

# Error Control Coding - Hamming Codes

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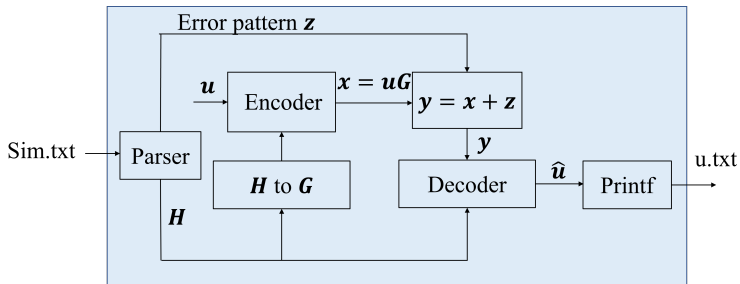
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March 15, 2023



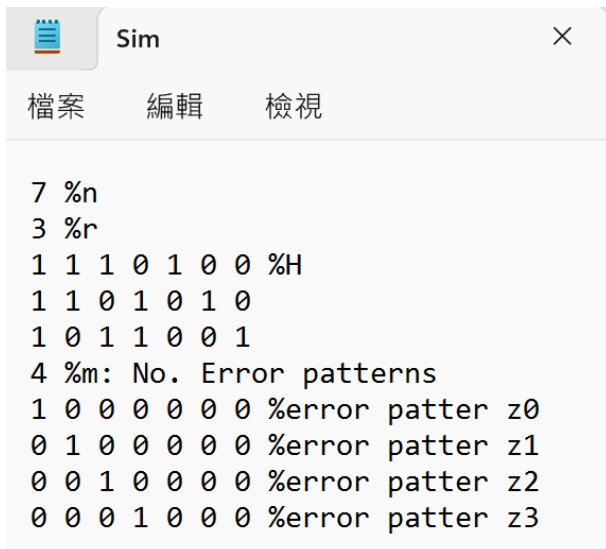
# Hamming Code

- Block Diagram:



# Hamming Code

- Input Sim.txt:

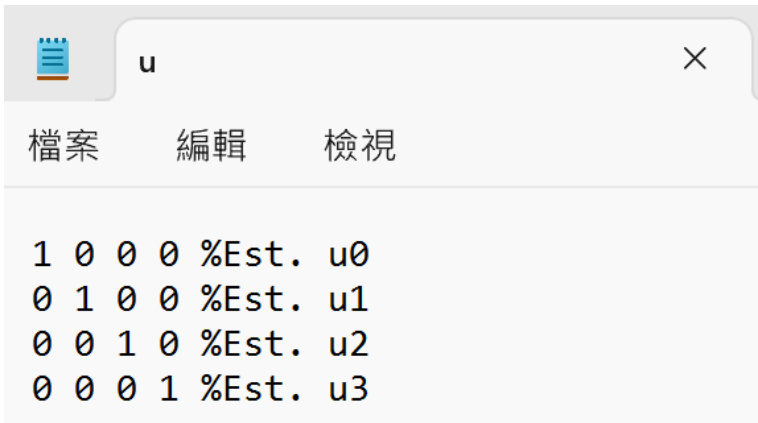


The screenshot shows a text editor window titled "Sim" with a menu bar containing "檔案", "編輯", and "檢視". The text content is as follows:

```
7 %n
3 %r
1 1 1 0 1 0 0 %H
1 1 0 1 0 1 0
1 0 1 1 0 0 1
4 %m: No. Error patterns
1 0 0 0 0 0 0 %error patter z0
0 1 0 0 0 0 0 %error patter z1
0 0 1 0 0 0 0 %error patter z2
0 0 0 1 0 0 0 %error patter z3
```

# Hamming Code

- Output u.txt:



# Hamming Code

- Use the recursion

$$u_{l+6} = u_{l+1} \oplus u_l, \quad \text{for } l \geq 0$$

with the initial conditions

$$u_0 = 1, u_1 = u_2 = u_3 = u_4 = u_5 = 0$$

to generate  $m \cdot k$  information bits where  $m$  is the number of test patterns.

- The generated sequence is 100000100001... with period 63.

# Hamming Code

## 程式作業繳交方式

- 3/22 9:00上課前私訊檔案給“助教\_高子傑”。
- 檔案名稱格式: 學號\_姓名.zip 例如: E94081042\_許博士.zip
- 壓縮檔內包含所有的.cpp 以及一個執行檔 .exe。
- 助教會拿你編譯過的執行檔做測試，再回覆pass or fail。(3/25前回覆你)
- 如果fail，最多三次機會(含第一次)，請在3/28 17:00前完成DEMO測試並把修改過的壓縮檔傳給助教。
- 請特別留意，你讀檔跟寫檔的格式是否正確(請參考上面給的範例Sim.txt、u.txt)