

DDAK - Clement Samuel Marly

1 a Heksadesimal $4D0.639$
 $16^2 \ 16^1 \ \frac{1}{16} \ \frac{1}{16^2} \ \frac{1}{16^3}$

$$\text{Desimal} = 4 \times 16^2 + 13 \times 16 + 0 \times 1 + 6 \times \frac{1}{16} + 3 \times \frac{1}{16^2} + 9 \times \frac{1}{16^3}$$

$$= (1232.389)_{10}$$

$$\text{Binary} = 1232 : 2 \quad 0,38892 \times 2$$

616 10

10,77784

308 0

1,55568

154 0

1,11136

77 0

0,22272

38 1

0,44544

19 0

9 1

4 1

2 0

1 0

0 1

$$= (10011010000,01100)_2$$

$$\text{Ternary} = 1232 : 3 \quad 0,38892 \times 3$$

410 2

11,6676

136 2

0,50028

45 1

1,50084

15 0

1,50252

5 0

1 2

0 1

$$= (1200122.1011)_3$$

$$\text{Nonary} = 1232 : 9$$

$$0,38892 \times 9$$

$$136 \overline{) 8}$$

$$\overline{) 3,50028}$$

$$15 \quad 1$$

$$4,50252$$

$$1 \quad 6$$

$$4,52268$$

$$0 \quad 1$$

$$4,70412$$

$$= (1618,3444)_9$$

$$6 \text{ Nonary} = 1087,3805$$

$$9^3 9^2 9^1 \cdot \frac{1}{9} \frac{1}{9^2} \frac{1}{9^3} \frac{1}{9^4}$$

$$\text{Desimal} = 9^3 + 0 + 9 \cdot 8 + 7 + 3 \cdot \frac{1}{9} + 8 \cdot \frac{1}{9^2} + 0 + 5 \cdot \frac{1}{9^4}$$

$$= (808,433)_{10}$$

$$\text{Binary} = 808 : 2$$

$$25 \quad 0$$

$$0,43286 \times 2$$

$$404 \overline{) 0}$$

$$12 \quad 1$$

$$\overline{) 0,86572}$$

$$202 \quad 0$$

$$6 \quad 0$$

$$1,73144$$

$$101 \quad 0$$

$$3 \quad 0$$

$$1,46288$$

$$50 \quad 1$$

$$1 \quad 1$$

$$0,92576$$

$$0 \quad 1$$

$$1,85152$$

$$= (1100101000,01101)_2$$

$$\text{Ternary} = 808 : 3$$

$$0,43286 \times 3$$

$$269 \overline{) 1}$$

$$\overline{) 1,29858}$$

$$89 \quad 2$$

$$0,89574$$

$$29 \quad 2$$

$$2,68722$$

$$9 \quad 2$$

$$2,06166$$

$$3 \quad 0$$

$$1 \quad 0$$

$$0 \quad 1$$

$$= (1002221,1022)_3$$



Tanggal :

Heksadesimal = $808 : 16$ $0,43286 \times 16$

50 $\overline{16}$ $16,92576$

3 2 $14,81216$

0 3 $12,99456$

= $(328.6EC)_{16}$

Ternary = 201100.02
 $3^5 3^4 3^3 3^2 3^1 \frac{1}{3} \frac{1}{3}$

Desimal = $2 \cdot 3^5 + 0 + 3^3 \cdot 1 + 3^2 \cdot 1 + 0 + 0 + 0 + 2 \cdot \frac{1}{3^2}$
 $= (522.222)_{10}$

Binary = $522 : 2$

261 $\overline{10}$ 8 0 $0,22222 \times 2$

130 1 4 0 $10,44444$

65 0 2 0 $0,88888$

32 1 1 0 $1,77776$

16 0 0 1 $1,55552$

$1,11104$

= $(1000001010.00111)_2$

Nonary = $522 : 9$ $0,22222 \times 9$

58 $\overline{10}$ $1,99998$

6 4 $8,99982$

0 6 $8,99838$

$8,98542$

= $(640.1888)_9$

Heksadesimal = $522 : 16$ $0,22222 \times 16$

32 $\overline{10}$ $13,55552$

2 0 $8,88832$

0 2 $14,21312$

= $(20A.38E)_{16}$

"Jujur Adalah Semangat Hidup Seorang Kanisian"

No :

Tanggal :

$$d \text{ Binary} = 101001100.11001$$

256 128 64 32 16 8 4 2 1 128 64 32 16 8 4 2 1

$$\text{Desimal} = 2^8 + 2^6 + 2^3 + 2^2 + 2^{-1} + 2^{-2} + 2^{-5}$$

$$= (332,781)_{10}$$

$$\text{Ternary} = 332 : 3 \quad 0.78125 \times 3$$

110 $\overline{)2}$	2.34375
36 2	1.03125
12 0	0.09375
4 0	0.28125
1 1	
0 1	

$$= (110022.2100)_3$$

$$\text{Nonary} = 332 : 9 \quad 0.78125 \times 9$$

36 $\overline{)8}$	7.03125
7 0	0.28125
0 4	2.53125
	4.78125

$$= (408.7024)_9$$

$$\text{Heksadesimal} = 332 : 16 \quad 0.78125 \times 16$$

20 $\overline{)12}$	12.5
1 4	8.0
0 1	

$$= (14C.C8)_{16}$$



No : _____

Tanggal : _____

e Desimal : 1112.25

Binary = 1112 : 2

556	10	8	1	0.25 x 2
278	0	4	0	10,5
139	0	2	0	1,6
69	1	1	0	
34	1	0	1	
17	0			

= (10001011000.01)₂

Ternary = 1112 : 3

0.25 x 3

370	12	10.75
123	0	2.25
41	0	0.75
13	2	2.25
4	1	
1	1	
0	1	

= (1112002.0202)₃

Nonary = 1112 : 9

0.25 x 9

123	15	2.25
13	6	2.25
1	4	2.25
0	1	2.25

= (1465.2222)₉

Hexadesimal = 1112 : 16

0 4

0.25 x 16

69	18	4.0
4	5	

= (458.4)₁₆

No :

Tanggal :

$$2 - (110001)_2 + (010001)_2$$

$$\begin{array}{r}
 0 \quad 10 \quad 0010 \quad 100010 \\
 110001 \rightarrow 110001 \rightarrow 110001 \rightarrow 110001 \\
 \underline{010001} + \quad \underline{010001} + \quad \underline{010001} + \quad \underline{010001} + \\
 \quad 0 \quad 0010 \quad 00010 \\
 \rightarrow 1100010 \quad 1100010 \\
 110001 \rightarrow 110001 \\
 \underline{010001} + \quad \underline{010001} + \\
 000010 \quad (1000010)_2,
 \end{array}$$

$$- (001010)_2 + (011000)_2$$

$$\begin{array}{r}
 10001 \quad 110001 \\
 001010 \rightarrow 001010 \rightarrow 001010 \rightarrow 001010 \\
 \underline{011000} + \quad \underline{011000} + \quad \underline{011000} + \quad \underline{011000} + \\
 1 \quad 011 \quad 0011 \quad 00011 \\
 110001 \\
 \rightarrow 001010 \\
 \underline{011000} + \\
 (100010)_2,
 \end{array}$$

$$- (0011010)_2 - (0001100)_2$$

$$\begin{array}{r}
 00 \quad 000 \quad 1000 \quad 11000 \\
 0011010 \rightarrow 0011010 \rightarrow 0011010 \rightarrow 0011010 \\
 \underline{0001100} - \quad \underline{0001100} - \quad \underline{0001100} - \quad \underline{0001100} - \\
 10 \quad 110 \quad 110 \quad 1110,, \\
 0011000 \\
 0011010 \\
 \rightarrow \underline{0001100} - \\
 (0001110)_2,
 \end{array}$$



No : _____

Tanggal : _____

$$- (1010000)_2 - (0110110)_2$$

$$\begin{array}{r} 1 \\ 1010000 \end{array} \rightarrow 1010000 \rightarrow 1010000 \rightarrow 1010000$$

$$\begin{array}{r} 0110110 \\ \hline 1010000 \end{array} - \begin{array}{r} 0110110 \\ \hline 1010000 \end{array} - \begin{array}{r} 0110110 \\ \hline 1010000 \end{array} - \begin{array}{r} 0110110 \\ \hline 1010000 \end{array}$$

$$111111 \quad 111111$$

$$\rightarrow 1010000 \rightarrow 1010000$$

$$\begin{array}{r} 0110110 \\ \hline 1010000 \end{array} - \begin{array}{r} 0110110 \\ \hline 1010000 \end{array} -$$

$$011001 \quad (0011001)_2$$

$$- (1010011)_2 - (0111001)_2$$

$$\begin{array}{r} 0 \\ 1010011 \end{array} \rightarrow 1010011 \rightarrow 1010011 \rightarrow 1010011$$

$$\begin{array}{r} 0111001 \\ \hline 1010011 \end{array} - \begin{array}{r} 0111001 \\ \hline 1010011 \end{array} - \begin{array}{r} 0111001 \\ \hline 1010011 \end{array} - \begin{array}{r} 0111001 \\ \hline 1010011 \end{array}$$

$$110000 \quad 1110000$$

$$\rightarrow 1010011 \rightarrow 1010011$$

$$\begin{array}{r} 0111001 \\ \hline 1010011 \end{array} - \begin{array}{r} 0111001 \\ \hline 1010011 \end{array} -$$

$$011010 \quad (0011010)_2$$

$$- (1011000)_2 - (0011011)_2$$

$$\begin{array}{r} 1 \\ 1011000 \end{array} \rightarrow 1011000 \rightarrow 1011000 \rightarrow 1011000$$

$$\begin{array}{r} 0011011 \\ \hline 1011000 \end{array} - \begin{array}{r} 0011011 \\ \hline 1011000 \end{array} - \begin{array}{r} 0011011 \\ \hline 1011000 \end{array} - \begin{array}{r} 0011011 \\ \hline 1011000 \end{array}$$

$$111111 \quad 111111 \quad 111111$$

$$\rightarrow 1011000 \rightarrow 1011000 \rightarrow 1011000$$

$$\begin{array}{r} 0011011 \\ \hline 1011000 \end{array} - \begin{array}{r} 0011011 \\ \hline 1011000 \end{array} - \begin{array}{r} 0011011 \\ \hline 1011000 \end{array} -$$

$$11100 \quad 111100 \quad (0111100)_2$$

$$- (1010)_2 \times (0110)_2$$

$$1010$$

$$\underline{0110} \times$$

$$0000 \rightarrow 0 \times 1010$$

$$1010 \rightarrow 10 \times 1010$$

$$1010 \rightarrow 100 \times 1010$$

$$0000 \rightarrow 0000 \times 1010$$

$$(111100)_2$$

$$- (1.010)_2 \times (10.10)_2$$

$$10.10$$

$$\underline{1.010} \times$$

$$.00000 \rightarrow 0.000 \times 10.10$$

$$.1010 \rightarrow 0.01 \times 10.10$$

$$0.000 \rightarrow 0.0 \times 10.10$$

$$\underline{10.10} \rightarrow 1 \times 10.10$$

$$11.00100$$

$$(11.001)_2$$

$$- (11001010)_2 : (1001)_2$$

$$1001 \overline{) 11001010}$$

$$\underline{1001}$$

$$00111$$

$$\underline{0}$$

$$\underline{0010}$$

$$\underline{1001}$$

$$\underline{0000}$$

$$01011$$

$$\underline{1001}$$

$$100$$

$$\underline{0}$$

$$100$$

$$\text{remainder / sisa} = (100)_2$$

$$\text{quotient} = (10110)_2$$

$$- (1010100)_2 : (100)_2$$

$$100 \overline{) 1010100}$$

$$\underline{100}$$

$$10$$

$$\underline{0}$$

$$101$$

$$\underline{100}$$

$$10$$

$$\underline{0}$$

$$100$$

$$\underline{100}$$

$$0$$

$$\text{remainder} = (0)_2$$

$$\text{quotient} = (10101)_2$$


$$\begin{aligned}
 3 \quad a \quad (165)_7 &= (75)_x \\
 (165)_7 &= (\dots)_{10} \\
 &= 1 \cdot 49 + 6 \cdot 7 + 5 \cdot 1 \\
 &= (96)_{10}
 \end{aligned}$$

$$\begin{aligned}
 (75)_x &= (\dots)_{10} \\
 &= x^1 \cdot 7 + 5 \cdot x^0
 \end{aligned}$$

$$96 = x \cdot 7 + 5$$

$$91 = 7x$$

$$x = 13$$

$$(75)_{13} //$$

$$\begin{aligned}
 b \quad (431)_5 &= (224)_x \\
 (431)_5 &= 4 \times 5^2 + 3 \times 5^1 + 1 \\
 &= 100 + 15 + 1 \\
 &= 116
 \end{aligned}$$

$$(224)_x = 2 \cdot x^2 + 2 \cdot x + 4 \cdot x^0$$

$$116 = 2x^2 + 2x + 4$$

$$112 = 2x^2 + 2x$$

$$56 = x^2 + x$$

$$x_1 = -8 \quad x_2 = 7$$

$$(224)_7 //$$

$$\begin{aligned}
 c \quad (2196)_{10} &= (ccc)_x \\
 (c &= 12
 \end{aligned}$$

$$(ccc)_x = x^2 \cdot 12 + x^1 \cdot 12 + 12 \cdot x^0$$

$$2196 = 12x^2 + 12x + 12$$

$$2184 = 12(x^2 + x)$$

$$182 = (x^2 + x)$$

$$x_1 = -14 \quad x_2 = 13$$

$$(ccc)_{13} //$$

Tidak ada asumsi pembulatan, 8 bit dianggap 0000.0000 (desimal termasuk)

4 d $A = (12.375)_{10}$

$$= 12 : 2 \quad 0.375 \times 2$$

$$6 \overline{10} \quad 0.750$$

$$3 \quad 0 \quad 1.5$$

$$1 \quad 1 \quad 1.0$$

$$0 \quad 1$$

$$A = (1100.011)_2$$

$$B = (14.8125)_{10}$$

$$= 14 : 2 \quad 0.8125 \times 2$$

$$7 \overline{10} \quad 1.6250$$

$$3 \quad 1 \quad 1.25$$

$$1 \quad 1 \quad 0.5$$

$$0 \quad 1 \quad 1.0$$

$$B = (1110.1101)_2$$

• 1's complement $B > A$

$$-(B - A) \leftarrow$$

$$B = (1110.1101)_{15}$$

$$-A = (0011.1001)_{15} \leftarrow$$

$$= (10010.0110)$$

$$= -(0010.0111)_{15}$$

$$= (1101.1000)_{15}$$

$$A = (1100.0110)_{15}$$

$$-A = (0011.1001)$$

• 2's complement $B > A \rightarrow -(B - A)$

$$B = (1110.1101)_{25}$$

$$-A = (0011.1010)_{25} \leftarrow$$

$$= -(0010.0111)_{25}$$

$$= (1101.1000)_{25}$$

$$= (1101.1001)_{25}$$

$$A = (00001100.0110)_{25}$$

$$-A = (11110011.1001)$$

$$= (11110011.1010)_{25}$$

b $A = (200)_4$

$$= 2 \cdot 4^2 + 0 \cdot 4^1 + 0 \cdot 4^0$$

$$= (32)_{10}$$

$$= 32 : 2 \quad 4 \quad 0 \quad 0 \quad 1$$

$$16 \overline{10} \quad 2 \quad 0$$

$$8 \quad 0 \quad 1 \quad 0$$

$$A = (1000000)_2$$



$$B = (311)_4$$

$$= 3 \cdot 4^2 + 1 \cdot 4^1 + 1 \cdot 4^0$$

$$= 48 + 4 + 1$$

$$= (53)_{10}$$

$$53 : 2$$

$$26 \text{ R } 1$$

$$13 \text{ R } 0$$

$$6 \text{ R } 1$$

$$30$$

$$11$$

$$01$$

$$B = (110101)_2$$

- 1's complement $B > A \rightarrow -(B-A)$

$$B = (001110101)_{15}$$

$$A = (001000002)_{15}$$

$$-A = (11011111)_{15} + \leftarrow$$

$$-A = (11011111)_{15}$$

$$00010100$$

$$= -(00010101)_{15}$$

$$= (11101010)_{15}$$

- 2's complement $B > A \rightarrow -(B-A)$

$$B = (001110101)_{25}$$

$$A = (001000002)_{25}$$

$$-A = (11100000)_{25} + \leftarrow$$

$$-A = (11101111)_{25}$$

$$= -(00010101)_{25}$$

$$= (11100000)_{25}$$

$$= (11101010)_{25}$$

$$= (11101011)_{25}$$

c $A = (170)_8$

$B = (120)_8$

$$= \frac{001}{1} \frac{111}{7} \frac{000}{0}$$

$$= \frac{001}{1} \frac{010}{2} \frac{000}{0}$$

$$= (01111000)_2$$

$$= (01010000)_2$$

- 1's complement $A > B \rightarrow A-B$

$$A = (01111000)_{15}$$

$$B = (01010000)_{15}$$

$$-B = (10101111)_{15} + \leftarrow$$

$$-B = (10101111)_{15}$$

$$00100111$$

$$= (00101000)_{15}$$

• 2's complement

$$A = (01111000)_2$$

$$-B = (10110000)_2 +$$
$$= (00101000)_2$$

$$B = (01010000)_2$$

$$-B = (10101111)_2$$

$$= (10110000)_2$$

