

Internet Threats

① Physical threat

Loss of whole computer system, hardware, damage to comp. software, theft of computer systems, natural disasters like floods, earthquake etc. Acts of terrorism like attack on world trade centre are also major threat, flooding of cities

② Accidental Error

Imp. that computer security experts should take into consideration when designing security measures of a system.

having proper checks, corruption of data by programming error
user of operator error

③ Unauthorized access

Data stored on computer system has to be accessed for it to be translated.

Unauthorized person access

remote systems can access info sometimes

office & bande ne wo data access kia jo uske lie ni hai

④ Malicious misuse

Trojan horses & any other illegal alteration of comp. system

that generates illegal codes to alter standard codes.

great financial loss.

⑤ threats due to participatory culture → fake video containing trojan was embedded in a video on Youtube

⑥ threats due to web feeds

info on web dist. using protocols like RSS

⑦ threats related to data privacy

Internet risks

① Data Leaches: Private individual data like email address to credit card no.s are always at risk of getting in wrong hands

② DDoS: making online site unavailable by overwhelming it with traffic from multiple sites sources.
target → imp resources like bank, news.

3) Backdoor trojans

unauthorised remote access to a computer

or obtaining access to plain text in cryptographic systems

hidden part of prog. or sep program

example $\Rightarrow$ Keylogger

4) Ransomware $\Rightarrow$

malware that installs covertly on user's device

it can attack to publish the victims data until ransom is paid.

Simple ransomware can ~~install on victim~~ lock a computer system which not difficult to reverse & display a msg. to for payment to unlock.

5) Internet fraud $\Rightarrow$

(Online scam)

use internet services to defraud victims or take advantage of them like stealing personal info can lead to identity theft.

Web attacks & prevention

① XSS (Cross site scripting)

inject client side script into webpages viewed by users

xss vulnerability may be used by attackers to bypass access controls, serious problem.

② DDoS: websites run unbearably slow or get offline completely
Cooperate & govt sites been hit
Solution $\Rightarrow$ well reviewed & reliable DDoS protection tool
that filters request & rejects one i.e malicious

$\rightarrow$ so $\Rightarrow$ reliable WAF (web application firewalls)
can shield these vulnerability working
in conjunction with behavioural firewalls
~~that can~~ block sophisticated & dangerous attacks

SQL injection → most serious

→ take advantage of web app. vulnerabilities

→ gain control over databases & all info in them

→ any web app. that ~~is~~ holds data will use databases to store them & ~~is~~ recall when necessary
e.g. info name, credit card detail

Solution → practice regular auditing & remediation of your application
any vulnerability can be dealt quickly
parametrized queries & ^{checking} SQL injection patterns before executing query can save

④ Cookie poisoning/hijacking

.tricky & deceiving.

many app. use cookies to save user info like logins, passwords
allows modifying valid cookie & gain false authorisation
to info about another user & steal your info.

Solution

cleaning stored cookies from browser regularly
avoid signing up for sites & newsletters you don't trust
Regular virus scanning

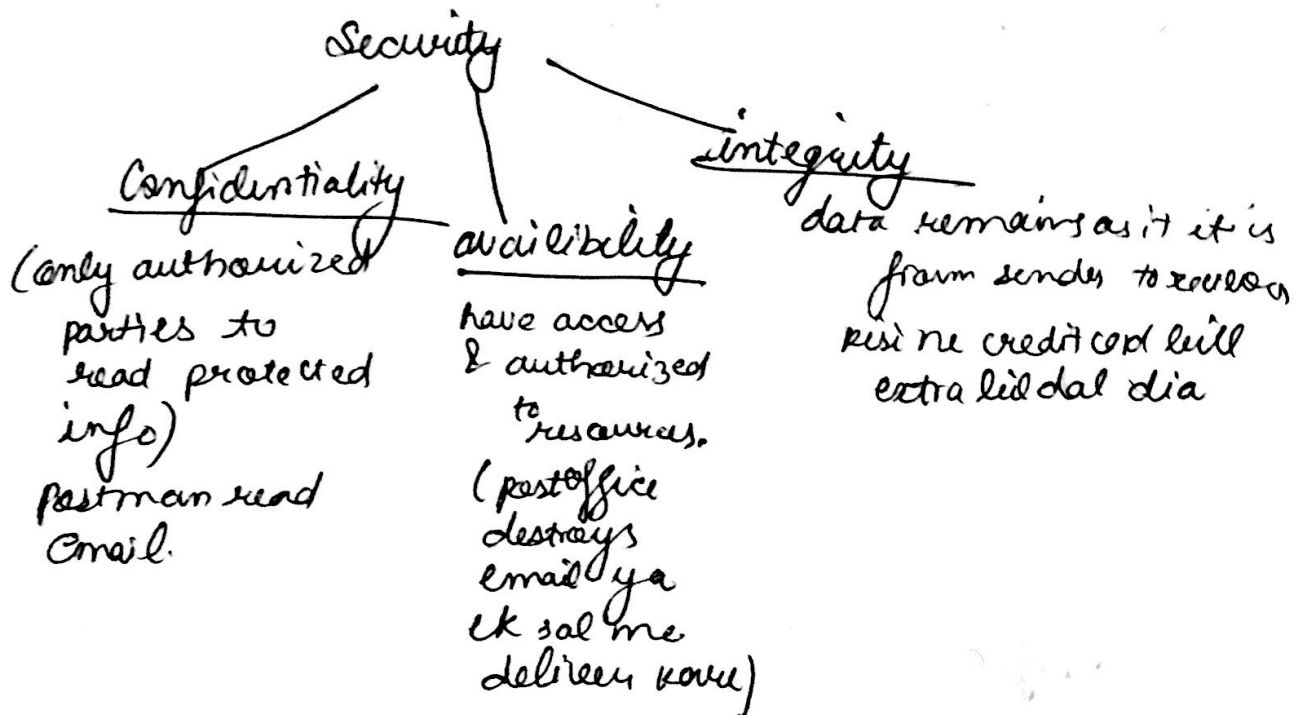
⑤ Spoofing → mimick another user, retrieve info i.e. allowed
use HTTP request containing session id info
from another user to target user.

⑥ Virus ^{kit} through mail

⑦ ~~it~~

Web security model

- ① Unauthorized internal users who access confidential info using stolen p.c.
- ② Former employees can access info using alternate pass
- ③ Weak access points in info structure can expose the company
- ④ Management that undermines security



Security system

1) Authentication

verify who says you are
you are only allowed to log on your internet banking acct

2) Authorization

Allows only you to manipulate resources

3) Encryption

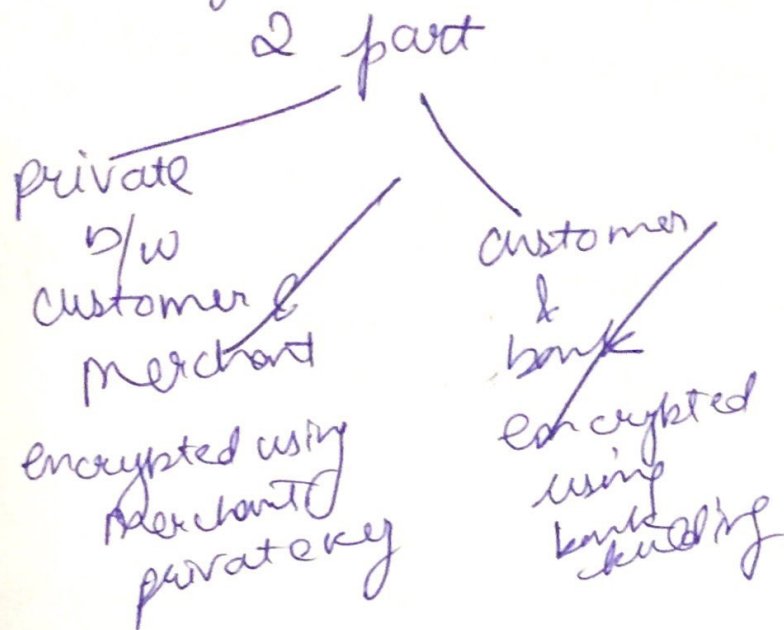
info hiding

you cannot spy on others using internet transactions

4) Auditing → keeps record that you bought something

Application vulnerabilities & defenses

SET (Secure electronic transaction)
dev. by mas, mastercard, visa & other comp. companies



Plugin Software component adds a specific feature to an existing computer program. ~~when~~

Examples plugin in web browsers like search engines, virus scanners, Java plug in

Browser extensions → Add to the functionality of web browser without affecting viewable content of web browser

Web user tracking

analysis of visitor's behaviour on a website which may be used to provide with optimum content that relates to his preferences during visit or afterward

associating a given incoming req. with a set of identifying credentials.

like user from where it came from
permission & holding policy can use these credentials to det-
y req. is permitted

REST framework gives no. of authentication schemes and
allows you to imp custom scheme.
it occurs before any code is allowed to proceed at
very first before permission -

HTML & Certificates

uses one of the 2 protocols for encryption

→ SSL (Secure socket layer)

→ TLS (Transport layer security)

uses asymmetric public key infrastructure

private key ~~does~~ to decrypt use public key

↓
strictly private
protected

HTTP certificate?

- ① When you request HTTPS connection to a webpage, ~~website~~
 - ② Website send SSL certificate to browser
 - ③ It has public key to begin secure session
 - ④ Based on initial exchange, browser & website will initiate SSL handshake
generation of shared secrets to establish a secure session for you & browser
- When SSL certificate is used in SSL HTTPS cannot
use SSL padlock
... can certificate is installed

emphasis on communities for users
easier to share info
Ex → facebook, wikipedia, Spreadsheets, E-commerce

Features →

1) Folksonomy

free classification of info.
allows users to classify & find info
tagging of websites, images etc

2) Rich user experience

dynamic content responsive to user
input: जैसे जैसे खोजेंगे पर image बदलेंगे

3) User participation

info flows 2 ways b/w site owner & its users
by evaluation, commenting etc.
Site users also create their own content for others to
see, like wiki

4) Software as a Service (SaaS)

Web 2.0 sites developed APIs to allow automated usage
like web 'app'

5) Mass participation wide variety of users having diff concern participate in sharing info

Latest Trends in Web Technologies

1) Using AI to create websites & webpages

dev. software act likes humans
used by google & wiki create

2)

like molly (AI program) is used by web
dev. to make the grid for pretty websites

2) Evolution of Javascript

Web 3.0 will become increasingly possible if
browsers continue to increase speed & capabilities

LavaScript is evolving for web development as they increased support for iOS.

3) Internet of things

Internet is moving away from comp. to household apps.
 ^{re to inter} ^{in tech} increasing demand for internet to allow control of every thing of life. using our apps in part.
 kettle setting
 hackers getting new world to play with.

4) Ruby on Rails

Variety of features within rails making fav. for web dev.

Enhancements improved flexibility, more focus on appearance rather framework.

5) Modern UI

flexible CSS patterns without Java script libraries.

No longer are webpages ~~too~~ being complex.
 web dev. make our website lively
 which reacts to changes as to each user.
 Need to bring them to life.

6) Web sites as apps

~~Parallel scrolling: Background e.~~

7) Rise of Instagram:

popularity of image sharing applications
 for interest Snapchat app.

8) Parallel scrolling → background elements move at a diff way they do in normal.

Semantic Web

- 1) XML self description of data
- 2) RDF: foundation for receiving
publishing data,
exp. data obj & relations



- 3) SPARQL → Query lang. & protocol
of semantic web str.
- 4) Ontology → shareable conceptualization of
specific domain of interest
in machine language

Challenges

- 1) Vastness
- 2) Vagueness
- 3) Uncertainty
- 4) Inconsistency
- 5) Deict.

Web 2.0 Tech

Rich Internet app. Graphics
Web oriented architech. Feeds
Social Media