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[redacted]

1. Vernam Cipher
   a. Encryption using bitwise XOR
   C = P (+) K
   P = C (+) K
   Where C = CipherText
   Where P = PlainText (Message)
   Where K = Key
   Assume a message M is “EMORY”
   Key is “HELLO”
   Therefore PlainText = Message(M) = EMORY
   And Key = “HELLO”

   Therefore, using C = P (+) K to get the CipherText

P: EMORY

Where the binary for EMORY from the encoding and decoding table given is 001 011 100 101 010

K: HELLO

Where the binary for HELLO from the encoding and decoding table given is 110 001 111 111 100

Therefore, to get C, add P and K, where P = PlainText (Message) and K = Key

	E	M	O	R	Y
P:	001	011	100	101	010
K:	110	001	111	111	100
C:	111	010	011	010	110
	L	Y	M	Y	H

Therefore, C is LYMYH, with the corresponding binary 111 010 011 010 110.

i.e C: LYMYH = 111 010 011 010 110

b. C: RRYLM = 101 101 010 111 011

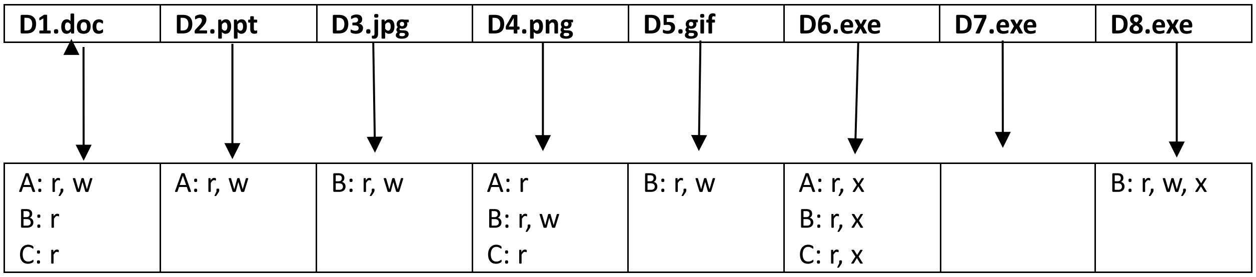
K: HELLO = 110 001 111 111 100

Therefore, to get P, add C and K, where C = Cipher Text and K = Key

	R	R	Y	L	M
C:	101	101	010	111	011
K:	110	001	111	111	100
P:	011	100	101	000	111
	M	O	R	A	L

2. Access Control

   a. The access control matrix of the privileges assigned to users based on how it is specified can be found below.

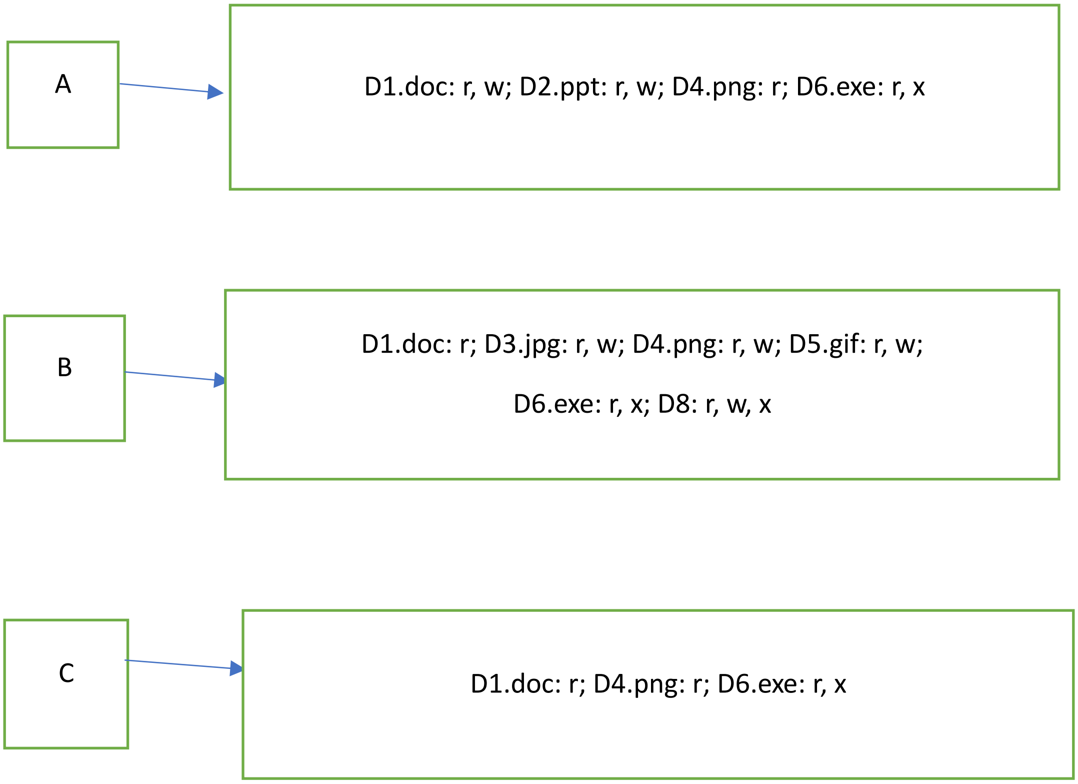


D1.doc	D2.ppt	D3.jpg	D4.png	D5.gif	D6.exe	D7.exe	D8.exe
A: r, w B: r C: r	A: r, w	B: r, w	A: r B: r, w C: r	B: r, w	A: r, x B: r, x C: r, x		B: r, w, x

   b. The access control list of the privileges assigned to users based on how it is specified in the question can be found below:

	Document files		Image files			Binary files		
	D1.doc	**D2.ppt**	**D3.jpg**	**D4.png**	**D5.gif**	**D6.exe**	**D7.exe**	**D8.exe**
A	read,write	read,write		read		read,exec		
B	read		read,write	read,write	read,write	read,exec		read,write,exec
C	read			read		read,exec		

   c. The capabilities list for the users can be found below



A

D1.doc: r, w; D2.ppt: r, w; D4.png: r; D6.exe: r, x

B

D1.doc: r; D3.jpg: r, w; D4.png: r, w; D5.gif: r, w;

D6.exe: r, x; D8: r, w, x

C

D1.doc: r; D4.png: r; D6.exe: r, x