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TUTORIAL NO : 06

Q.1 Explain SGML as markup language in details.

→ SGML stands for standard generalized markup language & is a meta language for tagging text developed by group led by Gold infarb based on earlier work done at IBM.

- SGML provides rules of defining markup language based an tags. each instance of SGML includes description of document structure called document type definition.

- So SGML doc is defined by (1) description of structure of doc. & (2) the text itself marked with tags which describe the structure.
- Semantics of elements & attributes are appl^n convention cannot be expressed formally in SGML.
- The rule for applying SGML markup to docs are part of the definition & those that can be expressed in SGML syntax are represented in doc. type declaration (DTD).
- This additional documentation typically describe element or logical piecer of data, attributes & info about those pieces of data.

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Q.2] Write short note on:

(1) HTML: HTML stands for Hypertext Markup language & is an instance of SGML.
- Most of the docs. on web are stored & transmitted in HTML. HTML is a simple language well suited for hypertext, multimedia, & display of small & simple docs.
- HTML is based on SGML & although there is HTML DTD, most HTML instances do not explicitly make reference to DTD.
- HTML has fields for metadata, which can be used for different appl^{n} & platforms. If we add programs (using JavaScript) inside a page, some people call it dynamic HTML (DHTML)

HTML2 does not:-
(a) allow user to specify their own tags or attributes.
(b) support the specification of nested structures needed to represent database schema.
(c) support kind of lang. specification that allows consuming appl^{n} to check data for structured validity on. importat^{n}.

(2) XML: XML stands for extensible Markup language & is simplified subset of SGML. XML is not markup language as HTML but metalanguage that is capable of containing markup languages in some way as SGML.

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- XML allows human-readable semantic markup which is also machine-readable. As a result XML makes easier to develop & deploy new specific markup, enabling automatic parsing, authoring & processing of networked data.
- XML allows any user to define new tags, define more complex structures & has data validation capabilities.
- XML is profile of SGML that eliminates many of difficulties of implementing. Things so for the most part it behaves like SGML as shown before.
- Recent uses of XML includes.
  1. Mathematical Markup Language (MathML)
  2. Synchronized Multimedia Integration Language (SMIL)
  3. Resource Description Format (RDF).

Q.3. Explain different formats in details with respect to multimedia.

→ Multimedia includes images, audio & video, as well as other binary data. There are several formats of images. The simplest formats are direct presentations of bit-mapped display such as XBM, BMP or PCX. However, these formats consume more space.

- Graphic Interchange format (GIF) is most popular image format which is good for

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black & white pictures as well as pictures that has small numbers of colours.
- Joint photographic experts Group (JPEG) format tries to eliminate parts of the image that have less impact on the human eye.
This format is parametric in the sense that the loss can be tuned.
- Another common image format is Tagged Image File Format (TIFF). It is used to exchange docs between diff. appl^n & diff. computer platforms.
- A new bit mapped image format was proposed for the internet : Portable Network Graphics (PNG).
- Most common formats for audio files are AU, MIDI & WAVE. There are several formats for animations or moving images Main one is MPEG (Moving Pictures Experts Group) that is related to JPEG.
- This format also includes audio signal associated with video. Other video formats are AVI, FLI & QuickTime.