{JSON}
MODIFIER

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Introduction:

What is JSON?

JavaScript Object Notation (JSON) is a lightweight text-based open standard designed for human-readable data interchange. It is derived from the JavaScript programming language for representing simple data structures and associative arrays, called objects.
Despite its relationship to JavaScript, it is language-independent, with parsers available for most programming languages.

What is XML?

Extensible Markup Language (XML) is a set of rules for encoding documents in machine-readable form. XML's design goals emphasize simplicity, generality, and usability over the Internet.

Objective:

Our main objective is to make a tool which can convert JSON to other different types of data representation languages like XML, CSV, HTML and can also beautify and minify the json data.

What can you do with JSON Modifier?

1. **It helps to convert JSON into XML format.**
2. **It helps to convert JSON into HTML table structure.**
3. **It helps to convert JSON into CSV format.**
4. **Validates JSON.**
5. **Minify the code.**
6. **Formats and Beautify the code to proper indentation for better understanding.**

JSON to XML

Grammar for converting json to xml with semantic rule for each production

P -> object
{print(object.val)}

object -> {ob}
{object.val=ob.val}

ob -> A,ob_1
{ob.val=A.val||ob_1.val}

ob -> A
{ob.val=A.val}

A -> N:V
{A.val=V.val, V.name=N.val}

N -> str
{N.val=str.val}

V -> str
{V.val=<V.name>str.val</V.name>}

V -> num
{V.val=<V.name>num.val</V.name>}

V -> bool
{V.val=<V.name>bool.val</V.name>}

V -> float
{V.val=<V.name>float.val</V.name>}

V -> array
{array.name=V.name, V.val=array.val}

V -> object
{V.val=<V.name>object.val</V.name>}

str -> "s"
{str.val=s.val}

array -> [arr]
{arr.name=array.name, array.val=arr.val}

arr -> V,arr_1
{arr_1.name=arr.name, V.name=arr.name, arr.val=V.val||arr_1.val}

arr -> V
{arr.val=V.val, V.name=arr.name}

float -> num.num_1
{float.val=num.val||'.'||num_1.val}

num -> digit num_1
{num.val=digit.val||num_1.val}

num -> digit
{num.val=digit.val}

bool -> true
{bool.val=true}

bool -> false
{bool.val=false}

digit -> 0
{digit.val=0}
|
|
|
|
digit -> 9
{digit.val=9}

s -> alnum s_1
{s.val=alnum.val||s_1.val}

s -> alnum
{s.val=alnum.val}

alnum -> a
{alnum.val=a}
|
|
|
|
alnum -> z
{alnum.val=z}

alnum -> A
{alnum.val=A}
|
|
|
|
alnum -> Z
{alnum.val=Z}

alnum -> 0

{alnum.val=0}
|
|
|
|
alnum -> 9
{alnum.val=9}

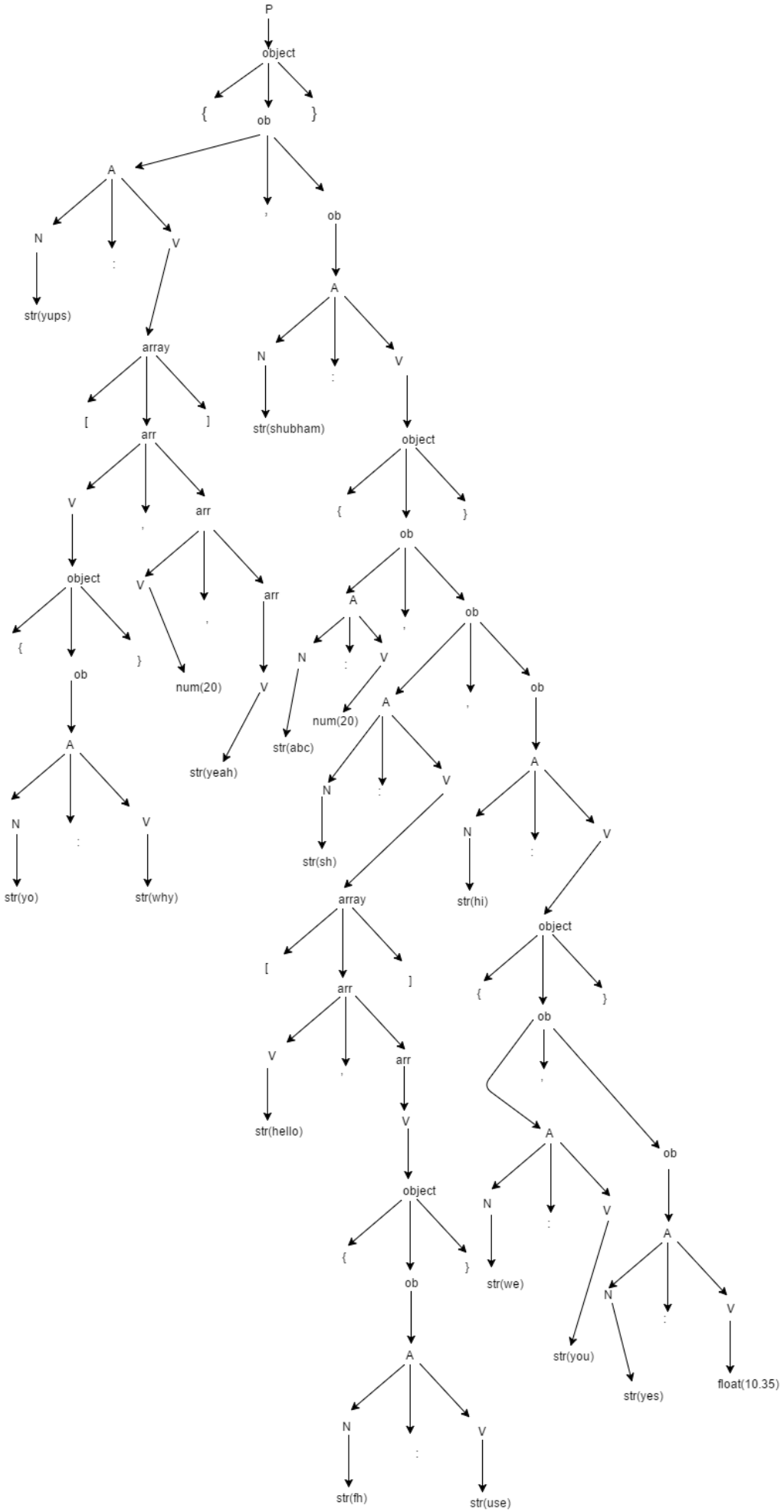
alnum -> \"
{alnum.val="}

alnum -> '
{alnum.val='}

alnum -> \\
{alnum.val=\}

Parse tree for the following json:


```
{
   "shubham": {
      "abc": 20,
      "sh": [
         "hello",
         {
            "fn": "use"
         }
      ],
      "hi": {
         "we": "you",
         "yes": 10.35
      }
   },
   "yups": [
      {
         "yo": "why"
      },
      20,
      "yeah"
   ]
}
```


P
object
{
ob
}
A
,
ob
N
:
V
str(yups)
A
array
N
:
V
[
arr
]
str(shubham)
object
V
,
arr
{
ob
}
object
V
,
arr
A
,
ob
{
}
N
:
V
num(20)
V
ob
num(20)
A
,
ob
A
str(yeah)
str(abc)
N
:
V
A
N
:
V
ob
N
:
V
str(yo)
str(why)
str(sh)
A
N
:
V
array
str(hi)
object
[
arr
]
{
ob
}
V
,
arr
,
A
ob
str(hello)
V
object
N
:
V
ob
{
}
str(we)
str(you)
A
N
:
V
str(yes)
float(10.35)
A
N
:
V
str(fh)
str(use)

The above json will generate the following xml data:

```
<shubham>
      <abc>20</abc>
      <sh>hello</sh>
      <sh>
         <fn>use</fn>
      </sh>
      <hi>
         <we>you</we>
         <yes>10.35</yes>
      </hi>
   </shubham>
   <yups>
      <yo>why</yo>
   </yups>
   <yups>20</yups>
   <yups>yeah</yups>
```

JSON to CSV

Grammar for converting json to csv with semantic rule for each production

int arrindex=0;

P -> object
{print(object.val)}

object -> {ob}
{object.val=ob.val}

ob -> A,ob_1
{ob.val=A.val||ob_1.val}

ob -> A
{ob.val=A.val}

A -> N:V
{
If(V.type==4) then
A.val=N.val||"."||V.val
Elseif(V.type==1) then
A.val=N.val||":"||V.val
}

N -> str
{N.val=str.val}

V -> str
{ V.val=str.val
V.type=1
}

V -> num
{ V.val=num.val
V.type=1
}

V -> bool
{ V.val=bool.val
V.type=1
}

V -> float
{ V.val=float.val
V.type=1
}

V -> array
{ V.val=array.val
V.type=4
}

V -> object
{ V.val=object.val
  V.type=4
}

str -> "s"
{str.val=s.val}

array -> [arr]
{array.val=arr.val
arrindex=0}

arr -> V,arr_1
{
  If(V.type==4) then
    arr.val=arrindex||"."||V.val||arr_1.val
  Elseif(V.type==1) then
    arr.val=arrindex||":"||V.val||arr_1*.val*
  arrindex++
}

arr -> V
{
  If(V.type==4) then
    arr.val=arrindex||"."||V.val
  Elseif(V.type==1) then
    arr.val=arrindex||":"||V.val
  arrindex++
}

float -> num.num_1
{float.val=num.val||'.'||num_1*.val}*

num -> digit num_1
{num.val=digit.val||num_1*.val}*

num -> digit
{num.val=digit.val}

bool -> true
{bool.val=true}

bool -> false
{bool.val=false}

digit -> 0
{digit.val=0}
  |
  |
  |

|
digit -> 9
{digit.val=9}

s -> alnum s_1
{s.val=alnum.val||s_1.val}

s -> alnum
{s.val=alnum.val}

alnum -> a
{alnum.val=a}
|
|
|
|
alnum -> z
{alnum.val=z}

alnum -> A
{alnum.val=A}
|
|
|
|
alnum -> Z
{alnum.val=Z}

alnum -> 0
{alnum.val=0}
|
|
|
|
alnum -> 9
{alnum.val=9}

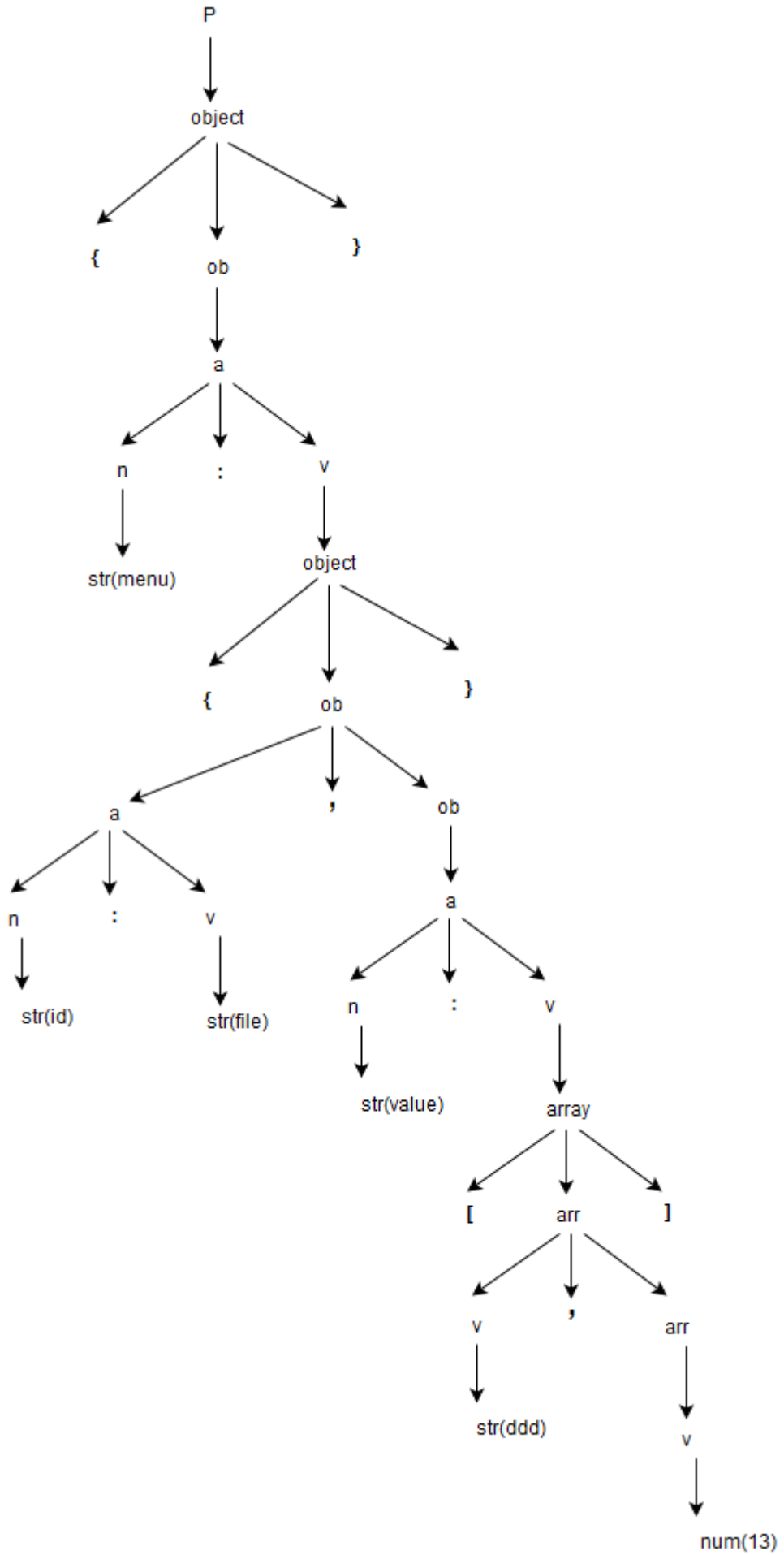
alnum -> \"
{alnum.val="}

alnum -> '
{alnum.val='}

alnum -> \\
{alnum.val=\}

Parse tree for the following json:

```
{
   "menu": {
      "id": "file",
      "value": ["ddd",13]
   }
}
```


P
object
{
ob
}
a
n
:
v
str(menu)
object
{
ob
}
a
,
ob
n
:
v
str(id)
str(file)
a
n
:
v
str(value)
array
[
arr
]
v
,
arr
str(ddd)
v
num(13)

The above json will generate the following csv data:

menu.id : file
menu.value.1 : ddd
menu.value.0 : 13

JSON to HTML

Grammar for converting json to html with semantic rule for each production

P -> object
{
P.val="<html><head><style>table,th,td {border: 1px solid black;border-collapse: collapse;}
th,td {padding: 5px;}</style></head><body>"||object.val||"</body></html>"
}

object -> {ob}
{object.val="<table>"||ob.val||"</table>"}

ob -> A,ob_1
{ob.val=A.val||ob_1.val}

ob -> A
{ob.val=A.val}

A -> N:V
{
A.val="<tr><td>"||N.val||"</td><td>"||V.val||"</td></tr>"
}

N -> str
{N.val=str.val}

V -> str
{ V.val=str.val
}

V -> num
{ V.val=num.val
}

V -> bool
{ V.val=bool.val
}

V -> float
{ V.val=float.val
}

V -> array
{ V.val=array.val
}

V -> object
{ V.val=object.val
}

str -> "s"
{str.val=s.val}

array -> [arr]
{array.val="<table>"||arr.val||"</table>"}

arr -> V,arr_1
{
arr.val="<tr><td>"||V.val||"</td></tr>"||arr_1*.val*
}

arr -> V
{
arr.val="<tr><td>"||V.val||"</td></tr>"
}

float -> num.num_1
{float.val=num.val||'.'||num_1*.val}*

num -> digit num_1
{num.val=digit.val||num_1*.val}*

num -> digit
{num.val=digit.val}

bool -> true
{bool.val=true}

bool -> false
{bool.val=false}

digit -> 0
{digit.val=0}
|
|
|
|
digit -> 9
{digit.val=9}

s -> alnum s_1
{s.val=alnum.val||s_1*.val}*

s -> alnum
{s.val=alnum.val}

alnum -> a
{alnum.val=a}
|
|
|

|
alnum -> z
{alnum.val=z}

alnum -> A
{alnum.val=A}
|
|
|
|
alnum -> Z
{alnum.val=Z}

alnum -> 0
{alnum.val=0}
|
|
|
|
alnum -> 9
{alnum.val=9}

alnum -> \"
{alnum.val="}

alnum -> '
{alnum.val='}

alnum -> \\
{alnum.val=\}

Consider the following JSON:

```
{
   "menu": {
      "id": "file",
      "value": ["ddd",13,10.3],
      "popup": 18
   },
   "jj":[12,100.22,"xxx",{"zz":[11,"ccc"]}]
}
```

The above json will generate the following html data:

<html><head><style>table,th,td {border: 1px solid black;border-collapse: collapse;} th,td {padding: 5px;}</style></head><body><table><tr><td>menu</td><td><table><tr><td>id</td><td>file</td></tr><tr><td>value</td><td><table><tr><td>ddd</td></tr><tr><td>13</td></tr><tr><td>10.3</td></tr></table></td></tr><tr><td>popup</td><td>18</td></tr></table></td></tr><tr><td>jj</td><td><table><tr><td>12</td></tr><tr><td>100.22</td></tr><tr><td>xxx</td></tr><tr><td><table><tr><td>zz</td><td><table><tr><td>11</td></tr><tr><td>ccc</td></tr></table></td></tr></table></td></tr></table></td></tr></table></body></html>

On opening the above html code using the browser, it shows the following output: