

## Assignment 5

### **Title: Implementing Hamming Code Encoder and Decoder with User Interface**

#### **Description:**

In this assignment, you will develop an application that implements Hamming Code for error detection and correction. The application must provide a graphical user interface (UI) that allows users to encode text into binary using Hamming Code and decode received binary data while detecting and correcting errors.

Your implementation may be written in any programming language, provided that it includes a functional user interface.

#### **Requirements:**

Your application should allow a user to:

- Enter a text message
- Convert the message into binary
- Apply Hamming Code to generate a protected binary sequence
- Simulate transmission (with optional error)
- Decode the received binary
- Detect and correct a single-bit error (if present)
- Recover the original text

#### **Submission Requirements**

You should submit:

- The complete source code
- A short report explaining:
  - How Hamming Code was implemented
  - How errors are detected and corrected
- Screenshots of the application interface

#### **Submission:**

The completed assignment must be sent to the following email address:

alaidi@uowasit.edu.iq

## **Email Requirements:**

To ensure your assignment is processed correctly, students must adhere to the following submission guidelines:

Email Subject Line: Assignment 5 – HammingCode – [Student Full Name]

(Example: Assignment 5 – HammingCode – Ali Ahmed)

Email Body: The text of the email must include the following details:

Student Full Name:

Department / Year:

Attachment Format:

The assignment must be submitted as a PDF file to preserve formatting.

File Naming: The file must be named using the format:

StudentName\_Assignment5\_HammingCode.pdf

(Example: Name\_Assignment5\_HammingCode.pdf)

Deadline:

20-4-2026