

1. Slide 6

a. Komplement 7 dari $(7564,43)_8$

$$\rightarrow (8^4 - 8^{-2})_{10} - (7564,43)_8$$

$$\rightarrow (7777.77)_{10} - (7564,43)_8$$

$$\rightarrow (0213.34)_8$$

b. Komplement 15 dari $(0A65,7C)_{16}$

$$\rightarrow (16^4 - 16^{-2}) - (0A65,7C)_{16}$$

$$\rightarrow (FFFF.FF) - (0A65,7C)_{16}$$

$$\rightarrow (F59A.85)_{16}$$

2. Slide 8

a. Komplement 10 dari $(04857.43)_{10}, (0.6572)_{10}$

$$\rightarrow (99999.99)_{10} - (04857.43)_{10}$$

$$\rightarrow (95142.57)_{10}$$

$$\rightarrow (9.9999)_{10} - (0.6572)_{10}$$

$$\rightarrow (9.3428)_{10}$$

b. Komplement 8 dari $(7564.23)_8$

$$\rightarrow (7777.77)_8 - (7564.23)_8$$

$$\rightarrow (0213.55)_8$$

c. Komplement 2 dari $(10110.101)_2$

$$\rightarrow (11111.111)_2 - (10110.101)_2$$

$$\rightarrow (01001.011)_2$$

3. Slide 9

a. 1.14

i. 00010000

1. Komplement 1

$$\rightarrow (11111111 - 00010000)_2$$

$$\rightarrow (11101111)_2$$

2. Komplement 2

$$\rightarrow (11101111 + 00000001)_2$$

$$\rightarrow (11110000)_2$$

ii. 11011010

1. Komplement 1

$$\rightarrow (11111111 - 11011010)_2$$

$$\rightarrow (00100101)_2$$

2. Komplement 2

$$\rightarrow (00100101 + 00000001)_2$$

$$\rightarrow (00100110)_2$$

iii. 10000101

1. Komplement 1

$$\rightarrow (11111111 - 10000101)_2$$

$$\rightarrow (01111010)_2$$

2. Komplement 2

$$\rightarrow (01111010 + 00000001)_2$$

$$\rightarrow (01111011)_2$$

iv. **00000000**

1. Komplement 1

$$\rightarrow (11111111 - 00000000)_2$$

$$\rightarrow (11111111)_2$$

2. Komplement 2

$$\rightarrow (11111111 + 00000001)_2$$

$$\rightarrow (100000000)_2$$

v. **10101010**

1. Komplement 1

$$\rightarrow (11111111 - 10101010)_2$$

$$\rightarrow (01010101)_2$$

2. Komplement 2

$$\rightarrow (01010101 + 00000001)_2$$

$$\rightarrow (01010110)_2$$

vi. **11111111**

1. Komplement 1

$$\rightarrow (11111111 - 11111111)_2$$

$$\rightarrow (00000000)_2$$

2. Komplement 2

$$\rightarrow (00000000 + 00000001)_2$$

$$\rightarrow (00000001)_2$$

b. 1.15

i. **25,478,036**

1. Komplement 9

$$\rightarrow (99,999,999 - 25,478,036)_{10}$$

$$\rightarrow (74,521,963)_{10}$$

2. Komplement 10

$$\rightarrow (1 + 74,521,963)_{10}$$

$$\rightarrow (74,521,964)_{10}$$

ii. **25,000,000**

1. Komplement 9

$$\rightarrow (99,999,999 - 25,000,000)_{10}$$

$$\rightarrow (74,999,999)_{10}$$

2. Komplement 10

$$\rightarrow (1 + 74,000,000)_{10}$$

$$\rightarrow (75,000,000)_{10}$$

iii. **63, 325, 600**

1. Komplemen 9

$$\rightarrow (99,999,9999 - 63,325,600)_{10}$$

$$\rightarrow (36,674,399)_{10}$$

2. Komplemen 10

$$\rightarrow (1+36,674,399)_{10}$$

$$\rightarrow (36,674,400)_{10}$$

iv. **00,000,000**

1. Komplemen 9

$$\rightarrow (99,999,999 + 00,000,000)_{10}$$

$$\rightarrow (99,999,999)_{10}$$

2. Komplemen 10

$$\rightarrow (99,999,999 + 1)_{10}$$

$$\rightarrow (100,000,000)_{10}$$

c. **1.16**

i. Komplemen 16 dari C3DF

$$\rightarrow (FFFF - C3DF)_{16}$$

$$\rightarrow (3C20)_{16}$$

$$\rightarrow (0001 + 3C20)_{16}$$

$$\rightarrow (3C21)_{16}$$

C3DF ke biner

\rightarrow Menggunakan tabel

Decimal Value	Hexadecimal Value	Binary Value
0	00	0000 0000
1	01	0000 0001
2	02	0000 0010
3	03	0000 0011
4	04	0000 0100
5	05	0000 0101
6	06	0000 0110
7	07	0000 0111
8	08	0000 1000
9	09	0000 1001
10	0A	0000 1010
11	0B	0000 1011
12	0C	0000 1100
13	0D	0000 1101
14	0E	0000 1110
15	0F	0000 1111
16	10	0001 0000
17	11	0001 0001

→ C=1100

→ 3=0011

→ D=1101

→ F=1111

→ (1100001111011111)₂ iii. Hasil

komplemen 2 dari konversi tersebut

→ (1111111111111111 - 1100001111011111)₂

→ (0011110000100000)₂

→ (0000000000000001 + 0011110000100000)₂

→ (0011110000100001)₂ iv. Konversi jawaban komp 2

tersebut ke hexadecimal dan bandingkan dengan

komplemen 16 dari C3DF

→ 0001 =1

→ 0010 =2

→ 1100 =C

→ 0011 =3

→ (3C21)₁₆, memiliki hasil yang sama dengan jawaban di i

4. Slide 14

a. $(11010 - 10110)_2$ kompl 2

- komplemen 2 dari 10110
- $(111111)_2 - (110110)_2$
- $(001001)_2$
- $(000001 + 001001)_2$
- $(001010)_2$

- operasi
- $(011010 + 001010)_2$
- $(1\ 00100)_2$ (End Carry, diabaikan)
- $(00100)_2$
- $+(100)_2$

b. $(576 - 864)_{10}$ kompl 10

- Komplemen 10 dari 864
- $(9999)_{10} - (9864)_{10}$
- $(0136)_{10}$

- Operasi
- $(0576)_{10} + (0136)_{10}$
- $(0712)_{10}$ (Tidak ada end carry, di komplemen 10 lagi)

- $(9999)_{10} - (0712)_{10}$
- $(9287)_{10}$
- $-(287)_{10}$

c. $(345 - 762)_8$ kompl 8

- Komplemen 8 dari (7762)
- $(7777)_8 - (7762)_8$
- $(0016)_8$

- Operasi
- $(0345)_8 + (0016)_8$
- $(0363)_8$ (Tidak ada end carry, di kompleme 8 sekali lagi)

- $(7777)_8 - (0363)_8$
- $(7415)_8$
- $-(415)_8$

d. $(7451 - 4562)_8$ kompl 8

- Komplemen 8 dari $(74562)_8$

$$\rightarrow (77777)_8 - (74562)_8$$

$$\rightarrow (03216)_8$$

→ Operasi

$$\rightarrow (07451)_8 + (03216)_8$$

$$\rightarrow (1\ 2667)_8$$

$$\rightarrow +(2667)_8$$

e. $(1100 - 1001)_2$ kompl 2

→ Komplemen 2 dari $(11001)_2$

$$\rightarrow (11111)_2 - (11001)_2$$

$$\rightarrow (00111)_2$$

→ Operasi

$$\rightarrow (01100)_2 + (00111)_2$$

$$\rightarrow (10010)_2 \text{ (end carry, diabaikan)}$$

$$\rightarrow + (011)_2$$

Slide 19

(A)

1. $(08739 + 92345)$

→ Komplemen 10 dari $(92345)_{10}$

$$(99999 - 92345)_{10}$$

$$(07654)_{10}$$

$$(1 + 07654)_{10}$$

$$(07655)_{10}$$

→ Operasi

$$(08793 + 07655)_{10}$$

$$(06394)_{10} \text{ (End Carry, diabaikan)}$$

$$+ (6394)_{10}$$

2. $(3524 - 6527)_8$

→ Komplemen 8 dari $(76527)_8$

$$(77777 - 76527)_8$$

$$(01250)_8$$

$$(00001 + 01250)_8$$

$$(01251)_8$$

→ Operasi

$$(03542 + 01251)_8$$

$$(050131)_8 \text{ (Tidak ada end carry, di komplemen 8 lagi)}$$

→ Komplemen 8 $(03793)_8$

$$(77777 - 05013)_8$$

$$(727640)_8$$

$$(1 + 72764)_8$$

$$-(2764)_8$$

3. $(11010 - 1001)_2$

→ Komplemen 2 dari 110011

$$(111111 - 110011)_2$$

$$(001100)_2$$

$$(001101)_2$$

→ Operasi

$$(011010 + 001101)_2$$

$$(100111)_2 \text{ (End Carry, diabaikan)}$$

$$+ (00111)_2$$

4. $(6723.45 - 4512.72)_{10}$

→ Komplemen 10 dari $(94512.72)_{10}$

$$(99999 - 94512.72)_{10}$$

$$(05487.27)_{10}$$

$$(05487.28)_{10}$$

→ Operasi

$$(06723.45 + 05487.28)_{10}$$

$$(11210.73)_{10} \text{ (End Carry, diabaikan)}$$

$$+ (1210.73)_{10}$$

(B)

1. $(3451 - 865)_{10}$

→ Komplemen 9 dari (90865)

$$(99999 - 0865)_{10}$$

$$(9134)_{10}$$

→ Operasi

$$(3451 + 9134)_{10}$$

$$(12585)_{10} \text{ (End Carry, ditambah digit akhir)}$$

$$(2586)_{10}$$

2. $(265 - 652)_8$

→ Komplemen 7 dari (7652)

$$(777 - 652)_8$$

$$(125)_8$$

→ Operasi

$$(256 + 125)_8$$

$$(412)_8 \text{ (Tidak ada end carry, di komplemen 7 lagi)}$$

$$(77777 - 0412)_8$$

$$(7365)_8$$

$$-(365)_8$$

3. $(10111.11 - 11001.01)_2$

→ Komplemen 1 dari $(111001.01)_2$

$$(11111 - 11001.01)_2$$

$$(00110.10)_2$$

→ Operasi

$$(10111.11 + 00110.10)_2$$

$$(11110.01)_2 \text{ (Tidak ada end carry, di komplemen 1 kembali)}$$

$$(111111.11 - 011110.01)_2$$

$$(100001.10)_2$$

$$-(00001.10)_2$$

4. $(325.12 - 657.45)_8$

→ Komplemen 7 dari $(7657.45)_8$

$$(777.77 - 657.45)_8$$

$$(120.32)_8$$

→ Operasi

$$(325.12 - 657.45)_8$$

$$(445.44)_8 \text{ (Tidak ada end carry, di komplemen 7 kembali)}$$

$$(7777.77 - 0445.44)_8$$

$$(7332.33)_8$$

$$-(332.33)_8$$

Slide 20

1.17

a. $(4.637 - 2.579)_{10}$

→ Komplemen 10 dari (2.579)

$$(99.999 - 92.579)_{10}$$

$$(07.421)_{10}$$

→ Operasi

$$(04.637 + 07.421)_{10}$$

$$(12058)_{10} \text{ (End Carry, diabaikan)}$$

$$+ (2058)_{10}$$

b. $(125 - 1.800)_{10}$

→ komplemen 10 dari (91.800)

$$(99.999 - 91.800)_{10}$$

$$(08.200)_{10}$$

→ Operasi

$$(00.125 + 08.200)_{10}$$

$$(08.325)_{10} \text{ (Tidak ada end carry, di komplemen 10 kembali)}$$

→ Komplemen 10 dari (08.325)

$$(99.999 - 08,325)_{10}$$

$$(91.674 + 1)_{10}$$

$$-(1.675)_{10}$$

c. $(2.043 - 4.361)_{10}$

→ Komplemen 10 dari (94.361)

$$(99.999 - 94.361)_{10}$$

$$(05.638)_{10} \Rightarrow (05.639)_{10}$$

→ Operasi

$$(02.043 + 05.639)_{10}$$

$$(07.682)_{10} \text{ (Tidak ada end carry, di komplemen 10 kembali)}$$

→ Komplemen 10 dari (07.682)₁₀

$$(99.999 - 07.682)_{10}$$

$$(92.317)_{10} \Rightarrow (92.318)_{10}$$

$$-(2.318)_{10}$$

d. $(1.631 - 745)_{10}$

→ Komplement 10 dari (90.745)
 $(99.999 - 90.745)_{10}$
 $(09.254)_{10}$ (End Carry, diabaikan)
 $+ (0.886)_{10}$

1.18

- a. $(10011 - 10010)_2$
 → Komplement 2 dari $(110010)_2$
 $(111111 - 110010)_2$
 $(0011001 + 1)_2$
 $(001110)_2$

 → Operasi
 $(010011 + 001100)_2$
 $(100001)_2$ (End Carry, diabaikan)
 $+(00001)_2$
- b. $(100010 - 100110)_2$
 → komplement 2 dari $(1100110)_2$
 $(1111111 - 1100110)_2$
 $(0011001 + 1)_2$
 $(0011010)_2$

 → Operasi
 $(0100010 + 00110010)_2$
 $(0111100)_2$ (Tidak ada end carry, di komplement 2 kembali)

 → Komplement 2 dari $(0111100)_2$
 $(1111111 - 0111100)_2$
 $(1 + 1000011)_2$
 $(1000100)_2$
 $-(000100)_2$
- c. $(1001 - 110101)_2$

 → komplement 2 dari $(1110101)_2$
 $(1111111 - 1110101)_2$
 $(0001010 + 1)_2$
 $(0001011)_2$

 → Operasi
 $(0001001 + 0001011)_2$
 $(0010100 + 1)_2$
 $(0010100)_2$ (Tidak ada end carry, di komplement 2 kembali)

 → Komplement 2 dari $(0010100)_2$
 $(1111111 - 0010100)_2$

$$\begin{array}{r}
 (1101011 + 1)_2 \\
 (1101100)_2 \\
 -(101100)_2
 \end{array}$$

d. $(101000 - 10101)_2$

$$\begin{array}{l}
 \rightarrow \text{komplemen 2 dari } (0110101)_2 \\
 (1111111 - 1010101)_2 \\
 (0101010 + 1)_2 \\
 (0101011)_2
 \end{array}$$

$$\begin{array}{l}
 \rightarrow \text{Operasi} \\
 (0101000 + 0101011)_2 \\
 (1010011)_2 \\
 (0010100)_2 \text{ (End Carry, diabaikan)} \\
 +(010011)_2
 \end{array}$$

1.19

$(+9286)_{10} = (0092.86)_{10}$	999.999	999.999
$(+801)_{10} = (000801)_{10}$	009.286	000.801
	<u> </u> -	<u> </u> -
	990.713	999.198
	1	1
	<u> </u> +	<u> </u> +
	$(990.714)_{10}$	$(999.199)_{10}$

a. $(+9.286) + (+801) = 009286 + 00080$
 $= (010087)_{10}$

b. $(+9.286) + (-801) = 009286 + 999199$
 $= (008485)_{10}$

c. $(-9.286) + (+801) = 990714 + 000801$
 $= (991515)_{10}$

d. $(-9.286) + (-801) = 990714 + 999199$
 $= (989913)_{10}$

1.21

$(+9742) = (009742)$	999999	999999
$(+641) = (000641)$	009742	000641
	<u> </u> -	<u> </u> -

	$\begin{array}{r} 990257 \\ 1 \\ \hline + \\ (990258)_{10} \end{array}$	$\begin{array}{r} 999358 \\ 1 \\ \hline + \\ (999359)_{10} \end{array}$
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a. $(+9742) + (+641) = (009742) + (000641)$
 $= (010383)_{10}$

b. $(+9742) + (-641) = (009742) + (999359)$
 $= (009101)_{10}$

c. $(-9742) + (+641) = (990258) + (000641)$
 $= (990899)_{10}$ (Tidak ada End Carry)

$$\begin{array}{r} 999999 \\ 990899 \\ \hline - \\ 009100 \\ 1 \\ \hline + \\ (009101)_{10} \\ -(9101)_{10} \end{array}$$

d. $(-9742) + (-641) = (990258) + (999359)$
 $= (989617)_{10}$ (Tidak ada End Carry)

$$\begin{array}{r} 999999 \\ 989617 \\ \hline - \\ 010382 \\ 1 \\ \hline + \\ 010383 \\ -(10383)_{10} \end{array}$$