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2.1) **Definition.**

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Figure 3: Example of a relational schema

For example the relational table CLASS is:

<table>
<thead>
<tr>
<th>NumClass</th>
<th>Nbstudent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

The advantages of this model are that the query language is based on a solid theory, algebra rules, and it is simple to build. But the inconvenience of this model is that the schema is fixed and it is difficult to modify it.

So the second model is a model of files. It has a simple structure and so it is easier to modify it than the first model. This model consists of collecting files and it is organizing as the system of files of an operating system such as we have on a computer. In this model, the big advantage is the simplicity for managing files. But there are no information on the structure and no schema so the consequences are that information can be redundant. But the real problem is that there is no query language for this model.

The third model is the semi-structured data which must answer to the facts of:

- The data cannot be compatible with a schema.
- The structure of the data evolves and needs to be updated frequently.
- The data can be structured slightly.

It is a compromise between the relational model and the model of files. So there is a supple schema and a query language. This model appeared in order to manage heterogeneous and structured data.
3.) **XML (Extensible Markup Language) and relational databases.**

3.1) what is XML?

XML was born of the SGML (standard generalized markup language) from the W3C consortium. W3C are a group of 400 firms Oracle, IBM… and laboratories research as INRIA (Europe), MIT (USA). W3C must define a model to facilitate the exchange of data on internet. XML was created in order to uniform document structure. XML is independent of the internet browser and it gives the possibility to represent the same document in some different formats such as HTML or pdf, ps….

XML defines a standard model of data exchange. As HTML, XML has got some tags which represent the structure's definition. Figure 4 shows an extract of XML code.

```xml
<?xml version="1.0" encoding="ISO-8859-1" standalone="yes"?><!
```

The second line gives the access of the DTD (document type definition). The DTD defines the tags for example the tag <Name> and the schema of the document. These tags must be in the right order. First of all, the document must begin with a first tag and finish with an end tag. The tags frame the elements. The tags allow us to build some elements of the document. Each element is linking with a simple or complex attribute. They can be integrating in other elements. A document is simply a continuation of elements which are built into other elements.
3.2) Storage of XML documents in a relational database.
3.3) **XML and query language.**

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3.4) **Publication of XML documents in a relational database.**

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\[ A \rightarrow A \]
```
4) **XML and federated databases.**

**Conclusion:**
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Glossary:
- DTD: document type definition
- HTML: HyperText Markup Language
- SGML: Standard generalized markup language.
- XML: Extensible Markup Language
- XML-QL: Extensible Markup Language-Query Language
- XQuery: Extensible Query Language
- XSLT: Extensible Stylesheet Language transformation