# Introduction to Web development - Web fundamentals

WD101

# General Instructions

- DON'T BE AFRAID. CODING CAN BE LEARNED WITH SOME EFFORT LIKE ANYTHING ELSE.

- Very hands-on approach, real learning happens when we apply brains rather than listening, more code you write more understanding you will have

- Think critically, ask questions, test assumptions(via code), computer is logical

- Do all graded assignments yourself, this isn't college, we will do live project

- Figure out things on our own, be a self learner, this is most crucial skill, lot of answers available on internet

# Course Structure

- Every week two classes, Monday & Friday

- Rest of the week work on assignments, can contact anytime

- Course is divided into modules, each week one module

- Different teachers might come for different modules

- On completion interview opportunities might be given [to be discussed at the end of the program] [not applicable]

- No hard and fast rules, still evolving

# Modules

1. Internet & Web fundamentals

2. Frontend

    1. HTML — mention the topics

    2. CSS

    3. Javascript

    4. jQuery (optional)

    5. Angular JS

3. Backend

    1. Python

    2. Django
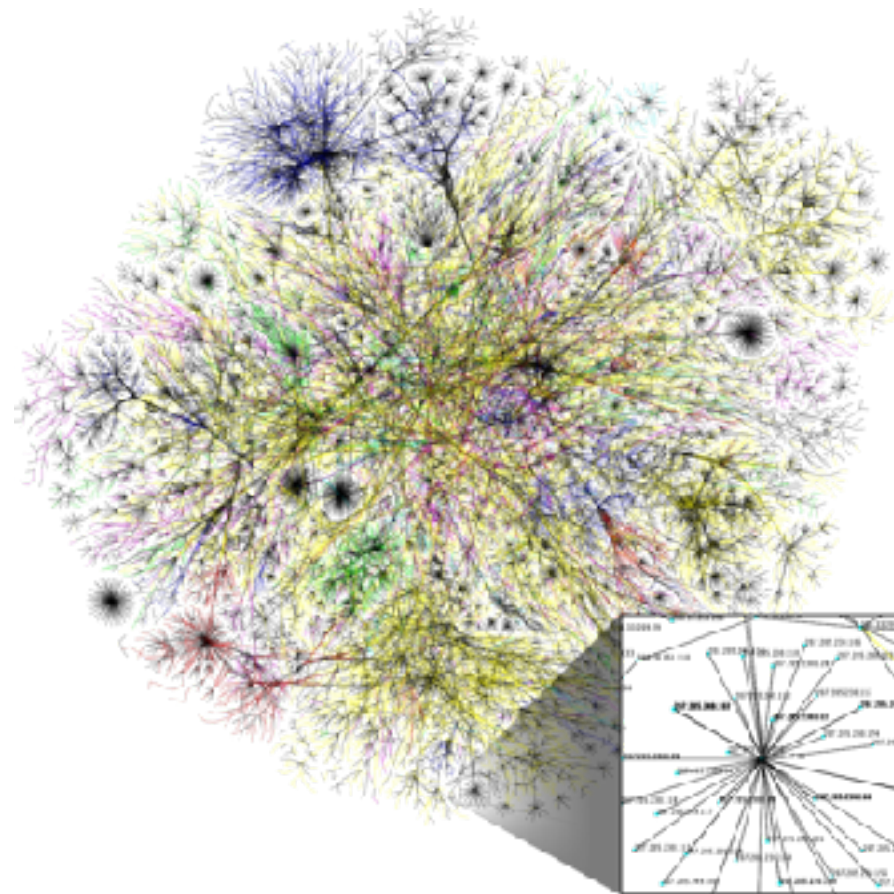
    3. Postgresql - RDBMS (database)

    4. APIs

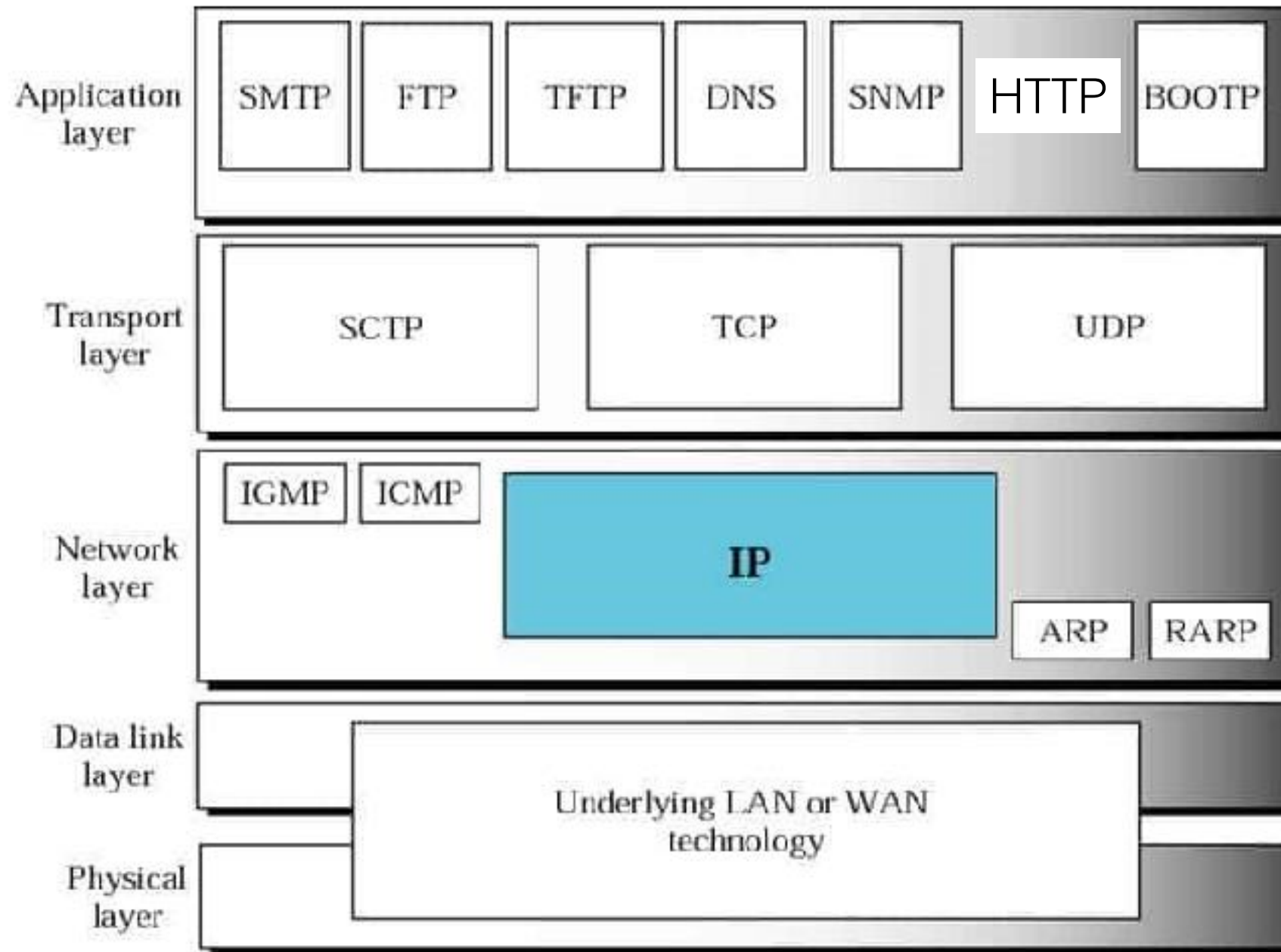4. Dev ops

    1. Terminal & Git — source /version control

    2.  Hosting, Nginx ,  Gunicorn, DNS settings

# What is internet?

Global system of interconnected computer networks that use the Internet protocol suite (TCP/IP) to link devices worldwide. About 20 billion devices on internet(2019).
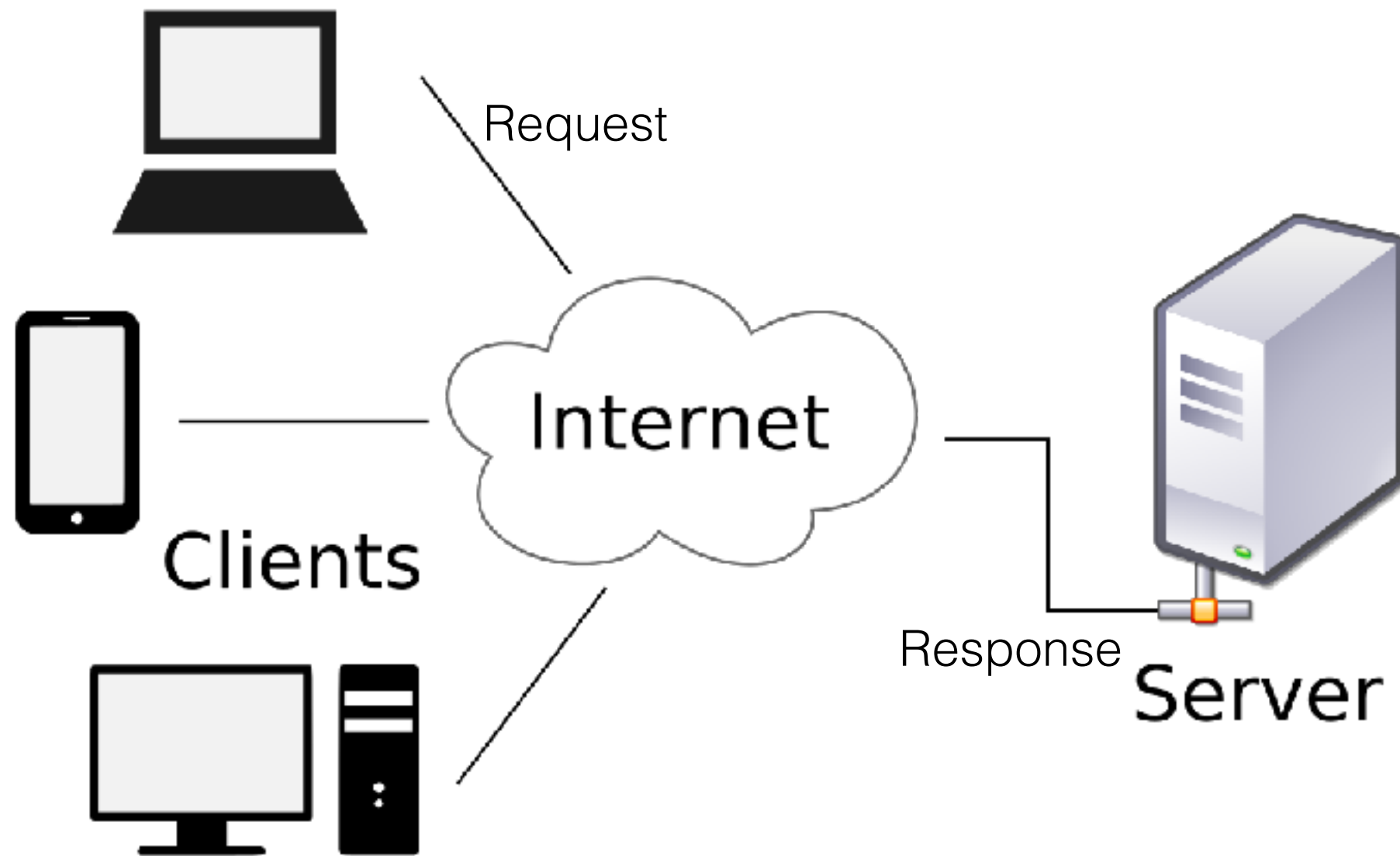
# Internet Protocol Suite

| Application layer | SMTP | FTP | TFTP | DNS | SNMP | HTTP | BOOTP |
|---|---|---|---|---|---|---|---|

| Transport layer | SCTP | TCP | UDP |
|---|---|---|---|

| Network layer | IGMP ICMP | IP | ARP RARP |
|---|---|---|---|

| Data link layer | Underlying LAN or WAN technology |
|---|---|
| Physical layer | |

Demo ping google.com, trace route google.com

# Web operates on Client Server Model



Request

Internet

Clients

Response

Server

Demo: Network tab in developer tools

# What is www?

- Imagine you being able to access documents on millions of computers(servers), like locally every file has a location of your computer C:\My Documents\file.txt

- The **World Wide Web** (**WWW**), commonly known as the **Web**, is an information system where documents and other web resources are identified by Uniform Resource Locators
eg: https://www.google.org/assets/static/images/logo_googledotorg-171e7482e5523603fc0eed236dd772d8.svg

- The resources of the Web are transferred via the Hypertext Transfer Protocol (HTTP), may be accessed by users by a software application called a web browser, and are published by a software application called a web server.

- Tim Berners-Lee invented the World Wide Web(http protocol) in 1989 while working at CERN.

# Cookies

- HTTP is stateless hence tagging is needed

- Cookies act as tags

- 3rd party cookies work across multiple sites — privacy is a big concern

- Example: Maintain login, items in cart, pages visited

- Show demo - Console - Storage tab

- Let's see network tab in developer tools to see all requests
  Ping google.com

# DNS - Domain Name system

- The Domain Name System (DNS) is a hierarchical and decentralised naming system for computers

- It ensures uniqueness of Domain names

- Resolves Domain name into I.P Address

- It also help in Aliasing — Names —> Names

# Web Architecture
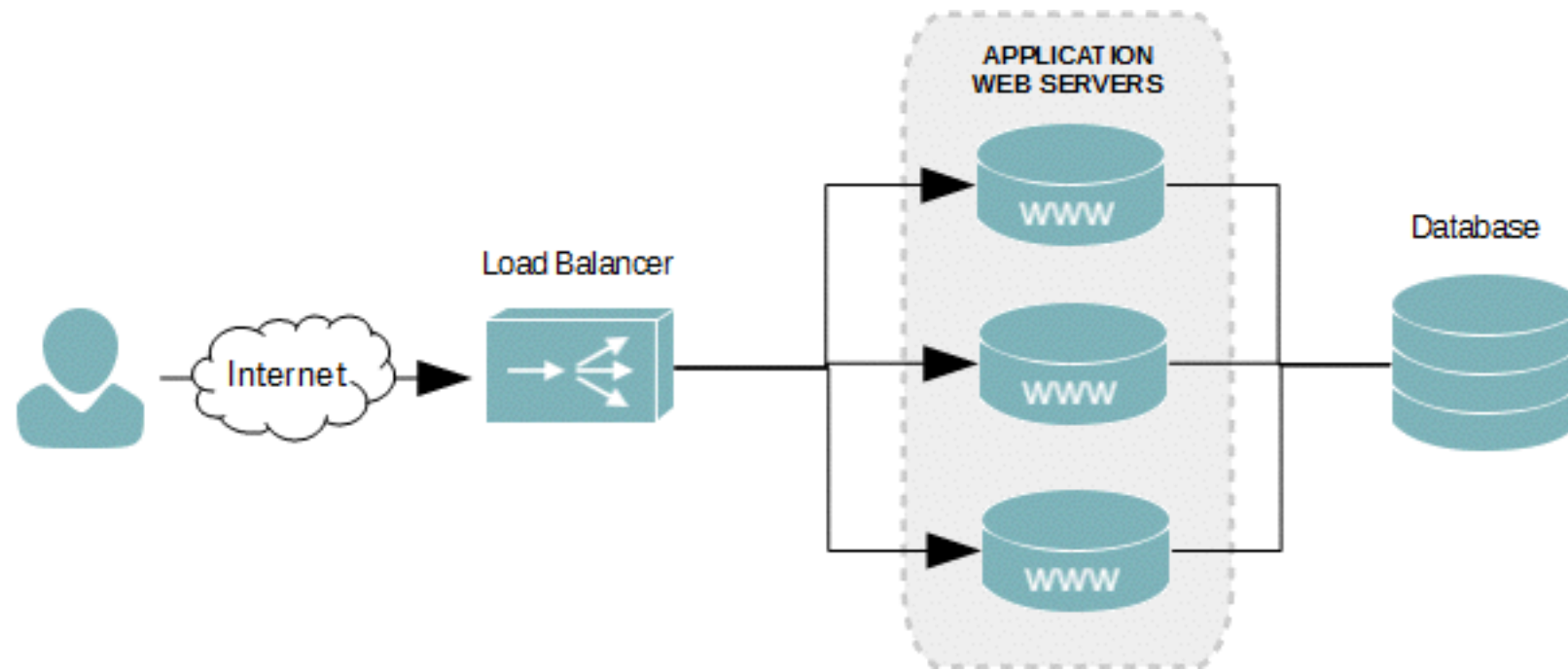
# Webpage

- What we see on websites are webpages that are
  primarily text documents formatted and annotated with Hypertext Markup
  Language (HTML). In addition to text there can also contain images, audio,
  videos

- Each webpage has a unique address called URL : Like <u>google.com</u>,
  <u>twitter.com</u> etc

- Hyperlinks permit users to navigate between web pages

- There are around 45 billion webpages indexed by Google, you have access
  to these many documents

- Demo: Console : Network tab

# First ever Webpage

## World Wide Web

The WorldWideWeb (W3) is a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary of the project, Mailing lists , Policy , November's W3 news , Frequently Asked Questions .

What's out there?
> Pointers to the world's online information, subjects , W3 servers, etc.

Help
> on the browser you are using

Software Products
> A list of W3 project components and their current state. (e.g. Line Mode ,X11 Viola , NeXTStep , Servers , Tools , Mail robot , Library )

Technical
> Details of protocols, formats, program internals etc

Bibliography
> Paper documentation on W3 and references.

People
> A list of some people involved in the project.

History
> A summary of the history of the project.

How can I help ?
> If you would like to support the web..

Getting code
> Getting the code by anonymous FTP , etc.

# Ending Notes

- Make an account on learn21.in/signup

- I will assign assignment there

- Submit your assignment there, this will help in tracking progress