

2). Explain the Evolution of web.

The web technology got evolved over the last few years and with each evolution, new tools were added.

The evolution happened in web from web 1.0 to web 2.0 and to web 3.0.

\* Web 1.0 :-

This was the first version of web referred as 'Syntactic web' or 'Read-Only web', where user's role was limited to reading the information presented to him/her.

It provided very little interaction where consumer can exchange the information together but it was not possible to interact with the website.

The role of Web 1.0 was very passive in nature.



Thus, the major limitations of Web 1.0 were as follows :-

- (i) The web 1.0 pages can only be understood by humans (web readers) i.e. they did not have machine compatible content.
- (ii) The web master was solely responsible for updating users & managing the content of website.
- (iii) There was a lack of dynamic representation i.e., to acquire only static information, no web console were available to perform dynamic events.

### \* Web 2.0 :-

- This web is also referred as Social Web or read-write web which facilitates interaction between web users & sites which in turn allow users to communicate with other users.



- The web 2.0 pages were dynamic in nature.
- Thus, the interaction between users & sites (machines) increased.
- Every user could be a content producer and the content was distributed & shared between the sites.
- Some famous applications are Facebook, Youtube, Twitter, etc.
- Technologies used are : HTML5, CSS3 & Javascript <sup>with</sup> frameworks like ReactJS, AngularJS, VueJS, etc.

### \* Web 3.0 :-

- This web is also referred as Semantic Web or read-write-execute which refers to the future of web.
- The pages are dynamic in nature & machine-to-machine interaction is possible.
- In this era, computers can ~~not~~ interpret information like humans via AI & ML.
- Some of the examples are Apple's Siri, Google's Cloud API, Wolfram Alpha.



3). What are the challenges of Semantic Web?

The challenges of Semantic Web are as follows:-

a). High recall, low precision:-

Even if the main relevant pages are retrieved they are of little use if another 28,758 mildly relevant or irrelevant documents are also retrieved.

b). Low or no recall:-

Often it happens that we don't get any relevant answer for our request, or that important & relevant pages are not retrieved.

c). Results are highly sensitive to vocabulary:-  
Often our initial keywords do not get the results we want. In these cases the relevant documents use different terminology from the original query. This is unsatisfactory because semantically similar queries should return similar results.



Date \_\_\_\_\_  
Page \_\_\_\_\_

d). Results are single label pages :-

If we need information that is spread over various documents, we must initiate several queries to collect the relevant documents & then we must manually extract the partial information & put it together.

4). Explain the term semantic with respect to web.

let us consider two examples :-

- i. Colin enjoys mushrooms.
- ii. Mushrooms scare Jamie.

Here, the words "Colin" and "Jamie" refer to two people, the word "mushrooms" refer to a class of organisms & the word "enjoy" and "scare" tell about the relationship.

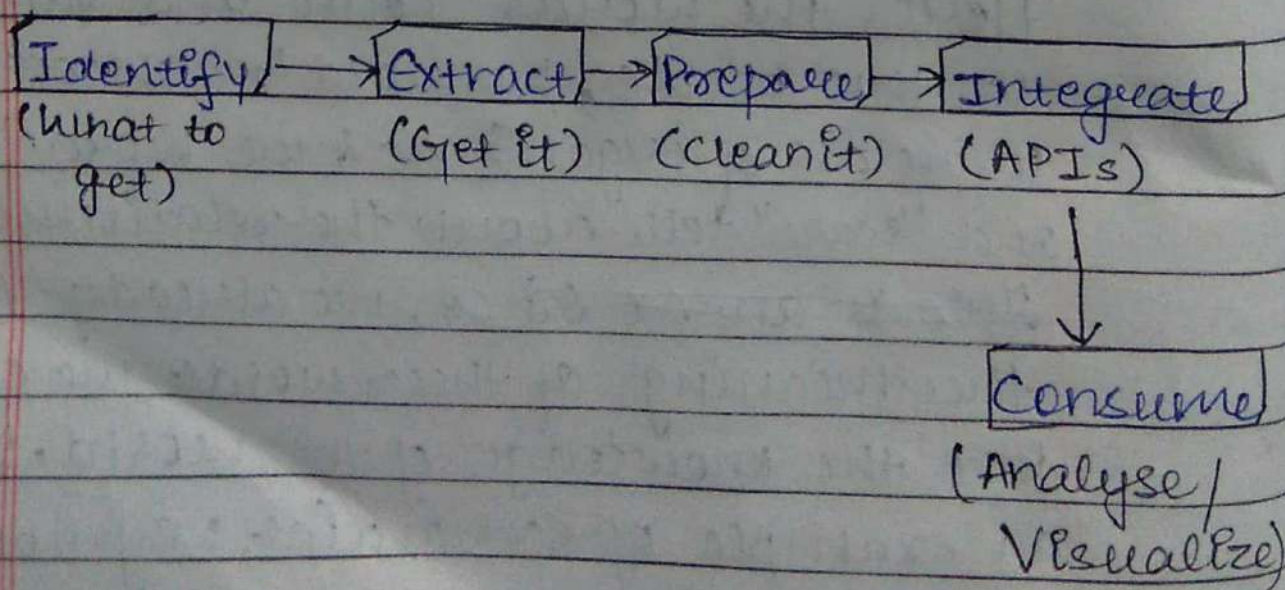
~~This is an ex~~ Since, we already know the meaning of these words we can easily take the knowledge of the world. This is an example of semantics. Symbols can refer to things or concepts & sequences of symbols convey meaning.



- Semantics is the process of communicating enough meaning to result in an action. A sequence of symbols can be used to communicate meaning, and this communication can then affect behavior.

6). What do you mean by Data Integration?  
Semantic data integration enables blending data from distinct sources by employing a data-centric architecture built upon an RDF model.

This can be visualised using the following figure :-



The ability to easily import and harmonize heterogeneous data from multiple sources and interlink it as RDF statements into an RDF triplestore is essential for many knowledge ~~asset~~ management solutions.