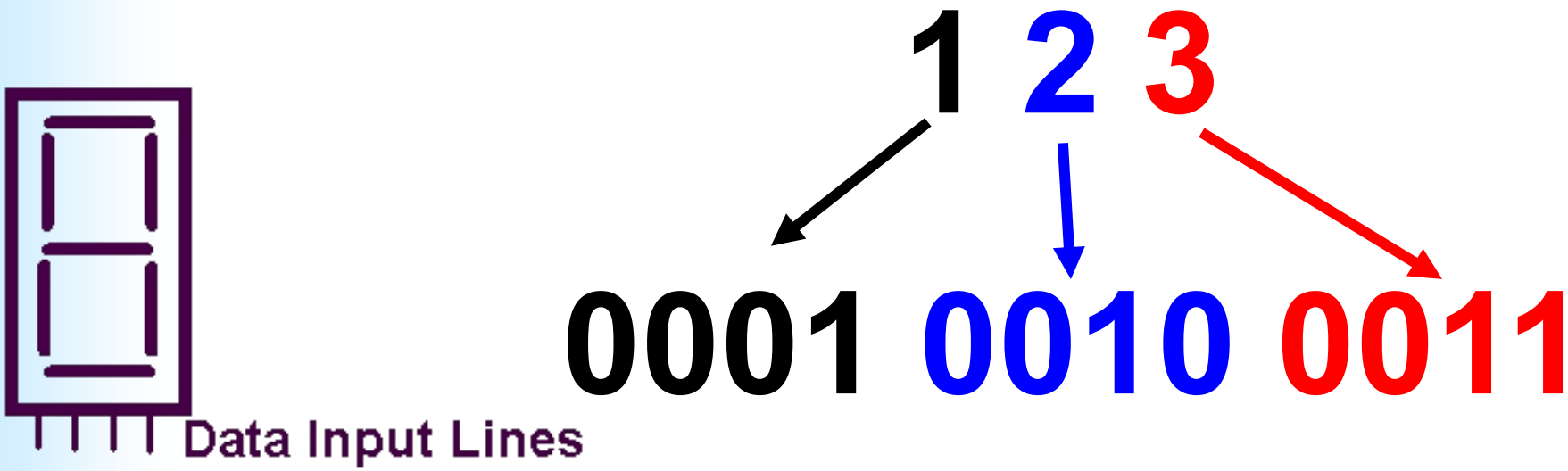
Binary Coded Decimal (BCD)

BCD	Decimal
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8
1001	9

Binary Coded Decimal (BCD)

- A **4-bit binary** represents 10 decimal digits (0~9).
- The binaries 1010 ~ 1111 cannot be used.

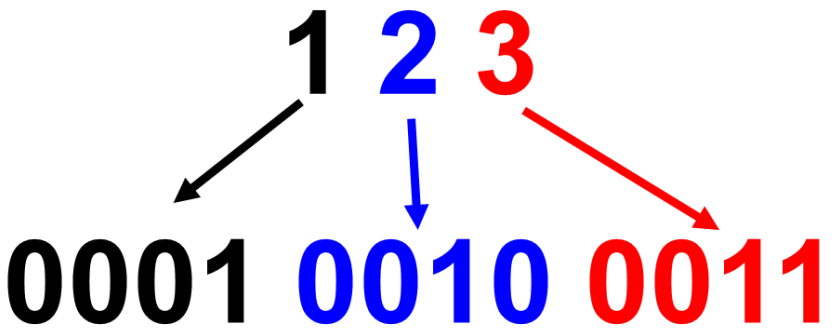


Homework #4 (1)

- Input: binary code
  - 二進為數值在0 ~ 999_{10} 之間
  - 不考慮負數
  - binary code 存放於 register r1
- Function: translate the binary code to the corresponding BCD code.
- Output: BCD code
  - 結果的BCD code應存放在register r2

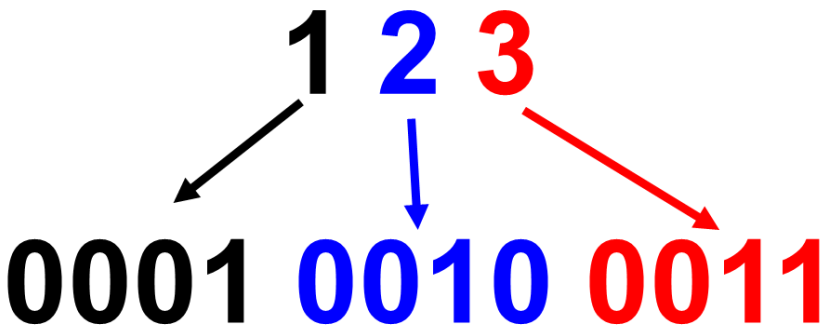
Homework #4 (2)

- 123 / 100 = 1 … 23
- 23 / 10 = 2 … 3



Homework #4 (3)

- 123 / 100 = 1 … 23
- 23 / 10 = 2 … 3



Homework #4 (4)

- ARM v4t 沒有提供除法指令，請使用減法來實現除法運算

- 輸入: r1的值自行指定
- 當程式執行到最後時，r2的值應該是其BCD code
  - 例如: r1 => 11 0011 1001，即十進位的825。程式結束前，r2的值應為 1000 0010 0101

How to Compile Your Program?

- `$arm-none-eabi-gcc -g hw4.s -o hw4.exe`

Homework #4 (5)

- Program should be assembled and linked by gcc
  - 使用於作業一所安裝完成的cross toolchain.
- Program should be executed under **GDB ARM simulator**
- 程式中應有適當的說明（註解）
- You should turn in to **ECOURSE2**
  - "**README.txt**" file: 文字檔，描述你程式的內容、如何編譯程式、如何執行你的程式
  - An ARM assembly program，**檔名為：hw4.s**
  - Makefile / any file needed in your work
  - 請將欲繳交的檔案壓縮成 <**hw4_學號.tar.bz2**>，上傳壓縮檔
- **Deadline: November 14 (Monday), 2022**