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

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Practical I : Information Security

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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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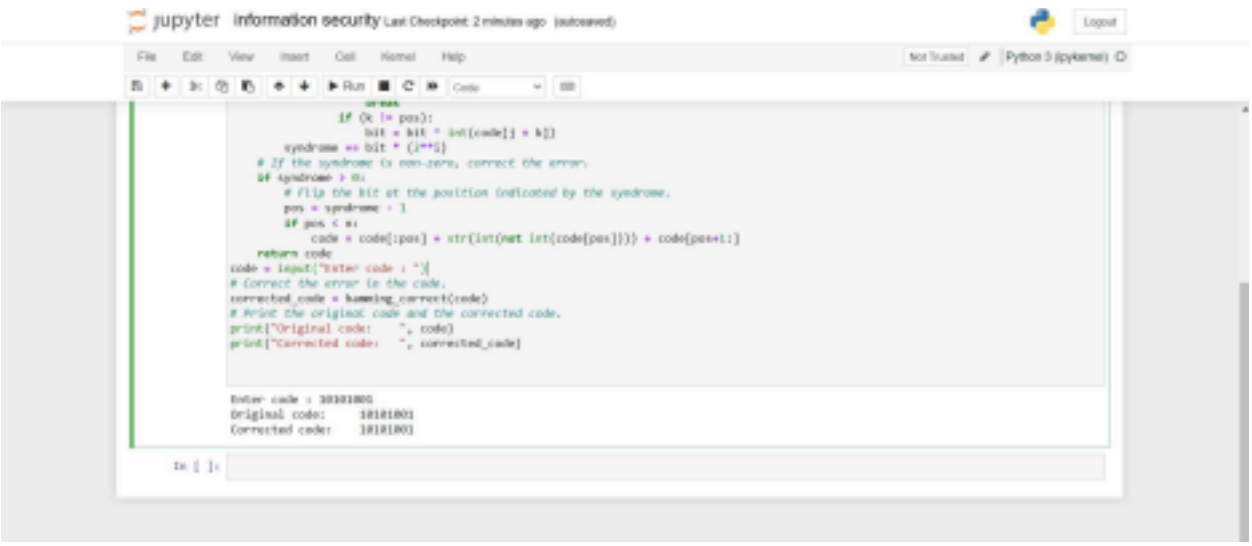

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