



**The Islamic University**  
**College of Technical Engineering**  
**Department of Computer Technical Engineering**



**Fourth Stage**

***Security***

**Lecture 8**

**Asst. Lec. Yousif Samer Mudhafar**

**Email: [yousif.samir19@gmail.com](mailto:yousif.samir19@gmail.com)**

# Lecture objective

**The student will recognize the following objective :**

➤ **Transposition Techniques**

➤ **Encryption and Decryption using  
Cipher.**

**Rail Fence**

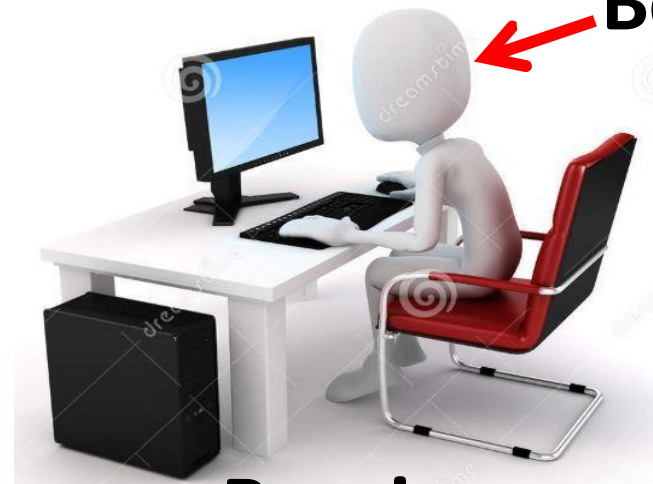
### 3. Rail Fence Technique

Alice



Sender

Bob



Receiver

*Depends on Number of Depth*

**Encryption**

*Depends on Number of Depth*

**Decryption**

**Cipher text**



### 3. Rail Fence Technique

In this technique the plaintext is written down as a sequence of diagonals and then read off as a sequence of rows, where **Rail Fence Technique** depends on depth.

#### Example 1

Encrypt and decrypt the Plaintext “**hello bop**” with **Rail Fence** of **depth 2**.

Ans:-

#### 1. Encryption Algorithm

Plaintext : “**hello bop**”

1<sup>st</sup> depth



h l o o

2<sup>nd</sup> depth



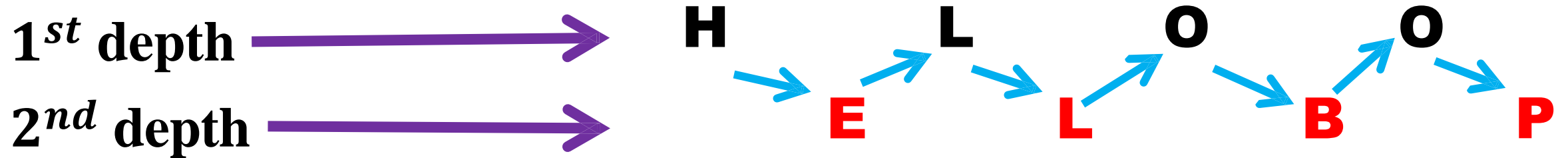
e l b p

The Cipher text is “**HLOOELBP**”



## 2. Decryption Algorithm

**Cipher text : “HLOOELBP”**



**The Plaintext is “hello bop”**

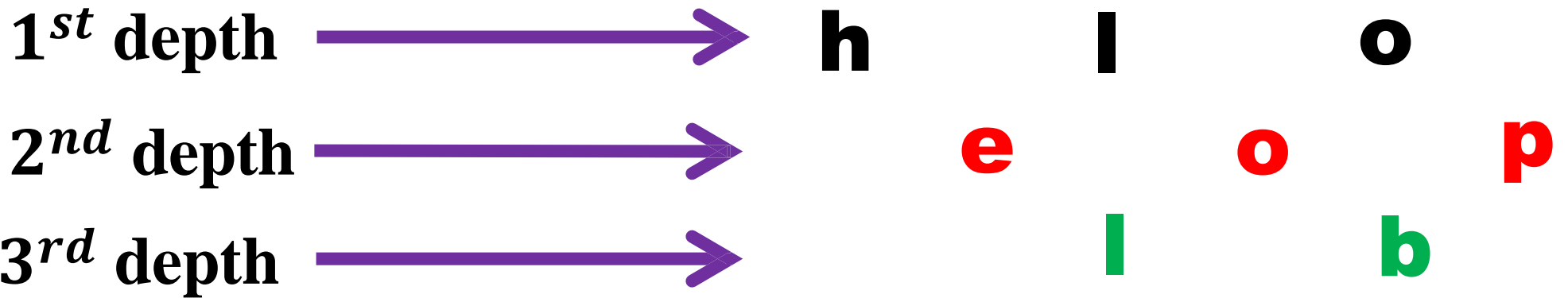
## Example 2

Encrypt and decrypt the Plaintext “**hello bop**” with Rail Fence of **depth 3**.

Ans:-

### 1. Encryption Algorithm

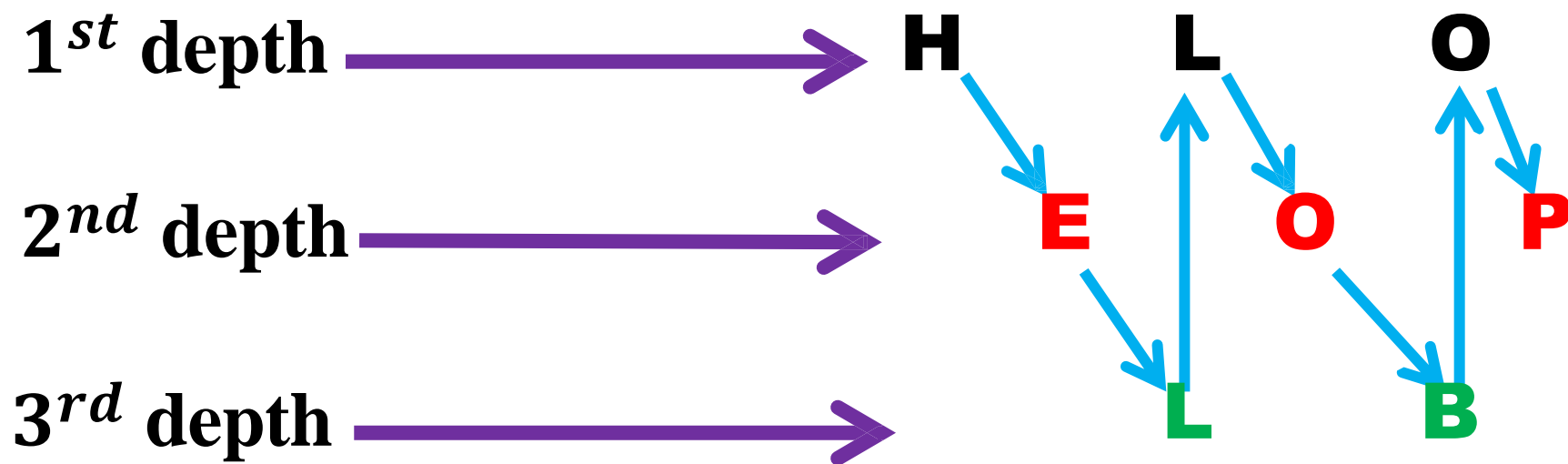
Plaintext : “**hello bop**”



**The Cipher text is “HLOEOPLB”**

## 2. Decryption Algorithm

**Cipher text : “HLOEOLB”**



**The Plaintext is “hello bop”**

**3 depth**

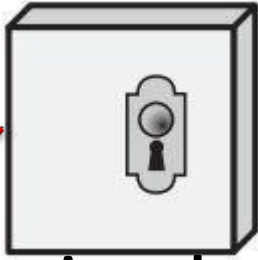


**3 depth**



**hello bop**

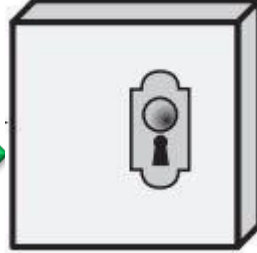
**(Sender)**



Encryption algorithm  
By using **Rail Fence** Cipher



**HLOEOPLB**



Decryption algorithm  
By using **Rail Fence** Cipher



**hello bop**

**(receiver)**

# Homework

Encrypt and decrypt the message **“meet me after the toga party”** by using **Rail Fence of 4 Depth**.