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CPE LAB

② $(0)_{10} = (0)_2 = (0)_8 = (0)_{16}$
$(1)_{10} = (1)_2 = (1)_8 = (1)_{16}$
$(2)_{10} = (10)_2 = (2)_8 = (2)_{16}$
$(3)_{10} = (11)_2 = (3)_8 = (3)_{16}$
$(4)_{10} = (100)_2 = (4)_8 = (4)_{16}$
$(5)_{10} = (101)_2 = (5)_8 = (5)_{16}$
$(6)_{10} = (110)_2 = (6)_8 = (6)_{16}$
$(7)_{10} = (111)_2 = (7)_8 = (7)_{16}$
$(8)_{10} = (1000)_2 = (10)_8 = (8)_{16}$
$(9)_{10} = (1001)_2 = (11)_8 = (9)_{16}$
$(10)_{10} = (1010)_2 = (12)_8 = (A)_{16}$
$(11)_{10} = (1011)_2 = (13)_8 = (B)_{16}$
$(12)_{10} = (1100)_2 = (14)_8 = (C)_{16}$
$(13)_{10} = (1101)_2 = (15)_8 = (D)_{16}$
$(14)_{10} = (1110)_2 = (16)_8 = (E)_{16}$
$(15)_{10} = (1111)_2 = (17)_8 = (F)_{16}$

① We need the wire jumper kit and the bread board.

③ $(10110110)_2$
$= (B\ \ 6)_{16}$
$11 \times 16^1 + 6 \times 16^0 = (182)_{10}$

$(1001)_2$
$= (9)_{16} = 9 \times 16^0 = (144)_{10}$

(001001)
$= (1\ \ 1)_8$

$(100101011 0)_2$
$= (256)_{16} = 2 \times 16^2 + 5 \times 16^1 + 6 \times 16^0$
$2 \times 256 +$
$= 512 + 80 + 6 = (598)_{10}$
$592 + 6$

010110110
$2\ \ 6\ \ 6$
$(266)_8$

16 | 11 | 1 6
16 | 6
1 7 6 + 6 = 182

5
16
9
144

3
16
16
1 96
16
256

3
16
5
80

$100101011 0$
$1\ \ 1\ \ 2\ \ 6$
$(1126)_8$

④ $(A6F3)_{16}$

$(1010\,0110\,1111\,0011)_2$

$=(1\ 2\ 3\ 3\ 6\ 3)_8$

$= 10\times16^3 + 6\times16^2 + 15\times16^1 + 3\times16^0$

$(40960) + (6\times256) + (1536) + 240 + 3 = (42749)_{10}$

3 3
256
16
1536
256
6

15
16
0

40960
1536
240
3
42749

$(D3)_{16}$

$=(1101\,0011)_2$

$=(3\ 2\ 3)_8$

1
13
16
178
13
208

$= 13\times16^1 + 3\times16^0$

$(208 + 3) = (211)_{10}$

⑤ Ⓐ $(1011010)_2 + (100111)_2$

1011010
$+\ 0100111$
$(1000001)_2$

Ⓑ $(1001.01101)_2 + (101.101)_2$

1001.01101
$+\ 101.10100$
$=(1111.00001)_2$

Ⓒ $(101.1001)_2 + (1011.1101)_2$

0101.1001
$+\ 1011.1101$
$(10001.0110)_2$

Ⓓ $(111.01011)_2 + (10101.10101)_2$

0111.01011
$+\ 10101.10101$
$(11101.00000)_2$

⑥ ⓐ $(1001110)_2$

$=(0110001)_2$ bit flip

ⓑ $(10101101)_2$

$=(01010010)_2$ bit flip

⑦ ⓐ $(1001110)_2$ bit flip

$=(0110001)$ add 1

$=(0110010)_2$

Ⓑ $(10101101)_2$ bit flip

$(01010010)_2$ add 1

$(01010011)_2$