

# Assignment 1

B → D

$$\begin{aligned}
 1. \quad & 1100 \quad 1011 \\
 & 2^7 2^6 2^5 2^4 \quad 2^3 2^2 2^1 2^0 \quad = 203 \\
 & 128 + 64 + 8 + 2 + 1
 \end{aligned}$$

$$\begin{aligned}
 2. \quad & 0011 \quad 0101 \\
 & 2^0 2^1 \quad 2^3 2^2 \quad = 105 \\
 & 64 + 32 + 8 + 1
 \end{aligned}$$

$$\begin{aligned}
 3. \quad & 1000 \quad 0011 \\
 & 2^7 \quad 2^1 2^0 \quad = 131 \\
 & 128 + 2 + 1 =
 \end{aligned}$$

$$\begin{aligned}
 4. \quad & 1000 \quad 1111 \\
 & 2^7 \quad 2^3 2^2 2^1 2^0 \quad = 143 \\
 & 128 + 8 + 4 + 2 + 1
 \end{aligned}$$

B → H

$$\begin{aligned}
 1 \quad & 1100 \quad 1100 \quad = \text{CC} \\
 2 \quad & 1111 \quad 0001 \quad = \text{F1} \\
 3 \quad & 0011 \quad 0001 \quad = \text{31} \\
 4 \quad & 1100 \quad 0010 \quad = \text{C2}
 \end{aligned}$$

## Assignment 1 (cont.)

H  $\rightarrow$  B

1.  $0x\ 45 = 0100\ 0101$
2.  $0x\ FA = 1111\ 1010$
3.  $0x\ 5D = 0101\ 1101$
4.  $0x\ 99 = 1001\ 1001$

H  $\rightarrow$  D

1.  $0x\ 5A = 5 \cdot 16^1 + 10 \cdot 16^0 = 80 + 10 = 90$
2.  $0x\ CC = 12 \cdot 16^1 + 12 \cdot 16^0 = 192 + 12 = 204$
3.  $0x\ 97 = 9 \cdot 16^1 + 7 \cdot 16^0 = 144 + 7 = 151$
4.  $0x\ 40 = 4 \cdot 16^1 + 0 \cdot 16^0 = 64$

# Assignment 1 (cont.)

D → B

$$1 \quad 2 \mid 213 \quad = 11010101$$

$$2 \mid 106 - 1$$

$$2 \mid 53 - 0$$

$$2 \mid 26 - 1$$

$$2 \mid 13 - 0$$

$$2 \mid 6 - 1$$

$$2 \mid 3 - 0$$

$$1 - 1$$

$$4. \quad 2 \mid 99 \quad = 1100011$$

$$2 \mid 49 - 1$$

$$2 \mid 24 - 1$$

$$2 \mid 12 - 0$$

$$2 \mid 6 - 0$$

$$2 \mid 3 - 0$$

$$2 \mid 1 - 1$$

$$2 \quad 2 \mid 9 \quad = 1001$$

$$2 \mid 4 - 1$$

$$2 \mid 2 - 0$$

$$1 - 0$$

D → H

$$1. \quad 16 \mid 233 \quad = E9$$

$$14 - 9$$

$$2. \quad 16 \mid 21 \quad = 15$$

$$1 - 5$$

$$3 \quad 2 \mid 67 \quad = 1000011$$

$$2 \mid 33 - 1$$

$$2 \mid 16 - 1$$

$$2 \mid 8 - 0$$

$$2 \mid 4 - 0$$

$$2 \mid 2 - 0$$

$$1 - 0$$

$$3. \quad 16 \mid 9 \quad = 09$$

$$0 - 9$$

$$4. \quad 16 \mid 75 \quad = 4B$$

$$4 - 11$$