**Internet Notes**

**Internet**

- global information system that is logically linked together by globally unique address

- Able to support communications using time TCP/IP

- 1969

**Internet**: *Inter* – Crossing Boundaries

: *Network* – Connection

**TCP** – Transmission Control Protocol

**Pocketswitch**- circuit switch – calling somebody

-store and forward networks

- go through intermediate machines

**LAN-** Local Area Network

1. Nodes – usually computer, routes

IOT- Internet of things

2. Interconnection Technology – used to connect nodes

* Wired – physical connection
* Wireless – no physical connection: Wifi, Satellite, Infrared, Bluetooth

3. Protocols – World Wide Web- an information system on the internet that allows documents to be connected to other documents by hypertext links.

-Sir Time Berners-Lee – HTTP, HTML, URL

Email

Darpa --> Arpanet

WAIS – Wide Area Information Servers

GOPHER – application layer protocol designed for distributing, searching

Usenet - Worldwide distributed discussion system available on computer

URL – address a specific document

**HTTP Notes**

HTTP 0.9 (1991)

HTTP 1.0 (RFC 1945, May 1996)

HTTP 1.1 (RFC 2068, Jan 1997, RFC 2616 Jun 1999) RFC 7230 – Jun 2014

HTTP 2 RFC 7540 May 2015 (push protocol)

HTTP - an application layer communication protocol used to access resources (hypertext/hypermedia) on the WWW, invented by Tim-Berners Lee

* developed W3C and IETF (Internet Engineering Task Force)

**HTTP Fundamentals**

* HTTP runs on top of TCP/IP, using TCP port 80 by default, or TCP port 443 for HTTPS (HTTP over SSL/TLS)
* HTTP is based on a client-server architecture
  + Clients, a.k.a user agents
    - Web browsers, web crawlers/spiders, other end user tools and application
  + Servers:
    - Origin servers
    - Proxy servers, gateways, tunnels
* HTTP uses a request-response standard protocol
  + The client sends an HTTP request message to the server
  + The server processes the request and replies with an HTTP response message
* HTTP is a stateless communication protocol
  + Servers do not keep information about clients in-between request
* HTTP provides support for other functionalities, such as:
  + Cache control
  + Content media type (MIME) specification
    - MIME – Multipurpose internet mail extension
  + Language and character set specification
  + Content/transfer codings
  + Content negotiation
  + Client-server –protocol negotiations
  + Persistent connection
  + Request pipelining
  + Authentication/authorization
  + Etc.

**HTTP Resource Addressing**

* HTTP resources are identified using URL (RFC 3986), or, more specifically HTTP URLs
  + Scheme (http or https)
  + Authority
    - User information or authentication credentials (deprecated)
    - Host
      * Domain name (resolved to an IP address using DNS) of the server where the resource resides (or will be created)
    - Port number
  + Path to the resource (resolve to the document root on the server)
    - May refer to a static or dynamic resource
  + Query -> starts with “?”
    - Typically provided as key=value pairs, with ampersand (&) separators between key/value pairs
    - May be URL-encoded
  + Fragment identifier

Example:

http://usr:pwd@server.org:81/info/profile.php?id=1234#addr

https://www.google.com

absolute url

relative url