
--dot notati on: tab le_ ali as.j so n_c -
ol.k ey 1.k ey2 [0, 1..],
--table must be aliased
--col must be checked IS JSON, no need to
enable
--key is case-s enstive
```

dot notion is slower and easily confused, use json_table instead.

Oracle 12.1.0.2 JSON Condition

```
1. IS JSON
create table json_demo
(
  jso n_doc clob not null,
 ts date default sysdate
);
alter table json_demo
add constriant ck_is_json
check (json_doc IS JSON WITH
UNIQUE KEYS (STRICT));
--WITH UNIQUE KEYS: use care
(perfo rmance)
--(STR ICT): force strict over
Lax syntax, such as case
sensit ive ," not ' etc
--ORA- 02290: check constraint
(TEST.D OC UME NT_ JSON)
violated
2. JSON_E XIS TS( jso n_d -
oc, '$.e mp loy ee_no' FALSE ON
ERROR);
```

JSON doc saved to VARCHAR2, CLOB or BLOB with conditions

Oracle JSON Path

```
$.Title.Songs[*].producer[0].
```

array index could be * or ordered index, no duplicate

Oracle JSON_VALUE: retrieve scalar value

```
select JSON_VALUE(json_data,
'$.Title.Songs[].producer[0].',RETURNING
VARCHAR2,ERROR ON ERROR )
from json_demo;
--Mand atory: table & Col name, add
FORMAT JASON for BLOB
--Opti onal: Returning type - varchar2,
number ,date, timestamp, 18c suppoert
CLOB,BLOB
--Opti onal: error NULL ON ERROR( de
ault), ERROR ON ERROR
```

Oracle JSON_QUERY: wrap return into array

```
select JSON_QUERY(json_data,
'$.Songs[0].producer[*].Name
WITH WRAPPER) from json_demo;
--return type: only varchar2
--WITH WRAPPER: default WITOUT
WRAPPER
--EMPTY ON ERROR( def ault)
```

Oracle JASON_TABLE:JSON doc --> table

```
select t.*
from json_demo,
    JSO N_TABLE ( json_doc,
'$.dep art men ts[*]'
      COLUMNS (
        row _number FOR ORDINA -
LITY,
       song varcha r2(50) PATH
'$.Title',
```

Oracle JASON_TABLE:JSON doc --> table (cont)

```
>     artist varchar2(50) PATH '$.Artist,
   ESTED PATH '$.producer[*]'
   columns(
     company varchar2(50) path '$.com-
pany'
      )
))
AS t;
--original table must included in from
--Column path is from table path
--FOR CARDINALITY: get row number
```

NESTED PATH only available for 12.2 above

FORMAT JSON

implict for all json column
explictly specify if column type is BLOB

{USER|ALL|DBA}_JSON_COLUMNS Views

```
SELECT table_name,column_name,form-
at,data_type
FROM user_json_columns;
```


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JSON_TEXTCONTAINS

```
1. context search index(full
text search or json search idnex
--12.1
CREATE INDEX json_d ocs _se -
arc h_idx ON json_d oc( data)
      IND EXTYPE IS CTXSYS.CO -
NTEXT
      PAR AMETERS ('section
group CTXSYS.JS ON_ SEC TIO -
N_GROUP SYNC (ON COMMIT)');
--12.2
CREATE SEARCH INDEX json_d ocs -
_se arc h_idx ON json_d oc( -
data) FOR JSON;
EXEC DBMS_S TAT S.g ath er_ -
tab le_ sta ts( USER, 'JSON_ -
DOC UME NTS');
2. query
SELECT COUNT(*) FROM json_doc
WHERE JSON_T EXT CON TAI NS( -
data, '$.Con tac tDe tai ls.E -
mail', 'john.d oe @ex amp le.c -
om');
SELECT COUNT(*) FROM json_d -
ocu ments
WHERE JSON_E XIS TS( data,
'$.Con tac tDe tai ls');
```


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