Hamming Code

Exp.No.6

18/9/25

Aim:

Write a program to implement error detection & error correction using Hamming code concept.

Error correction with Hamming code

Sender program

* Take text input
* Convert text → binary
* Apply hamming code (add redundant bits)
* Save output to channel file.

Receiver program

* Read data from channel file.
* Check errors using Hamming code.
* If error → show error position.
* If no error → remove redundant bits,
* Convert binary → ASCII, display text.

Program:

```
def main():
    data = list(map(int, input("Enter 4 data bits
                   (eg., 1011): ").split()))

    d1, d2, d3, d4 = data
    P1 = d1^d2^d4
    P2 = d1^d3^d4
    P3 = d2^d3^d4
Code = (P1, P2, d1, P3, d2, d3, d4)
Print ("Encoded Hamming code: ", "".join (map code))
```

```
recv = list(map (int, input ("Enter received 7bits: ") sp
    c1 = recv[0] ^ recv [2]^ recv [4]^ recv [6]
    c2 = recv[1]^ recv[2]^ recv[5] ^ recv [6]
    c3 = recv[3]^ recv[4] ^ recv[5] ^ recv[6]
 error pos = c1+(c2<<1) + (c3<<2)
 if errorpos =0:
     print("No error detected")
 else:
     print ("error at bit position:", errorPos)
     recv [error pos-1]^ =1
     print("corrected code:", " "join(map(str, recv)))
if _name_ == "_main_":
     main()
```

Result:

Hence the required program the error detection & error correction is written & executed successfully

Sample Inputs Output:

```
Enter 4 data bits : 1011
Encoded Hamming code: 0110011
Enter received 7 bits : 0111011
Error at bit position: 4
Corrected code : 0110011
```

[illegible]