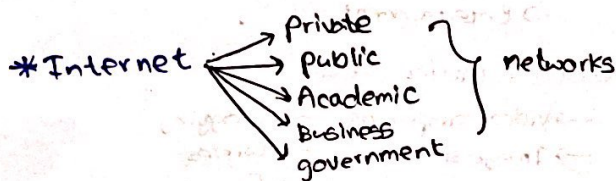# *Different types of networks
- → telecommunication networks
- → television and radio
- → transport
- → Social networks
- → Computer or data networks.

*Applications of Data Networks.
- ↳ Resource sharing → hardware → software
- ↳ Information sharing
- ↳ Communication → Email → Broadcast
- ↳ Remote Computing

*Internet
- → Private
- → Public
- → Academic
- → Business
- → government
} networks

*Different types of services and Protocols.
- → Mail service (POP3 / SMTP / IMAP)
- → File Transfer (FTP)
- → web (HTTP / HTTPS)
- → Remote Logging (SSH)

*Distributed systems architectures. speed ↓ low.
- → Client-Server (2 tier)
- → Client-Server (3 tier) data persistance
- → client-Server (n tier)

*https://www.google.com:8080/new_help/http.png
portal   sub domain   port   path   resource.

*Types of e-commerce Systems,
- -Online goods / soft items Software, e-books, videos
- - Retail Services travel, food, cloths
- - Marketing Services advertising, auctions
- - Customer services help centers, online banking.

*   GET   VS   POST ← *no size limitations. *sensitive and personal data
- → Cannot use to send secure data
- → Can be bookmarked
- → Displays form data in the URL
- → can be use to send secure data
- → cannot be bookmarked.
- → Doesn't display form data in the URL

*Types of data Networks,
- ↳ LAN
- ↳ WAN - enterprise networks.
- ↳ MAN

LAN VS WAN
LAN	WAN
*small geo	*large geo
*privately owned	*privately or leased
*High speed	*Low speed.
*more reliable	*less reliable.
*network management is easy	*network management is hard

*Examples for web servers.
- → Apache (php)
- → Tomcat (Java)
- → IISC.NeT).

*Concepts and technologies associated with the web applications.
- ↳Data networks and the Internet.
- ↳ Network Services and Protocols
- ↳ web server and the browser
- ↳ Markup languages.

*website ← Static content

*web application
- → interactive component to dynamically generate content
- → enter data, process them, get information. select content, click, drag, drop etc

*E-commerce Systems according to stakeholder engagement.
- →B2B Aliex, Alibaba, Amazon business
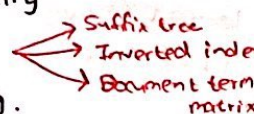- → B2C Amazon, daraz
- →C2C ebay, online auction sites.

Common search engine tools.
→ Desktop search tool
→ Meta search engine
→ Blog search engine
→ Enterprice search tools.

Make websites more visible to search engines.
→ Optimize every page with rich content.
→ Unique title tags and meta descriptions for every page.
→ weed out the 404 errors.
→ Make website content easily sharable
→ Optimize images.
→ Make website load faster
→ Include structured markup.

Search engine processes.
→ Web Crawling
→ Indexing → Suffix tree
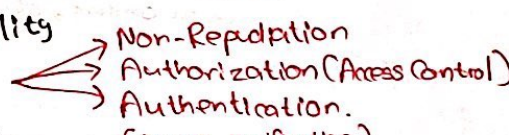→ → Inverted index
→ Searching. → Document term matrix

Social Media Integration
→ Google loging
→ Facebook comments
→ Youtube video.

Importance of Internet security.
→ Privacy and confidentiality.
→ Prevents data & identity theft.
→ Maintains Productivity.
→ Foils cyber-terrorism.

Internet Security Services (C.I.A)
→ Confidentiality
→ Integrity → Non-Repudiation
→ → Authorization (Access Control)
→ Availability → Authentication. (source verification)

Web crawler policies
→ Re-visit Policy
→ Parallization Policy.
→ Politeness Policy.
→ Selection Policy.

Index data structures.
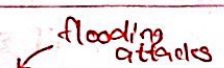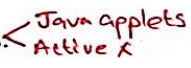→ suffix trees
→ Inverted Indexes.
→ document-term matrix

Uses of Social Media
→ Communication → Media sharing
→ Collaboration → Paid advertising.
→ Opinions & Reviews
→ Brand Monitoring
→ Entertainment

Social Media types.
→ Video campaigns → Blogging
→ Image sharing → Wikies
→ Micro blogging → Forums.
→ Social Networking → Social bookmarks.

Types of Internet Attacks. ← flooding attacks
→ Denial of Service Attacks (Dos)
→ Distributed Denial of Service Attacks (DDos)
→ Active code Attacks ← Java applets / Active X
→ SQL injection.
→ DNS Attacks. → Cross site scripting (XSS / CSS)

Type of Intruders.
→ Passive Intruder
→ Active Intruder (actively change any information)

HASH
→ MD5 → SHA1 → SHA 2

Symmetric Key Cryptography	Asymmetric Key Cryptography.
* Use a single key for both encryption and decryption	* Use one key to encrypt and other to decrypt. → Private key → public key. (verified by Certificate Authority).
* Key exchange problem	* Key exchange problem solved.
* Algorithms are less complex	* Algorithms are complex.
* faster	* slower
	* impracticle for large messages.

Comprehensive Security Protocols
→ Secure Socket Layer (SSL)
→ Secure IP Protocol (IPSec)
→ HTTPS.