

### Case Study

Bata shoes have developed a customer feedback system (CFS). Whenever customers make a purchase at a store, the store staff enroll that customer's information (phone number or email) into CFS. Then system sends out a survey to the customer asking them about their visit's satisfaction (1-5) and general feedback comments. Staff at head office review the survey results and summarize the comments for their senior managers.

#### Question Group A

1. For the given case study, identify and discuss a possible threat against integrity. Be specific to the case study!  
Secondly, propose a security measure against that threat.
2. Encipher the message HILARIOUSWORLD using columnar transposition with keyword TWICE. Show workings.

[ 4 + 2 + 4 marks]

#### Question Group B

1. For the given case study, discuss how you could apply the principle of least privilege to improve system security. Give a specific example relevant to this system.
2. Perform a Railfence decryption of plaintext TEOFNPECDE using a depth of 4. Show workings..
3. How can an attacker perform cryptanalysis on permutation ciphers?

[ 5 + 3 + 2 marks]

### Group A

Q2

TWICE = 4, 5, 3, 1, 2

4	5	3	1	2
H	I	L	A	R
I	O	U	S	W
O	R	L	D	

ciphertext = ASD RW LUL HIO IOR

### Group B

Q2

T-----E--- = TE  
-O---F-N-- = OFN  
--P-E---C- = PEC  
---D-----E = DE

Combined plaintext: TOPDEFENCE

Q3

Without knowing the key, attacker could manually try to rearrange the letters to see if they could find a pattern of permutation.

Frequency analysis will only indicate that it is a transposition cipher, it will NOT provide any further help.