USING CSS XML FILES IN REPRESENTING BIOLOGICAL DATA: CASE OF CONGOLESE METAZOA

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Abstract:

The present study is dealing with creating an xml file which will include all information on metazoans. Then, a file written in CSS (Cascading Style Sheets) will be created to allow the display of the XML (eXtensible Markup Language) file in a web browser. That technique will be abl e to permit an accurate and rapid search on information on metazoans. This will permit metazoan data to be integrated easily in interoperable applications on t he Internet. This paper will allow biologists to be able to accommodate all the wildlife in a web application. We have represented Metazoans in a graph. And we used that graph to create our XML file.

Keys words: xml, css, html, metazoa

1. Introduction:

It is in the XML environment we have created the web application. We proceed as follows: Creating XML tags for the application itself. Creating a style sheet (CSS) (Each tag set in XML file; we defined a style element that the browser will then display). We also made a brief presentation of the classification of the wildlife.

The eXtensible Markup Language (XML) [3] is a standard for describing the structure of information and content on the Internet over the past several years. XML is a fundamental component in many XML web services and it is used to store and exchange data in the Internet environment that may include private messages of customers. It overcomes the complexity of Standard Generalized Markup Language (SGML) and the user can define document structures, removing the limit of the fixed tags in Hypertext Markup Language (HTML). The following example displays library customer information in an XML document [1]. XML has been accepted as the universal standard for data interchange and pub lication on the web. B ecause of its flexible syntax, XML allows the same data to be represented in many different ways. Some XML documents may be better designed than other [6, 7].

Cascading style sheets (CSS) are another type of content that a document may include; they define appearance, just as HTML defines

content and JavaScript defines behavior [2, 3]. Cascading style sheet are a mechanism suggested by the World Wide Web Consortium (W3C) to fix a fundamental problem with older versions of HTML, their inability to separate content and appearance. By writing different style sheets, Web users can change the appearance of a document without ever having to edit the original document. It gives both Web page designers and Web page viewers more control over the font size, colors, and layout of pages then they had before [4].Cascading Style Sheets (CSS) offer many of the capabilities requested by page designers but is only now seeing widespread implementation. Web performance is affected by the introduction of CSS. CSS gives designers greater control over the layout of page elements [5].The animal kingdom is divided in two subkingdoms: protozoa (animals composed of only one cell) and metazoa (animals having several cells). [7, 8, 9]

2. Protozoa and Metazoa

Here, in condensed form, an overview of the animal kingdom and its many ramifications.

Protozoa

Among metazoa, we quote:

1. Rhizopods: they move by pseudopodia. Among the rhizopods there are the amoebas, Foraminifera, radiolarian.
2. Infusoria: They move using whip and of cilia. Among the infusoria there are the vorticella, the paramecium, etc
3. Sporozoa: They reproduce by sporulation. They all are of the parasites. Among the sporozoa there are the plasmodium (malaria parasites), trypanosomia (sleeping sickness parasitic) etc. [7, 9]

Metazoan

Consisting of animals having several cells. The group consists of metazoa invertebrates and vertebrates.

Metazoa: Vertebrates [10, 12, 13]

Among the vertebrate we quote the fish (cyclostomes like the lampreys; selacians like the lines, the sharks; ganoid like the sturgeons; teleostoi such as carps; lungfishes as Ceratodus), batrachians (urodela such as salamanders; the anurans such as frogs), the reptiles (lizards, snakes, tortoises, crocodilians) , birds (riders, songbirds, raptors, climbers, coils, grouses, waders, waterfowl) and Mammals (monotremes, marsupials, placental mammals like rodents, primates, insectivora, carnivora, etc.)

Metazoans: Invertebrates [9, 10, 11]

The invertebrates are animals with the irregular body, dug channels (sponges or sponges), with radiated symmetry from which the digestive cavity is not distinct from the general cavity (corallines, jellyfishes, siphonophores); animals with radiated symmetry, with the rough body, covered with prickles (sea urchins, starfishes, etc), animals whose body is made of a s egment (rotifers, bryozoans); animals whose body is made of several segments (towards dishes, annelids as earthworms, etc); animals with the body lengthened without appendices (trichina from pork tapeworms, nematodes etc); animals with a formed body of articulated rings (insects, crustaceans), animals with soft body not segmented (molluscs such slugs, snails, oysters, moulds,

cuttlefish, octopuses) or protochordates with outline of dorsal column (amphioxus) [7, 9]

From all the information on met azoa, we created a tree based on their characteristics. Then we made a XML file from that tree .

3. Structure of Document (Metazoa Tree)

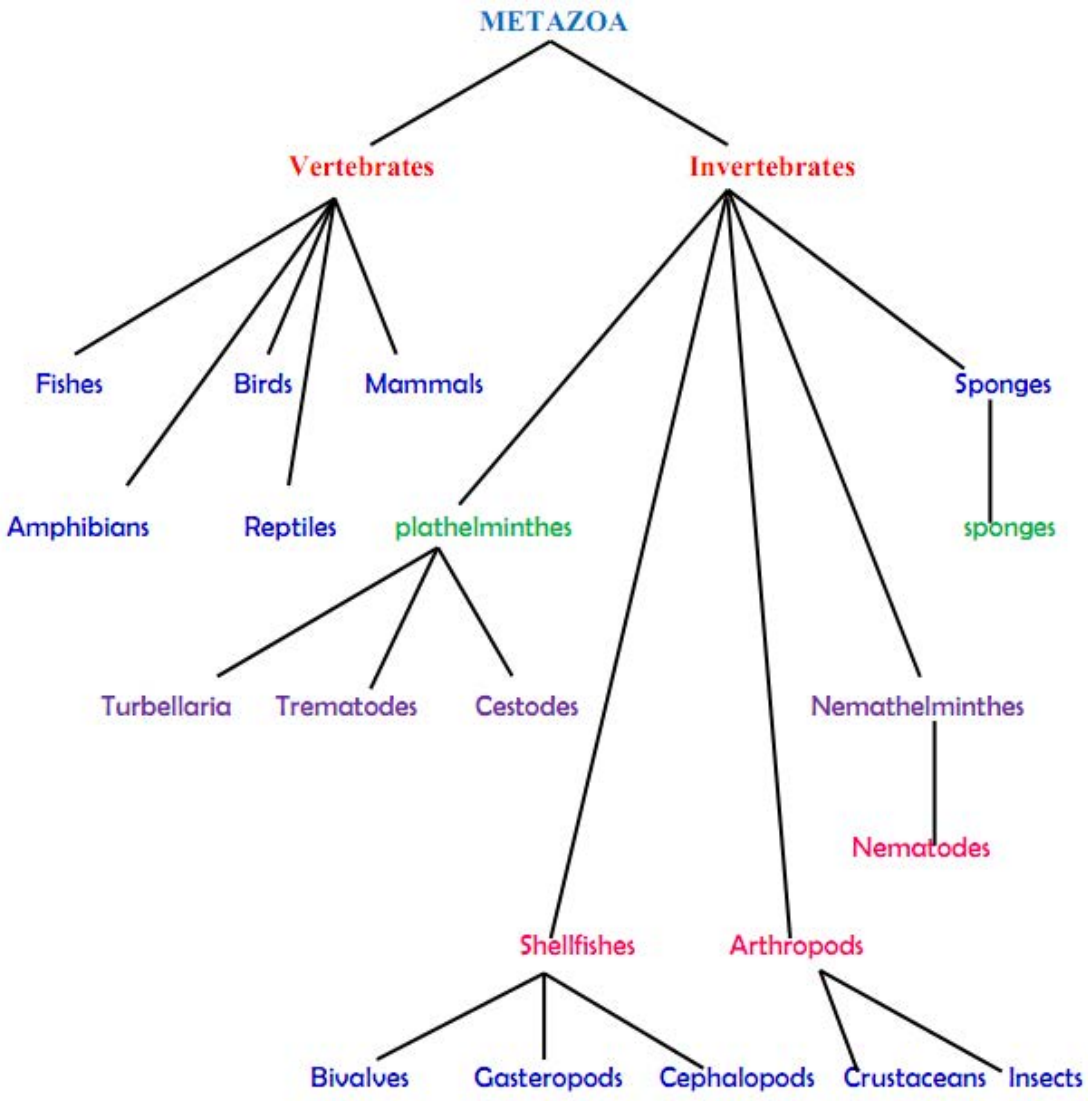

Figure I : Metazoa tree

4. Creating Metazoa Xml File

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/css"
href="metazo.css"?>
<subkingdom>
<name>METAZOA</name>
<phylum>
<phylumname>VERTEBRATE</phylumname>
<subphylum>
        <Class>
    <ClassName>Fish</ClassName>
    <Definition> Definition: vertebrate watery
having fins and breathing by gills</Definition>
    <Caracteristic>Caracteristics: They is
characterized by the presence from the osseous
        scales not welded between them and from
gills </Caracteristic>
    <LivingInvironnment>Living invironnment:
aquatic animals </LivingInvironnment>
```

<ReproductionMode>Reproduction mode: oviparous animals</ReproductionMode>
<Species>Species: </Species>
</Class>
<Class>
<ClassName>Amphibians</ClassName>
<Definition>Definition:They are small vertebrate tétrapodes
has cold blood and has naked skin, which do not live out of fresh water </Definition>
<Caracteristic>Caracteristics:They have a skin naked and wet, they have also lungs</Caracteristic>
<LivingInvironnment>Living Invironnment:They live in the very wet environments </LivingInvironnment>
<ReproductionMode>Reproduction mode:Oviparous animals </ReproductionMode>
<Species>Species: tritons, frogs, clamping plates</Species>
</Class>
<Class>
<ClassName>Reptiles</ClassName>
<Definition>Definition: Vertebrate with cold blood whose body temperature depends on the temperature of their environment </Definition>
<Caracteristic>Caracteristics:They have a covered skin of dry scales</Caracteristic>
<LivingInvironnment>Living Invironnment: </LivingInvironnment>
<ReproductionMode>Reproduction mode:oviparous animals </ReproductionMode>
<Species>Species: tortoises, lizards, snakes</Species>
</Class>
<Class>
<ClassName>Birds</ClassName>
<Definition>Definition:Vertébrés à plumes dont les membres antérieurs sont transformés en ailes </Definition>
<Caracteristic>Caracteristics:The presence of the feathers and the lungs, they have faculty to fly</Caracteristic>
<LivingInvironnment>Living Invironnment:They live in the air </LivingInvironnment>
<ReproductionMode>Reproduction mode: oviparous animals </ReproductionMode>
<Species>Species:Ducks, titmouses, owls </Species>
</Class>
<Class>
<ClassName>Mammals</ClassName>
<Definition>Definiton: These are warm blooded vertebrates, feeding their young with milk udders general
hairly</Definition>
<Caracteristic>Caracteristics: Presence of hair and lungs</Caracteristic>
<LivingInvironnment>Living Invironnment: Forests and savanna</LivingInvironnment>
<ReproductionMode>Reproduction mode: Viviparous</ReproductionMode>
<Species>Species: squirrel, herrison, stag</Species>
</Class>
</subphylum>
</phylum>
<phylum>

<phylumname>INVERTEBRATES</phylumname>
<subphylum>

<subphylumname>SPONGES</subphylumname>
<Class>
<ClassName>Sponge Limestones</ClassName>
<Definition>Definition: Animals without bodies or apparatuses well defined</Definition>
<Caracteristic>Caracteristics:They have skeletal spicules composed of calcium carbonate</Caracteristic>
<LivingInvironnment>Living Invironnment:They live in tropical water </LivingInvironnment>
<ReproductionMode>Reproduction mode: They are generally viviparous </ReproductionMode>
<Species>Species: sponges limestones </Species>
</Class>
</subphylum>
<subphylum>

<subphylumname>PLATHELMINTHES</subphylumname>
<Class>
<ClassName>Turbellaria</ClassName>
<Definition>Definition: plathelminthes which has a body covered by
an epithelium with glandular cells, lubricating cells with mucuses i.e.
which allow the displacement or the adhesion of the worm.</Definition>
<Caracteristic>Caracteristics: Ce sont des vers plat au corps couvert de cils</Caracteristic>
<LivingInvironnment>Living Invironnment:They live in fresh water or the soft ground </LivingInvironnment>
<ReproductionMode>Reproduction mode:They are sexuals and hermaphrodite, asexual by regeneration </ReproductionMode>
<Species>Species: planar</Species>
</Class>
<Class>
<ClassName>Trematodes</ClassName>
<Definition>Definition: All the trematodes are parasitic worms</Definition>
<Caracteristic>Caracteristics:They are

recognized by a flattened body, short</Caracteristic>
<LivingInvironnment>Living Invironnment: Ils vivent le plus généralement en parasites des vertèbres</LivingInvironnment>
<ReproductionMode>Reproduction mode:They are hermaphrodites </ReproductionMode>
<Species>Species: ditches</Species>
</Class>
<Class>
<ClassName>Cestodes</ClassName>
<Definition>Definition: They are of plathelminthes parasitic;
They have a round higher end, the scolex with hooks and suction cups which enable them to cling</Definition>
<Caracteristic>Caracteristics:Ils ont un corps en forme de ruban muni de ventouses et de crochets a la tête, sans bouche ni appareil
digestif, se nourrissant du contenu digestif de l'hôte qui les abrite.</Caracteristic>
<LivingInvironnment>Living Invironnment:They live in the digestive tract of the vertebrate </LivingInvironnment>
<ReproductionMode>Reproduction mode: Their reproduction is done by autofecondation, by folding up</ReproductionMode>
<Species>Species: tapeworms</Species>
</Class>
</subphylum>
<subphylum>

<subphylumname>NEMATHELMINTHES</subphylumname>
<Class>
<ClassName>Nematodes</ClassName>
<Definition>Definition: The nematodes are metazoa triploblastic cœlomes</Definition>
<Caracteristic>Caracteristics:Ils ont un tube digestif simple, rectiligne, comprenant une bouche (souvent avec des crochets), un pharynx,
un œsophage, un intestin et un anus ventral</Caracteristic>
<LivingInvironnment>Living Invironnment: They live in fresh water</LivingInvironnment>
<ReproductionMode>Reproduction mode:Their growth is done by successive moults </ReproductionMode>
<Species>Species: ascaris, telegraphic, oxyures </Species>
</Class>
</subphylum>
<subphylum>

<subphylumname>SHELLFISHES</subphylumname>
<Class>
<ClassName>Bivalves</ClassName>
<Definition>Definition: molluscs whose shell consists of two distinct and attached parts, more or less symmetrical,
being able to open or be closed again.</Definition>
<Caracteristic>Caracteristics:They are molluscs deprived of head</Caracteristic>
<LivingInvironnment>Living Invironnment:They all are exclusively watery,
and one finds them as well in fresh water as in salt water </LivingInvironnment>
<ReproductionMode>Reproduction mode: They are oviparous animals</ReproductionMode>
<Species>Species: moulds, oysters</Species>
</Class>
<Class>
<ClassName>gastropods</ClassName>
<Definition>Definition:They are invertebrate animals and have a soft body, without skeleton.
It have intestines, lungs and are protected by a shell made from mucus that they secrete,
which harden while drying and become limestone </Definition>
<Caracteristic>Caracteristics:crawl, breathe by gills</Caracteristic>
<LivingInvironnment>Living Invironnment: They live out of fresh water </LivingInvironnment>
<ReproductionMode>Reproduction mode:The are hermaphrodites,viviparous or oviparous </ReproductionMode>
<Species>Species:snails, slugs </Species>
</Class>
<Class>
<ClassName>Cephalopods</ClassName>
<Definition>Definition: They are junction of the molluscs, of which the foot,
divided into arm, surmounts the head</Definition>
<Caracteristic>Caracteristics: They are predatory sailors. They nourish molluscs, fish, and shellfish.
They hold their prey with their arms,
and shred it with their horn nozzle</Caracteristic>
<LivingInvironnment>Living Invironnment: They are watery</LivingInvironnment>
<ReproductionMode>Reproduction mode: They are oviparous animals</ReproductionMode>
<Species>Species:cuttlefish, octopuses, squids </Species>
</Class>

```
      </subphylum>
      <subphylum>

<subphylumname>ARTHROPODS</subphylumname>
         <Class>
            <ClassName>Crustaceans</ClassName>
            <Definition>Definition: These are arthropods whose body has calcium an external
                  impregnated salt chitin carapace </Definition>
            <Caracteristic>Caracteristics:Ils respirent a l'aide des branchies, ont une carapace solide imprégnée de calcaire,
                  possèdent cinq paires de pattes</Caracteristic>
            <LivingInvironnment>Living Invironnment: They are watery</LivingInvironnment>
            <ReproductionMode>Reproduction mode: They are oviparous animals</ReproductionMode>
            <Species>Species:shrimps, crab, barnacles </Species>
         </Class>
         <Class>
            <ClassName>Insects</ClassName>
            <Definition>Definition: They are primarily watery arthropods having jaws and two pairs of antennas.
                  they dominate the sea</Definition>
            <Caracteristic>Caracteristics:They have a head, a thorax, an abdomen; They have six legs,
                  four wings and two antennas, are pledged with the emerged grounds.</Caracteristic>
            <LivingInvironnment>Living Invironnment: find under almost all the climates, of hottest with coldest. </LivingInvironnment>
            <ReproductionMode>Reproduction mode: </ReproductionMode>
            <Species>Species: They are oviparous animals</Species>
         </Class>
      </subphylum>
   </phylum>
</subkingdom>
```

5. Associating a Xml Document to Cascading Style Sheet (Css)

We add a CSS file:

```
name {

   font-family:Verdana, Arial, Helvetica, sans-serif;
   font-style:italic;
   font-weight:bold;
   font-size:30px;
   color: #000000;
   line-height:normal;
   border:solid;
   cursor:pointer;
   margin-right:700px;
   margin-left:250px;
   margin-top:20px;

}

subkingdom {

background-position:center;
width:900px;
margin-left:200px;
border-color:#000000;
border:solid;
background-color:#FFFF99;

}

phylumname  {
      font-family:Geneva, Arial, Helvetica, sans-serif;
      font-style:normal;
      font-size:18px;
      color:#00CC00;
      margin-right:700px;
      margin-left:20px;
      margin-bottom:20px;
}

subphylumname {
      font-family:Georgia, "Times New Roman", Times, serif;
      font-style:normal;
      font-size:16px;
      font-weight: bold;
      color:blue;
      margin-right:700px;
      margin-left:20px;

}

ClassName {
   display: block;
   width: 250px;
   font-size: 10pt ;
   font-family: arial ;
   font-weight: bold;
   background-color: teal;
   color: white;
   padding-left: 10px;
}

Definition {
list-style-position:outside;
margin-right:800px;


}
```

```
Caracteristic{
margin-right:800px;

}
LivingInvironnment{
margin-right:800px;


Species {
margin-right:800px;


}
}
ReproductionMode{

margin-right:800px;

}
```

6. Résultats

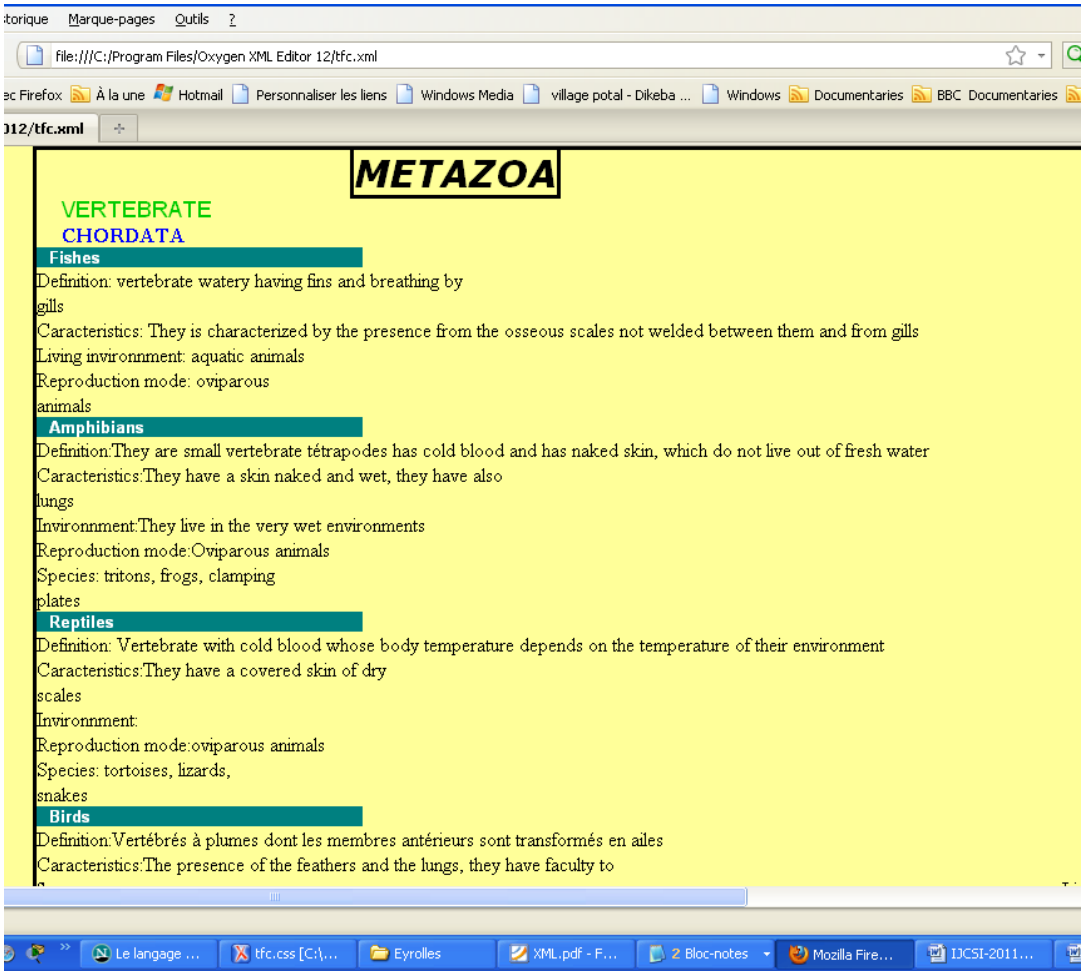

Figure II: representation in a browser

7. Conclusion

In this paper we presented the advantages of using XML in biology for data representation. We said that the xml format is currently used to enable interoperability of applications on the web. We used the CSS for the layout of our data. For our data displayed in a web page.
We showed how to use xml and css to allow our data to be usable. We presented metazoans as a tree.

We have presented just a part of the xml code that we created for reasons of space management. This work will allow biologists to publish information on metazoan in heterogeneous environments and t hus help integrate these data more easily.

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