

## Syllabus

- 002
- I How the internet works.
  - II Web development process
  - III Client side languages  $\Rightarrow$  HTML, CSS, Bootstrap, Javascript, jQuery.
  - IV Server side scripting Language  $\Rightarrow$  PHP, MySQL, XML, AJAX.
  - V Responsive web applications: Password authentication, Data encryption, form validation, Blogs.

## Test 1

### Aktivität 1

# How the Internet Works

## ① The Internet Overview:

### Internet infrastructure:

- Internet is a network of cables that facilitates the transmission of "data ~~packag~~ packets".
- The network of cables is vast and spans the globe across 550,000 miles of hidden cable under the ocean.

### data Packet

- contains the information being transmitted over a network. includes emails, files or web pages. also include information about the sender and a recipient.

### data Packet contents

- The recipient is a device attached to the network.
- the address of the device is defined by its IP Address.
- Every device attached to the network has a unique IP address.

→ IP is a string of numbers separated by periods.

→ The IP address of the web server hosting

google.com is

74.125.224.72

→ Each website has its own IP address.

### Email Data Packet

#### Header:

→ Sender's IP address.

→ Receiver's IP address.

→ Protocol

→ Packet number

#### Payload:

→ Data (Email)

Trailer: ( indicates the packet complete and there is no other data  
transmission)

→ Data to show end of packet

→ Error correction.

## Bandwidth

⇒ The speed at which data packets can be transmitted.

⇒ Bandwidth transmission capacity is measured by

## Bitrate

⇒ Bitrate is the number of bits per second a digital network can transmit.

⇒ Latency: Amount of time it take for 1 bit to be sent from sender to the receiver.

$$\# \text{ 8 million bits} = 1 \text{ Mb}$$

4MB, MP3 file, send, 4 seconds ⇒ required bitrate  
8 Mbps

1750 1132

四庫全書

Amstel 5927 \*

200V

~~Lost in April 1911~~

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The Internet is a set of protocols

## Protocol:

Protocol: A well established set of rules and standard used to communicate between machines.

→ TCP/IP Protocol.

→ HTTP / HTTPS Protocol.

→ SMTP Protocol.

→ FTP Protocol.

# TCP/IP Protocol

\* IP (Internet Protocol) : Route information to the proper address. doesn't facilitates the physical connection between pc to transmit data packets.

## \* TCP Protocol:

→ facilitates the transmission of data packets.

→ Ensure no information is missing. If data

missing अनुरोध TCP resend वाले request आये।

\* DNS → Domain name server  
\* ISP → Internet service provider

## The HTTP Protocol

### HTTP/HTTPS Protocol

facilitates communication between a web browser and web server.



→ a computer that hosts a website or web application.

→ configured to accept remote connections with internet users and relay data through

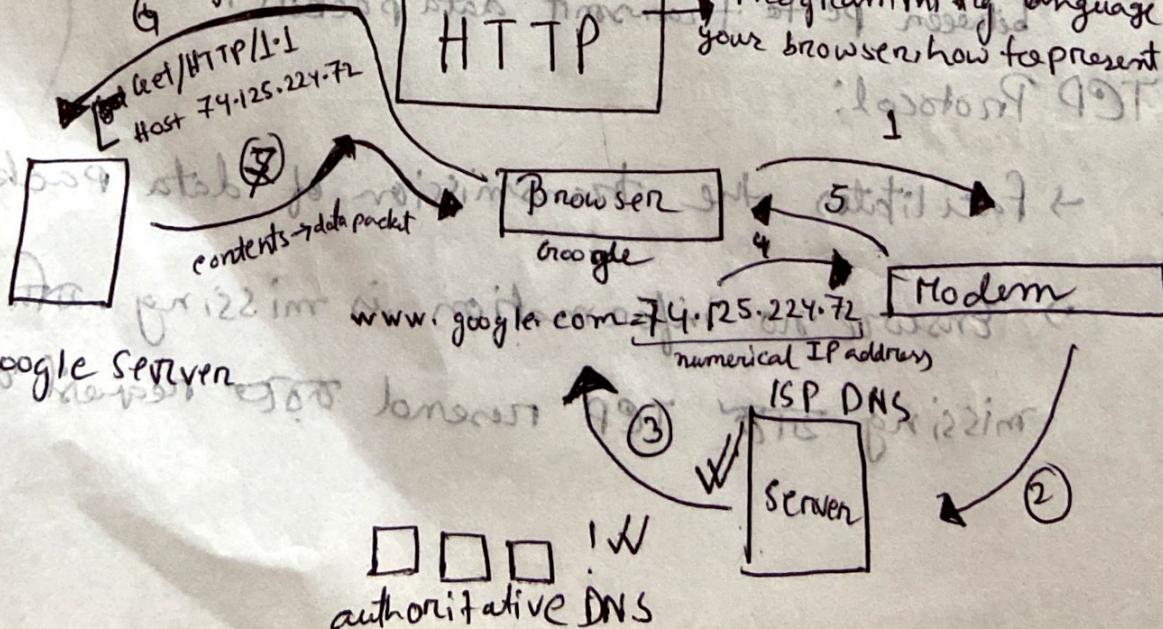
HTTP / HTTPS → (Hyper Text Transfer protocol secure)

(HyperText transfer Protocol)

get request

HTTP

Programming language that tells your browser how to represent a page.



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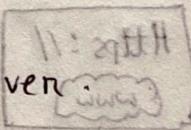
## HTTPS Protocol

(more secure)

- i) More Secure than HTTP.
- ii) Data Packets are ~~or~~ encrypted using SSL or TLS.
- iii) SSL: Secure Socket Layer layer.
- iv) TLS: Transport Security Layer Security.
- v) SSL layer is created with a security certificate.

## Security Certificate

- i) Requires installation on the web server.
- ii) Can be purchased from a reputable vendor.
- iii) Validation requires information of about the Domain and Registrant.
- iv) EV certificates offer ~~the~~ the highest level of security.



SSL certificate

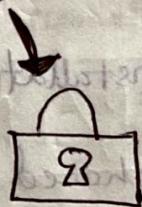
2040 bit encryption

## Encryption Process

Protected  
SSL <sup>जैसे</sup> कोर्ट website visit करते, SSL certificate  
install कर web server automatically encrypted  
connection build <sup>जैसे</sup> user को browser  
समझे

## SSL Handshake

When a web browser creates an  
encrypted connection with a web browser



this ~~means~~ means this site  
is safe to share your  
information.

SSL certificate from authorized company is a must  
before sharing sensitive information.

⇒ When email exceeds of thousands of subscribers.

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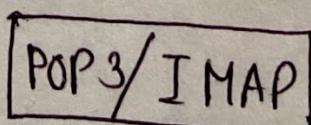
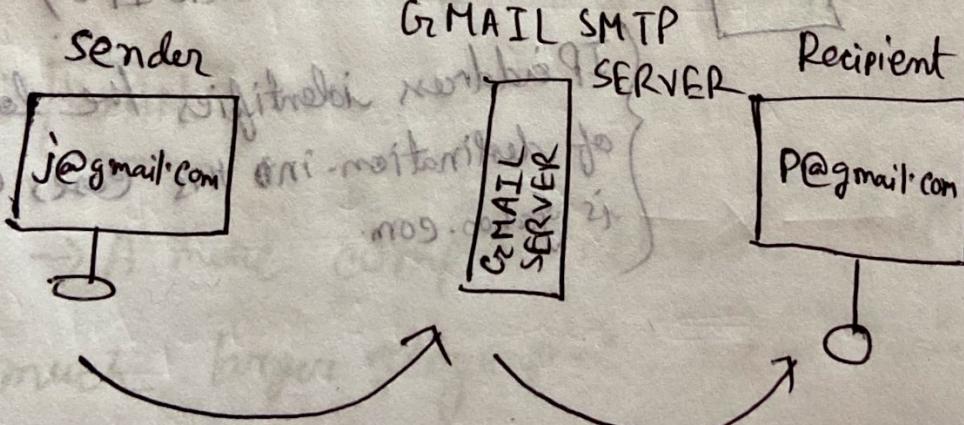
## The SMTP Protocol and Local Mail Delivery



(মাঝে আমার website এর customer দ্বারা সেবা  
email -> communicate করে, তখন নামক)

- Simple Mail Transfer Protocol.
  - SMTP Email server handles outgoing mail delivery.
  - Two types of mail delivery
    - Local and outbound
- from, ...@gmail.com  
to, ...@gmail.com
- domain same
- from, ...@gmail.com  
to, ...@yahoo.com
- domain different

### Local Mail Delivery

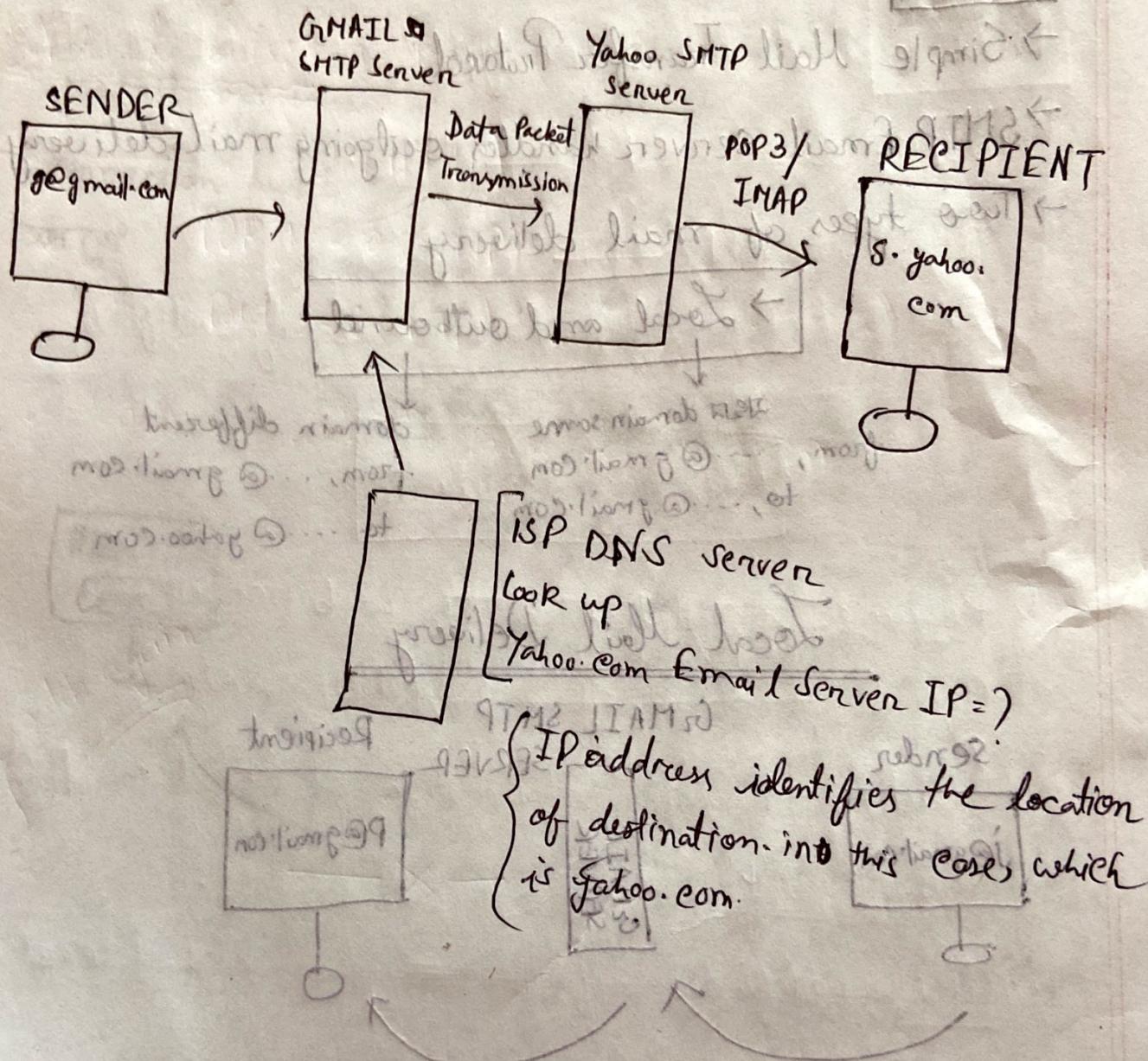


→ Protocol for  
downloading email stored  
in the server. download  
হলে server থেকে delete  
হলে যাই (POP3) & (IMAP).  
recipient download করে গেরেন্টি

Sender email address server → store & forward  
recipient email at SMTP server → access & forward (login)  
out router area

OOB

## Outbound Mail Delivery



## Network Basics - LAN & WAN

LAN (Local Area Network) (PC <sup>জেটি</sup> Ethernet Port wifi <sup>বিলি</sup> connect  
জেটি)

WAN (Wide Area Network) (ITI) Q8 বিলি

①

**LAN:**

(স্মার্ট কম্পিউটার LAN Port-ও net ও a line এইগুলি)

→ A group of computers that shares a common communications line within a relatively small area.

{  
②

**WAN:**

→ A more complex network that spans across much larger geographic areas such as cities, states & nations.

→ The Internet <sup>is</sup> the largest WAN in Existence

{ PC এবং মাইক্রো directly network net G.3 line এর মধ্যে riskier, hacker IP দিয়ে direct PC access করতে পারে। Router is a better option in that case.

# Network Ports & Firewalls

## Network Ports:

Port 80 (HTTP)

PORT 25 (SMTP)

Port 21 (FTP)

\* Windows firewall के विवरों के बारे में जानकारी

Windows firewall settings details BY RAVI

Si preziso est beneficiu plătit de la NAI A ← {

~~April 19~~ ~~for going to the publishing house~~

107 watch again for going up no published road (100%)  
F: HAW (1)

008) 2030 and 92 ~~for~~ ~~X~~ Brown 10/9709 from A ←

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· visitors & etc

~~imposed~~ in WAC required with <sup>21</sup> the territorial etc.

# The Web Development Process

## Overview

Step 1: Plan & Create flow diagram of the Web Application.

Step 2: Determine your system Requirements & Hosting Solutions.

Step 3: Register a Domain name.

Step 4: Setup a local testing server.

Step 5: Setup a production server.

Step 6: Setup your FTP services.

Step 7: front end developing : HTML, CSS, Bootstrap, Javascript, jQuery.

Step 8: Database Setup / config. (MySQL/PhpMyAdmin)

Step 9: Dynamic Web Interactivity (PHP) (DB connect)

Step 10: FTP upload.

Step 11: DNS Record Configuration.

Step 12: Email & SMTP Setup.

Step 13: Deployment.

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## Web Application Planning Overview

- { \* Establish the purpose of your website : E.g. static or dynamic
- { static informational site
- { dynamic interactive site (amazon/Ebay)

- # Navigation mapping / flow chart make sure
- reverse gritter road outside : D.95+2
- reverse road winding outside : E.95+2
- reverse RTT road outside : J.95+2

- positioned, 220, MTH : bridge levels hrs train : F.95+2
- fire & emergency
- (risk AC/Mg/19/JD/CPM) , pffno) \ puter sandstone : 8.95+2
- ETC of 800 (9H9) activities site deli dinner : e.95+2
- road RTT : O.95+2
- winding road bridge 2/30 : L.95+2
- puter RTT & dinner : S.95+2

## Web Hosting & System Requirements

### Web Hosting Packages Overview

#### Types of Web hosting Solutions.

- Local hosting
- Shared / Dedicated / VPS → (Virtual Private Hosting)
- Cloud hosting.

#### Which one is best?

you have  
to know  
the answer  
of these  
questions.  
first.

- Will the site be publicly accessible on the internet?
- Static or Dynamic site. (DB driven)
- Require Scalability.
- What Scripting language and DB will you be using? [ PHP+MySQL OR ASP+ASP.NET (Microsoft) based lang.]

We will learn  
these in this  
course

Intranet Only (Publicly ~~not~~ accessible <sup>at</sup>,  
only ~~out~~ network <sup>at</sup>  
system - access ~~from~~ <sup>to</sup> ~~out~~)

- Requires local server setup.
- PHP & MySQL DB ~~not~~ only work on a server.
- Requires Router port configuration.

Internet Accessible

- Local machine can be configured to run a public web website.
- Using local machine is very risky → Not recommended
- Requires costly static IP address

192.168.1.10

(Host IP)  
first hand

## Hosting Solutions

### → "Traditional Web Hosting"

- Pre-packaged hosting solutions by reputable companies.
- Example: Godaddy.com  
Hostgator.com

### Traditional Hosting:

- Server is housed in a Data center
- Managed by hosting company.
- requires a fixed monthly or yearly subscription plan.
- different packages to suit your needs.

Example Options

## Shared Hosting:

- Hosting company allocates a certain amount of resource to your website.
- Resource allocation based on subscription plan
- Very easy to use.
- Hosting companies takes care of all management and configuration → Turn key package

### Sample package:

<https://ca.godaddy.com/hosting/web-hosting>.

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## Shared Hosting (29)

- \* Package details, price, offers.
- \* Linux based → PHP + MySQL (better)
- \* Windows based → ASP + ASP.NET

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## Dedicated Hosting (more powerful and expensive than the shared one)

- All server resources dedicated to your web app.
- Servers are powerful.
- more bandwidth.
- full control over configuration
- self managed or managed.
- custom server hardware configurations.

Example  Plans :

<https://ca.godaddy.com/pro/dedicated-server>.

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(Not as flexible as dedicated one)

## VPS) Virtual Private Server

- much better resource allocation than shared hosting.
- Few sites on a single server merit \*
- Servers are powerful & have resources \*
- more bandwidth.
- Fair control over configuration.
- self managed or managed.
- Restricted to existing hardware.

Example plans:

<https://ca.godaddy.com/pro/>

managed - vps.

: andy @ Agman

## Cloud Hosting & Case Study

- Revolutionary technology
- Very Flexible
- Full control
- Highly scalable
- Almost zero downtime
- Per second /hour billing
- Pay only for what you use
- Hardware is Scalable (Virtually)

Example:

<https://www.dinode.com/pricing>

( তারকাণ্য সের্ভার ক্রয় করে cloud create  
 হয়, CPU, RAM, bandwidth, storage (in short  
 capacity) increase হয়। )

## Domain Names

### Introduction

- Registration is optional.
- Without a Domain name your website would be accessed using the IP address.
- Hosting Company will provide you with your public IP.

### Registration

- Domain Registration is highly recommended.
- Registration is easy and cheap.
- Many Registers to choose from.

#

**ICANN**

Internet Corporation for Assigned names  
and numbers.

## TLD & ccTLD

commercial/  
profit.

- i) TLD (Top Level Domains) : .com, .net,  
.org etc  
→ organization
- ii) ccTLD (Country Code TLD) : .us, .bd, .ca etc  
↳ administered independently of ICANN

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## Domain Name Registers

### Registrars

- Many registrars to choose from.
- It is important to select a reputable company.
- Domain names can become valuable very quickly.

## Selecting a Registrar

for business  
purpose

- use well established registrars for high-value domains.
- Examples: safenames.net, cseglobal.com, markmonitor.com.
- These registrars offer extensive brand protection services. used by twitter & Facebook.

## Registrars for start-ups

- use a popular reputable registrar.

Example: godaddy.com,  
enom.com,  
tucows.com

- offer domain security and online administration.

godaddy.com

- Largest domain register
- over 50 million domains.