

Submitted To : Ma'am Upasana Singh

Name: Khushi Chhatwani

Course: B.Sc (hons.) Computer Science, III Year, VI Semester

College Roll no. : CSC/21/55

University Roll no. : 21059570021

Practical I : Information Security

PRACTICAL 1

```
def hamming_correct(code):
    # Calculate the number of parity bits.
    n = len(code)
    r = 0
    while 2**r <= n:
        r += 1
    # Generate the syndrome.
    syndrome = 0
    for i in range(r):
        pos = 2**i - 1
        bit = 0
        for j in range(pos, n, 2*pos + 2):
            for k in range(pos + 1):
                if j + k >= n:
                    break
                if (k != pos):
                    bit = bit ^ int(code[j + k])
            syndrome += bit * (2**i)
    # If the syndrome is non-zero, correct the error.
    if syndrome > 0:
        # Flip the bit at the position indicated by the syndrome.
        pos = syndrome - 1
        if pos < n:
            code = code[:pos] + str(int(not int(code[pos]))) + code[pos+1:]
    return code

code = input("Enter code : ")
# Correct the error in the code.
corrected_code = hamming_correct(code)
# Print the original code and the corrected code.
print("Original code: ", code)
print("Corrected code: ", corrected_code)
```

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File Edit View Insert Cell Kernel Help Not Trusted Python 3 (ipykernel)

```
def hamming_correct(code):
    # Calculate the syndrome
    syndrome = 0
    for i in range(0, len(code)):
        bit = int(code[i])
        syndrome ^= bit * (i+1)
    # If the syndrome is non-zero, correct the error.
    if syndrome != 0:
        # Flip the bit at the position indicated by the syndrome.
        pos = syndrome - 1
        if pos < len(code):
            code = code[:pos] + str(int(not int(code[pos]))) + code[pos+1:]
    return code
code = input("Enter code: ")
# Correct the error in the code.
corrected_code = hamming_correct(code)
# Print the original code and the corrected code.
print("Original code: ", code)
print("Corrected code: ", corrected_code)

Enter code: 10101000
Original code: 10101000
Corrected code: 10101001
```

In []:

Name: Khushi Chhatwani
College Roll no. : CSC/21/55
University Roll no. : 21059570021