**Ques 1.** Implement the error correcting code.

Ans:-

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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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