AIMAN SIDDIQUA - 2K18/MC/008

COMPUTER NETWORKS

MC-308

ASSIGNMENT-3

(1.) Encryption transforms senders original information (plaintext) to another form (cipher-text). Decryption reverses the original process to transform the message (ciphertext) back to its original form (plaintext).

They protect storage or transport of information by fulfilling the following five key security functions:

	PROTECTION	DESCRIPTION
(i)	Confidentiality	Allow only authorized users to access information.
(ii)	Authentication	Verify who the sender was and trust the sender is who they claim.
(iii)	Integrity	Trust the information has not been altered
(iv)	Nonrepudiation	Ensure that the sender or receiver cannot deny that a message was sent or received.
(v)	Access Control	Restrict availability of information.

(2) Uncompressed : WEDWEWEEWEBWET

	Passed string	
1 W	W	WEDWEWEEWEB WET
W		
1 W, 2 E	E	EDWEWEEWEB WET
W, E		
1 W, 2 E, 3 D	D	DWEWEE WEBWET
W, E, D		
1 W, 2 E, 3 D, 4 WE	WE	WEWEEWEBWET
W, E, D, 1E		
1 W, 2 E, 3 D, 4 WE, 5 WEE	WEE	WEE WEBWET
W, E, D, 1E, 4E		
1 W, 2 E, 3 D, 4 WE, 5 WEE, 6 WEB	WEB	WEBWET
W, E, D, 1E, 4E, 4B		
1 W, 2 E, 3 D, 4 WE, 5 WE, 6 WED, 7 WET	WET	WET
W, E, D, 1E, 4E, 4B, 4T		

Compressed: W, E, D, 1E, 4E, 4B, 4T

(3.) DCT - Discrete cosine Transform

In this step, each block of pixels goes through DCT. The transformation changes the values so that the relative relationship b/w pixels are kept but

the redundancies are removed.

Quantization

- After the transformation, table T is created, the values are quantized to reduce the number of bits needed for encoding.
- It divides the no. of bits by a constant and then drops the fraction.
- The divisor depends on position of the value in table T.

(4.) A user Agent (UA) interacts with an end user and allows the user to send and receive mail messages.

A Message Transfer Agent (MTA) routes a mail message towards its final destination by sending the message to another MTA.

(5.) (i) VIRTUAL TERMINAL

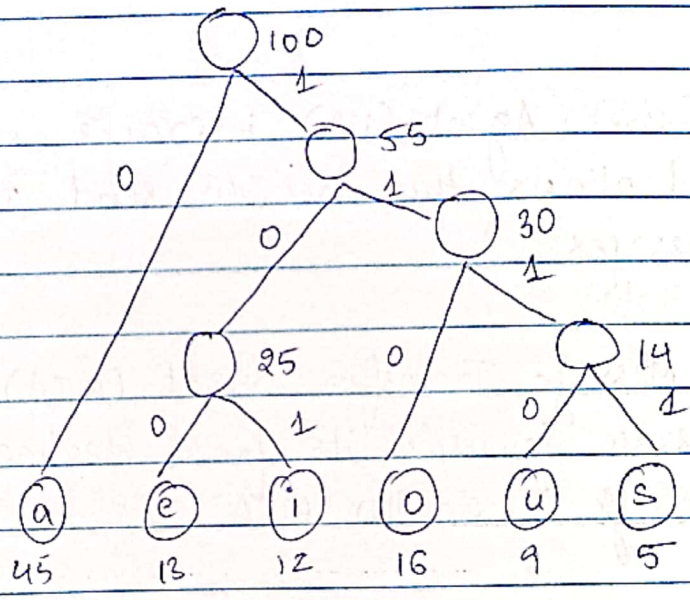
- It allows a PC to ~~sen~~ connect to remote server, usually to perform a file transfer or run an application.
- The PC and server may be running different OS but can communicate using well known protocols such as TELNET, SSH, FTP etc.
- PUTTY is a well known example.

(ii) PUBLIC & PRIVATE NETWORKS

Public network: Network to which anyone can connect.
Example - Internet

Private Network: Network to which access is restricted.
Example - Corporate Network, School Networks

6.



a : 0
e : 100
i : 101
o : 110
u : 1110
s : 1111

(7.) Drawbacks of Lossy Compression Techniques

- Loss data is not retrievable.
- The file has very limited potential for adjustments or changes post production
- Accuracy is impaired.
- With higher compression ratio, output degrades.

(8.) Domain Name System (DNS) is the phonebook of the internet. Humans access information only through domain names. DNS servers eliminate need for humans to memorize IP addresses.

How DNS works:

(i) User logs onto their ISP to use the Internet.
(ii) The user opens a web browser and types a URL into the address bar
(iii) The computer then asks for ISP's DNS server for specific IP address for the URL.
(iv) Once the DNS server is found, it responds with appropriate IP address and user's computer gives this address to user's browser.
(v) The browser opens a connection to the server using the IP address provided and retrieves the page and from the site requested.
(vi) The browser displays the requested page on the computer screen.

9. Kernel is central component of an operating system that manages operations of computer and hardware. It basically manages operations of memory and CPU time. Kernel acts as a bridge b/w applications and data processing performed at hardware level using inter-process communication & system calls.

10.
- Before being transmitted, information in the form of characters and numbers should be changed to bit streams.
- The presentation layer is responsible for interoperability b/w encoding methods as different computers use different encoding methods.
- It translates data b/w the format the network requires and the format the computer does.