pati 1 7/8/25

PRACTICAL - 6

Aim:

Write a program to implement error detection and correction using HAMMING CODE concept. Make a test run to input data stream and verify error cornection feature.

Error Correction at Data Link Layer:

Hamming code is a set of error correction codes that can be used to detect and correct the errors that can occur when the data is transmitted from the sender to the receiver. It is a technique developed by R.W Mamming for error correction Create sender program with the below features?

- i) Input to sender file should be a test the any length. Program should convert the kert to binary.

 2. Apply Hamming code concept on the binary data and seconsmen redundant bits in to it.
- 3. Jave this output, in a file called channel create a receiver program with below features:

1. Receiver program should read the input from Wechannel file migra who some on some

2. Apply hamming code on the binoury douta to check errors. [17] mudos 8. If there is an error, display the position of the error [[3] CES] CES] mulos 4. Else nemove the redundant bits and convert the binary data to ascii and display the output. if bulldoda); = 4 or any (" p not in "or fatends Student Observation ("Lugi kalavii") dass Code: def cale-parity (data): dala : [mb (b) for C = [0,0,0, dala [0], 0, datati], data [2], datati] C[1]= C[3] ^ C[5] ^ C[7]

C[2]= C[3] ^ C[6] ^ C[7]

C[4] = C [5] ^ C[6] ^ C[7] return c[i] Is A [i-9] one def détect-correct Cr). Lovison de K= FOJ+r (one) pomos lostes = mas 81,82,84=161] 4163] 7 + [5], 7 [2], 162] 163] ~ r[6] ~ H[2], r[4] ^ r[5] ^ r[6] ^ r[2] crr-pos 2 84 * 4 + 82 * + + 81 of err-pos:

print [f' Error at bit ferr-pos3')

r[err-pos] = 1

print ["cornected=", r[n])

olse

.else

return r [] return r [i:] def contract = data (c): return [ct2], c[4], c[5], c[6]] if -- name - = - mais mustin ent evorier data = input ("Enter 4-bit data") if lon (douba)! = 4 or any (b not in "b" forbind ext ("invalid iput") matter road of trade enc: calc: painty (data)

print C' Encoded! , enc) it input C'Entroduced error ? (Y/M):1). Lowers. -P = int Cinput ("Enter position 1-7: []) if 1 < 2 p < 27: "[0] " [0]) "[0]) = [HJO enc [p-1] n z 1 print (" Received: ", enc) dono dono exorr = debect - cornect (enc) prints C" original dati " extract-data (corr) output: Enter 4-bit data: 1011 1 * 18 309 110 Borter position 17713

Recioned: Co, 1,010,0,1,1900) liming

ogenes Promone 4 Error at bit 3 cornected = [0,1,1,0,0,1,1] o los quelos mit - Original data [1,0,1,1,1] Shas a Later convert absorber absorber of anotes MALA to a limited one such as affice building school induding data, pristers and but access . In il ratormonen between where such as computer from Pinas gutes pode of out taking who account historical projuinements and Steps you can take it computers a switch with as an participation is suffer for these series and yest simply so styrm is a distribution in a mod and of see the copie with speet completion Hence the code for Hamming problem successful executed. corned - 2 to toproperties