WE Sessional Assignment:

Q. No: 1. Describe DNS, HTTP status code, Port Number and HTTP request methods.

Ans. 1) DNS.

The DNS (Domain Name System) is basically a large database which resides on various computers and it contains the names and IP addresses of various hosts on the internet and various domains. It provides information to Domain Name Service to use when queries are made.

→ DNS is globally distributed, scalable and a reliable database which comprises of these three components.

1) A namespace.
2) Servers making that name space available.
3) Resolvers (clients which query the servers about the name space.

→ Uses of DNS.

a) DNS as Database:
Keys to the database are "domain names". Each domain name contain one or more attributes known as resource records and each attribute is individually retrievable.

b) Global Distribution.
The data is maintained locally, but retrievable globally.

c) Loose Coherency.
The database is always internally consistent. Each version of a subset of database (a zone) has a serial number which is incremented on each each database change.

d) Scalability.
There's no limit to the size of database & number of queries. One server can own 20,000,000 names and 2000 queries per second handled easily.

e) Reliability:
Data is replicated, the data is copied from master to many slaves hence no data loss happens.

f) Dynamicity.
Database can be updated dynamically i.e Add/delete/modify of any record.

→ Components.

1) Name Spaces.
Specifications for a structured name space and data associated with the name.

2) Resolvers.
Client programs that extract information from Name servers.

3) Name Servers.
Server Programs which hold information about the structure and the names.

2) HTTP status codes.

Status codes are open or closed sign from pages to the search crawlers (used by search engines e.g google, bing etc). Status code tell the crawler to either continue & not, and also on how to deal with the content on the page.
The wrong status code can send the wrong signal to the search crawler and negatively affect crawlability and rankability of a website page.

→ Most common status codes.

200: Status code 200 is response to successful HTTP request.
301: code 301 is known as permanent redirect.
302: Status code 302 is known as a temporary redirect.
404: It is a response to notify that the page is no longer accessible to the search crawlers.
500: It is a response to notify that a server error exists and no content is accessible to search crawlers/engines.

→ Tools to check status code of Page.

1) Screaming Frog
2) Xenu's Links Sleuth

3) Port Numbers.

A client machine is capable of browsing multiple webpages originated from different web servers simultaneously.

→ Ports help to identify the process running on the host machine uniquely. A Port is represented by 16-bit integer value between 0 to 65535.

→ When a webpage is opened a port number is created automatically to identify the process uniquely and when the page is closed port gets released back automatically.

→ Ports are used by on transport layer by TCP & UDP protocols to choose among multiple processes running on destination host.

→ Some ports have been reserved to support common/well-known services. which include
FTP: 21/tcp, telnet: 23/tcp, smtp: 25/tcp, ufin: 513/tcp etc

→ contd

→ IANA (Internet Assigned Number Authority) has divided port numbers in to three ranges

1) Well-known ports:
They range from 0 to 1023.
2) Registered ports.
They range from 1024 to 49151.
3) Dynamic Ports.
They range from 49152 to 65535. These ports can be used by any process temporarily.

4) HTTP Request Methods.

Http define a set of request methods to indicate the desired action to be performed for a given resource. These are explained below:

1) GET, GET:
The GET method requests a representation of the specified resource. Requests using GET should only retrieve data.
2) HEAD.
The HEAD method asks for a response identical to a GET request, but without response body.
3) POST:
The POST method submits an entity to the specified resource, often causing a change in state/effects on server.
4) PUT:
The PUT method replaces all current representations of target resource with request payload.

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5) DELETE:
The delete method deletes the specified resource.

6) CONNECT:
The CONNECT method establishes a tunnel to the server identified by target resource.

7) Options:
The options method describes communication options for the target resource.

8) TRACE:
The TRACE method performs a message loop-back test along the path to target resource.

9) PATCH:
The PATCH method applies partial modifications to a resource.

Q. No. 2. What are Chrome Dev-tools? Also explain different tab.

Ans. The chrome developer tool has made debugging a lot easier. The built-in developer tool allows us to edit the page, debug it and also gives access to work on the internal web browser and applications.

→ Accessing developer tool is very easy, we can right click, on an element on the website and select inspect from there. We will see a lot of panels/tabs in devTool. These tabs give us a lot of functionality. Some are discussed below.

1) Easy access on Desktop/Mobile:
The second tab in the left corner is used to check our application view on mobile/desktop. It allows us

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to check how our application will look on different devices/screen sizes. It is mainly used to check responsiveness of a website.

2) Element tab:
This tab is mainly used to debug the code of HTML and CSS in our website. Whenever we need to change something in the styling of our HTML & CSS and we want to see how it will reflect in our website, we can do that with the help of this tab. Element tab allow us to interact with DOM, change it and view it.

→ This tab helps in taking closer look at Dom structure & identifying the HTML elements rendered in it.

3) Console:
This tab helps us in debugging the JavaScript code. We can view the logged message and run the JavaScript code here. This tab helps us in showing the error along with the line number in our source code. This is really helpful in debugging the source code.

4) Network:
This tab is mainly used to detect the upload or download request made by a webpage. We can log all network activity in the Network log. We can open the Network panel and then reload the webpage.

5) Performance:
As the name suggests, this tab is used to optimise the loading speed of our website. We can analyze the runtime performance of the web-page & capture setting allows us to capture the performance metric settings.

6) Security:
This tab is used for any type of security concern. This tab is used to ensure that HTTPS is properly implemented on page. We can also view the SSL certificate issued on the web page. The authenticity of the page gets certified with the help of this tab.

7) Application:
This tab shows us what's in our browser storage: in-browser databases like Web SQL, local storage and more. It also gives us granular control over our cookies.

8) Memory:
The memory tab is used to see how much memory our page is using. With the help of this tab we can track down memory leaks and optimise our code for better memory usage.

9) Sources:
This tab shows where all the file that were used to make the website are stored & it helps in inspecting them.

10) Audits:
This tab is used to improve performance, with the help of autogenerated reports on site's functionality and structure by this tab.

Q 3. What is ECMAScript? Discuss different ECMA standards.

Ans.
ECMAScript is the scripting language standardized by ECMA International in the ECMA-262 specification. In short, ECMAScript is a language specification.

→ Many languages follow and implement the ECMAScript specification, eg. JavaScript, ActionScript, Nashorn.

→ Ecma international release standard specifications from time to time. The current edition is the ECMA-262 Edition 5.1.

→ Currently most browsers offer full support for JavaScript ECMAScript 5.1 edition.

Some standards:

1) ECMAScript 4:
ES4 was proposed as update to the JavaScript language that was never officially released. It was intended to add many new features and capabilities to the language. But it faced opposition from some members of JavaScript community and was ultimately abandoned.

2) ECMAScript 5:
ES5 is also known as ECMAScript 2009 as it is released in 2009. It is a function contractors focus on how the objects are instantiated. For ES5 you have to write function keyword and return, to be used to define the function, like general JavaScript language.

3) ECMAScript 6:
ES6 is also known as ECMAScript 2015 as it is released in 2015. Its class allows the developers to instantiate an object using the new operator, using an arrow functio

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In case of doesn't need to use function keyword to define the function, also return keyword can be avoided to fetch the computed value.

Q.04 Bootstrap Vs Tailwind - - - ? Also provide code snippets for at least 3 different cases.

Ans.

Tailwind CSS	Bootstrap
1) Tailwind offers predesigned widgets to build a site from scratch with fast UI development	1) Bootstrap comes with a set of pre-styled responsive, mobile first components that possess a definite UI kit.
2) Tailwind CSS uses a set of utility classes to create a neat UI with more flexibility and uniqueness	2) Sites created using Bootstrap follow the generic pattern that makes them look identical.
3) Website created using Tailwind CSS are much more customizable.	3) Websites created with Bootstrap are known for their responsiveness and flawless design, but the looks are generic & similar.
4) Tailwind CSS is relatively newer, that's why it has less number of community support. But it is growing increasingly.	4) Bootstrap is efficient and saves a lot of time. For being around more than nine years and a popular CSS framework, it has large community of developers.
5) Tailwind CSS only needs the base stylesheet file, which amounts upto 27kb making it lighter.	5) It has four files to be included in project to get full benefit. The total file size is 308.23 kb.

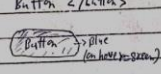
6) Tailwind CSS is used by BlaBlaCar, Expedia and Bazzite	6) Spotify, Twitter and Lyft are some of the famous companies that use Bootstrap.

Code Examples:

1) Button :

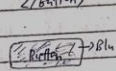
Tailwind code

```
<button class="bg-blue-800
hover:bg-green-600
text-black
font italic
py-2 px-4 rounded">
Button </button>
```



Bootstrap code

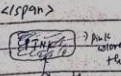
```
<button type="button"
class="btn btn-primary">
Button
</button>
```



2) Simple label :

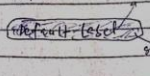
Tailwind

```
<span class="text-xs
font-semibold inline-block
py-1 px-2 uppercase rounded
text-pink-600 bg-blue uppercase
last:mr-0 mr-1">
pink
</span>
```



Bootstrap

```
<span class="label
label-default">
Default Label
</span>
```



Contd

3) Grid

Tailwind

```
<div class="grid
grid-cols-3 gap-4
bg-blue-400">
<div> 1 </div>
<div> 2 </div>
<div> 3 </div>
<div> 4 </div>
<div> 5 </div>
<div> 6 </div>
</div>
```

Bootstrap

```
<div class="row" style="
background-color:skyblue;">
<div class="col-sm-4">1 </div>
<div class="col-sm-4"> 2 </div>
<div class="col-sm-4"> 3 </div>
<div class="col-sm-4"> 4 </div>
<div class="col-sm-4"> 5 </div>
<div class="col-sm-4"> 6 </div>
</div>
```