TASK: **Develop a Custom Encryption Algorithm**

Internship Task – Advanced Level

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1. Objective

Design and implement a simple custom encryption algorithm that provides basic confidentiality.

2. Algorithm Used

A XOR-based symmetric encryption algorithm. Each character of the input is XORed with a fixed key. Same key is used for decryption.

3. Code Summary

```
def custom_encrypt(text, key):
    return ''.join(chr(ord(c) ^ key) for c in text)

def custom_decrypt(text, key):
    return ''.join(chr(ord(c) ^ key) for c in text)
```

4. Encryption Example

- **Original Message: ConfidentialMessage**
- **Encrypted Text: ÊÔÕÖÓÅÐÈÊÑÈÕÄ**

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- **Decrypted Text: ConfidentialMessage**

5. Security Analysis

- **Pros:**
  - **Fast and simple to implement.**
  - **Demonstrates symmetric encryption.**
- **Cons:**
  - **Not secure for real-world use.**
  - **Static XOR key is weak against brute-force or known-plaintext attacks.**
- **Recommendation:**
  - **Use strong algorithms like AES-256 or RSA.**
  - **Implement key management and random IVs for real systems.**

6. Conclusion

This basic XOR cipher shows how encryption works at a low level. While insecure for production, it provides foundational understanding of symmetric encryption.

Prepared By:
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Submitted to: Youngdev Intern