

Esercizi pag 39

1) a)

$$110011_2 \rightarrow \text{DECIMAL} \quad | \text{OTTALO} \quad | \text{ESADECIMALE}$$
$$2^6 + 2^5 + 2^3 + 2^0 = \begin{array}{r} 110011 \\ \hline 6 \quad 3 \end{array} = \begin{array}{r} 110011 \\ \hline 3 \quad 3 \end{array} = 63_{10} \quad | - 33_{16}$$
$$= 63_{10}$$

b)

$$10101011 \rightarrow \text{DECIMAL} \quad | \text{OTTALO} \quad | \text{ESADOC.}$$
$$2^6 + 2^5 + 2^3 + 2^0 = \begin{array}{r} 10101011 \\ \hline 2 \quad 5 \quad 3 \end{array} = \begin{array}{r} 10101011 \\ \hline 7 \quad 0 \end{array} = 253_{10} \quad | - AB_{16}$$
$$= 171_{10}$$

c)

$$101011110_2 \rightarrow \text{DECIMAL} \quad | \text{OTTALO} \quad | \text{ESADECIMALE}$$
$$350_{10} \quad | \begin{array}{r} 101011110 \\ \hline 5 \quad 3 \quad 6 \end{array} = \begin{array}{r} 101011110 \\ \hline 1 \quad S \quad E \end{array} = 536_{10} \quad | - 536_{16}$$

d)

$$100101101101_2 \rightarrow \text{DECIMAL} \quad | \text{OTTALO} \quad | \text{ESADOC.}$$
$$2413_{10} \quad | \begin{array}{r} 100101101101 \\ \hline 100101101101 \end{array} = \begin{array}{r} 100101101101 \\ \hline 100101101101 \end{array} = 2413_{10} \quad | - 2413_{16}$$

$$\begin{array}{r} 1. \\ - 9555_8 \\ \hline 56D_{16} \end{array}$$

(2)	$23_8 \rightarrow \text{BINARIO}$	21_{10}	13_{16}
d) 	$\begin{array}{r} 2 \quad 3 \\ \swarrow \quad \searrow \\ 010 \quad 101_2 \\ \hline 010101_2 \end{array}$	10011010_2	$C-S4 DECIMAL$

(3)	$43_8 \rightarrow \text{BINARIO}$	35_{10}	23_{16}
d) 	$\begin{array}{r} 4 \quad 3 \\ \swarrow \quad \searrow \\ 100 \quad 011_2 \\ \hline 1000011_2 \end{array}$	10011010_2	$C-S4 DECIMAL$

(3)	$13_{10} \rightarrow \text{BINARIO}$	15_8	D_{16}
d) 	1101_2	1011_2	$C-S4 DECIMAL$

(4)	$6F_{10} \rightarrow \text{BINARIO}$	100_8	$F0_{16}$
d) 	10000000_2	100_8	$C-S4 DECIMAL$

(5)

2) $17_{16} \rightarrow \text{BINAR} @$

1	7
0001	0111 ₂

OTTA LK

27_8

DECIMAL

$$2^0 + 2^1 + 2^2 + 2^3 =$$

$$1 + 2 + 8 + 16 =$$

$$= 23_{10}$$

$FA_{16} \rightarrow \text{BINAR} @$

F	A
1111	1010 ₂

OTTA LK

372_8

DECIMAL

$$2^1 + 2^2 + 2^3 + 2^4 + 2^5 =$$

$$2 + 8 + 16 + 32 + 64 =$$

$$= 110_{10}$$

Übungsaufgabe 35

1)

$$F(A, B) = A \cdot \overline{\bar{A} \cdot B} + \bar{B}$$

A	B	\bar{A}	$\bar{A} \cdot B$	$\bar{A} \cdot \bar{B}$	$A \cdot \bar{A} \cdot B$	\bar{B}	F
0	0	1	0	1	0	1	1
0	1	1	1	0	0	0	0
1	0	0	0	1	0	1	1
1	1	0	0	1	0	0	0

$F(A, B) = \bar{B}$

$$f(A, B) = \bar{A} + B + A \cdot \bar{B} + \bar{A} + \bar{B}$$

A	B	\bar{A}	$A \cdot \bar{B}$	$A + \bar{B}$	$\bar{A} + \bar{B}$	f
0	0	1	0	1	1	1

0	1	0	0	1	0
0	1	1	0	0	1
1	0	0	1	1	0
1	1	0	0	1	1

$G(A, B) = \overline{A} \cdot \overline{B} + A \cdot \overline{B}$ — Tautologija

$$H(A, B) = \overline{\overline{A} \cdot \overline{B} \cdot B}$$

A	B	\overline{B}	$A \cdot \overline{B}$	$\overline{A \cdot \overline{B}}$	$\overline{\overline{A \cdot \overline{B}} \cdot B}$	H
0	0	1	0	1	0	1
0	1	0	0	1	1	0
1	0	1	1	0	0	1
1	1	0	0	1	1	0

$H(A, B) = \overline{B}$

$$I(A, B) = \overline{\overline{A} + A + \overline{AB}}$$

A	B	\overline{A}	\overline{AB}	$\overline{\overline{A} + A + \overline{AB}}$	I
0	0	1	1	0	1
0	1	1	1	0	1
1	0	0	1	0	0
1	1	0	0	0	0

$$I(A, B) = \overline{A}$$

2)

$$F(A, B, C) = CB + A + \bar{B}$$

A	B	C	CB	F
0	0	0	0	0
0	0	1	0	0
0	1	0	0	1
0	1	1	1	1
1	0	0	0	1
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

$$G(A, B, C) = \overline{A}\overline{B} \cdot \overline{\overline{A}\overline{B}C}$$

A	B	C	$\overline{A}\overline{B}$	$\overline{A}\overline{B}C$	$\overline{\overline{A}\overline{B}C}$	G
0	0	0	0	0	1	0
0	0	1	0	0	1	0
0	1	0	0	0	1	0
0	1	1	0	0	1	0
1	0	0	1	0	1	1
1	0	1	1	1	0	0
1	1	0	0	0	1	0
1	1	1	0	0	1	0

$$H(A, B, C) = \overline{\overline{A} + \overline{A} + C \cdot B \cdot A} = A$$

A	B	C	CB	$A + CB$	$\overline{A + CB}$	$\overline{A + CB} \cdot A$	G
0	0	0	0	0	1	0	0
0	0	1	0	0	1	0	0
0	1	0	0	0	1	0	0
0	1	1	1	1	0	0	0

0	1	1	1	1	1	0	0	0
1	0	0	0	1	0	0	0	1
1	0	1	0	0	1	0	0	1
1	1	0	0	1	1	0	0	1
1	1	1	1	1	1	0	0	1

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$L = SF \wedge \neg APERT_1 \wedge ALMFR_0 \wedge \neg PORT_1$

$A = SF \wedge SOR_0 \wedge APERMFR \wedge ALMFR_0 \wedge 2 \text{ PORTE ADIACENTI}$

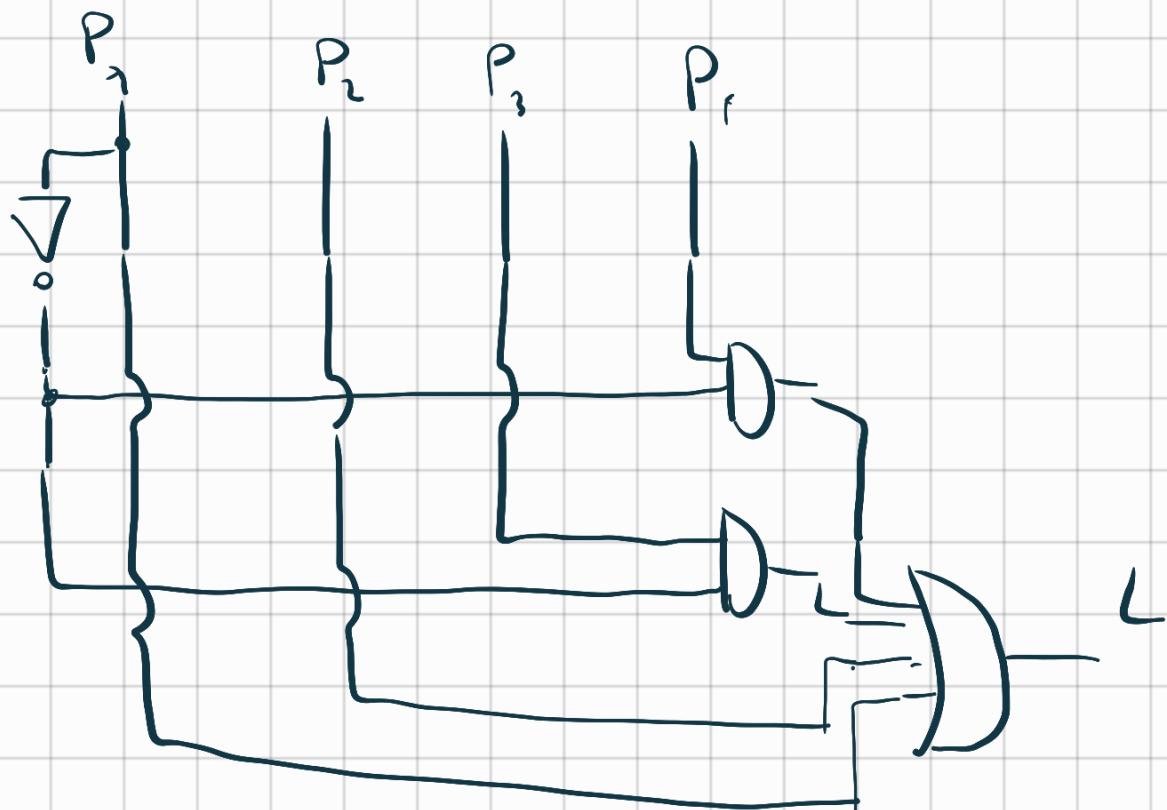
$B = SF \wedge SOR_0 \wedge APERMFR \wedge ALMFR_0 \wedge 3 \text{ PORTA}$

P_1	P_2	P_3	P_4	L	A	B
0	0	0	0	0	0	0
0	0	0	1	1	0	0
0	0	1	0	1	0	0
0	0	1	1	1	1	0
0	0	1	1	1	0	0
0	1	0	0	1	0	0
0	1	0	1	1	0	0
0	1	1	0	1	1	0
0	1	1	1	1	1	1
1	0	0	0	1	0	0
1	0	0	1	1	0	0
1	0	1	0	1	0	0
1	0	1	1	1	1	1
1	1	0	0	1	1	0
1	1	0	1	1	1	1
1	1	1	0	1	1	1
1	1	1	1	1	1	1

$$L = \overline{P_1} \cdot P_2 \cdot P_3 + \overline{P_1} \cdot P_2 \cdot \overline{P_3} + P_1 \cdot P_2 + P_1$$

	00	01	11	10
00	0	1	1	1
01	1	1	1	1
11	1	1	1	1
10	1	1	1	1

$$L = \overline{P_1} \cdot P_2 \cdot P_3 + \overline{P_1} \cdot P_2 \cdot \overline{P_3} + P_1 \cdot P_2 + P_1$$

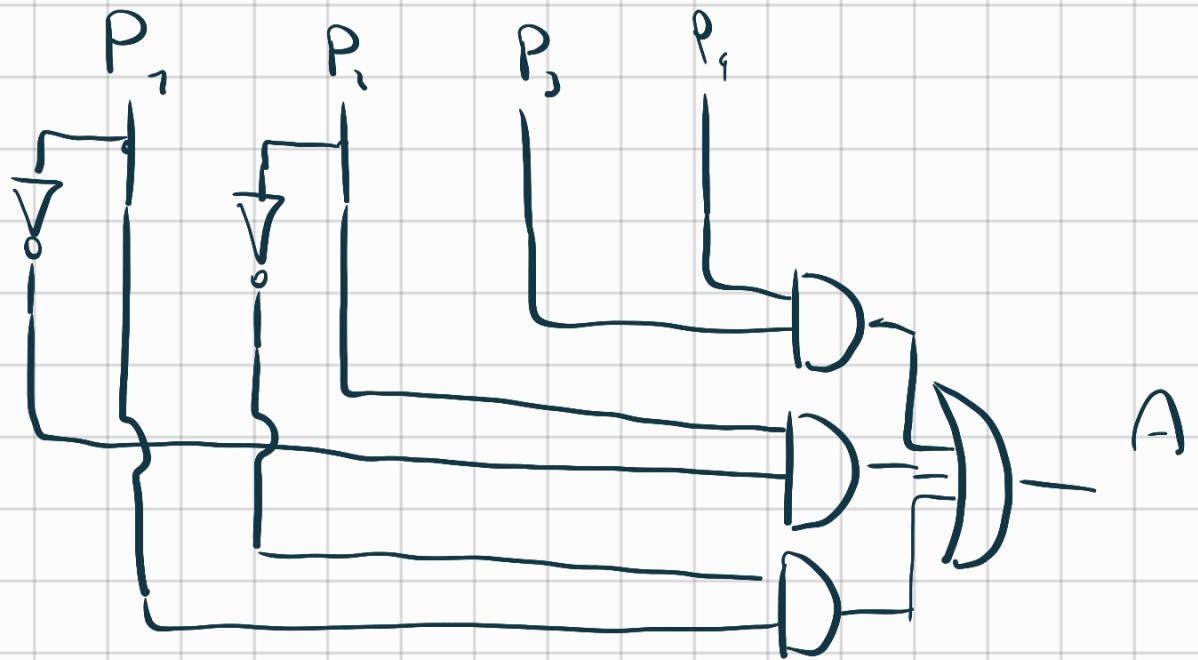


$$A = \overline{P_1} \cdot P_2 \cdot P_3 + \overline{P_1} \cdot P_2 \cdot \overline{P_3} + P_1 \cdot P_2 + P_1$$

	00	01	11	10
00	0	0	1	0
01	1	1	1	1
11	1	1	1	1
10	1	1	1	1

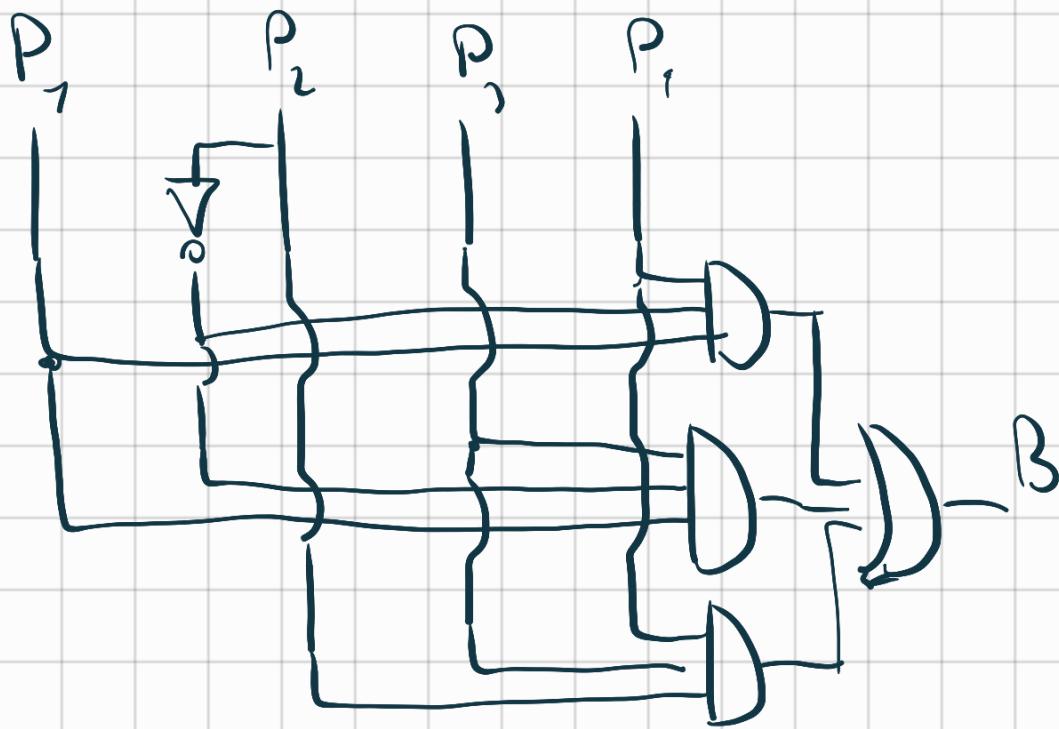
0_1	0	0	1	1
11	0	0	1	0
10	1	1	1	1

$$A = P_3 \cdot P_F + \overline{P_1} \cdot P_2 + P_1 \cdot \overline{P}_2$$



$\overline{P_1} \cdot \overline{P_F}$	00	01	11	10
00	0	0	0	0
01	0	0	1	0
11	0	0	1	0
10	1	1	1	1

$$B = P_1 \cdot \bar{P}_2 \cdot P_4 + P_1 \cdot \bar{P}_2 \cdot P_3 + P_2 \cdot P_3 \cdot P_4$$



PAG 84

$$1) W = 1A_H = (0001 \ 1010)_2$$

$$R_1 = JD3_H = (1001 \ 1101 \ 0011)_2$$

$$R_2 = 1D3_H = (0001 \ 1101 \ 0011)_2$$

1 BIT DI Control word DA ACCU-URGE RE A
 W 50ms 4 (b_3, b_2, b_1, b_0), OTTERING 30 UR

PARL DA 12 BIT

12 11 10 9 8 7 6 5 4 3 2 1

W:

0	0	0	1	b_3	1	0	1	b_2	0	b_1	b_0
---	---	---	---	-------	---	---	---	-------	---	-------	-------

b_3



b.



b.



b.

$$b_0 = 0 \oplus 1 \oplus 1 \oplus 1 \oplus 0 = 1$$

$$b_1 = 0 \oplus 0 \oplus 1 \oplus 0 \oplus 0 = 1$$

$$b_2 = 0 \oplus 1 \oplus 0 \oplus 1 = 0$$

$$b_3 = 0 \oplus 0 \oplus 0 \oplus 1 = 1$$

QUIR'S

12 11 10 9 8 7 6 5 4 3 2 1

 $\psi = \boxed{0 \ 0 \ 0 \ 1 \ 1 \ 1 \ 0 \ 1 \ 0 \ 0 \ 1 \ 1}$

$$\psi = (0 \ 0 \ 0 \ 1 \ 1 \ 1 \ 0 \ 1 \ 0 \ 0 \ 1 \ 1) = (1 \ 0 \ 3)$$

12 11 10 9 8 7 6 5 4 3 2 1

 $R_1 = \boxed{1 \ 0 \ 0 \ 1 \ 1 \ 1 \ 0 \ 1 \ 0 \ 0 \ 1 \ 1}$


$$b_0 = 0 \oplus 1 \oplus 1 \oplus 1 \oplus 0 \oplus 1 = 0$$

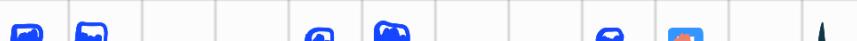
$$b_1 = 0 \oplus 0 \oplus 1 \oplus 0 \oplus 0 \oplus 1 = 0$$

$$b_2 = 1 \oplus 1 \oplus 0 \oplus 1 \oplus 0 = 1$$

$$b_3 = 1 \oplus 0 \oplus 0 \oplus 1 \oplus 1 = 1$$

C'F OR CIRCUIT 5/T 1100₂ = 12

12 11 10 9 8 7 6 5 4 3 2 1

 $R_2 = \boxed{0 \ 0 \ 0 \ 1 \ 1 \ 1 \ 0 \ 1 \ 0 \ 0 \ 1 \ 1}$


$$\begin{aligned}
 b_0 &= 0 \oplus 1 \oplus 1 \oplus 1 \oplus 0 \oplus 1 = 0 \\
 b_1 &= 0 \oplus 0 \oplus 1 \oplus 0 \oplus 0 \oplus 1 = 0 \\
 b_2 &= 0 \oplus 1 \oplus 0 \oplus 1 \oplus 0 = 0 \\
 b_3 &= 0 \oplus 0 \oplus 0 \oplus 1 \oplus 1 = 0
 \end{aligned}$$

IC missajero no presenta errores.

2) $W = FF_H = (1111 \ 1111)_2$

IC missajero HA BISOCO UN BIT DE CONTROL

12	11	10	9	8	7	6	5	4	3	2	1
1	1	1	1	1	b ₃	1	1	1	b ₂	1	b ₁
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■

$$\begin{aligned}
 b_0 &= 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 = 1 \\
 b_1 &= 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 = 1 \\
 b_2 &= 1 \oplus 1 \oplus 1 \oplus 1 = 0 \\
 b_3 &= 1 \oplus 1 \oplus 1 \oplus 1 = 0
 \end{aligned}$$

Output

12	11	10	9	8	7	6	5	4	3	2	1
1	1	1	1	0	1	1	1	0	1	1	1

OR_A

$$R_A = G \cdot f_f = (1110 \ 0111 \ 0111)_2$$

12	11	10	9	8	7	6	5	4	3	2	1
1	1	1	1	0	0	1	1	1	0	1	1
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■

$$b_0 = 1 \oplus 0 \oplus 1 \oplus 1 \oplus 1 \oplus 1 = 1$$

$$b_1 = 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 = 0$$

$$b_2 = 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 0 = 0$$

$$b_3 = 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 = 1$$

L'errore si trova nel 3^{bit} $(1001)_2 = 9$

$$R_1 = F F 7_4 = (1111 \quad 1111 \quad 0111)_2$$

12	11	10	9	8	7	6	5	4	3	2	1
1	1	1	1	1	1	1	1	0	1	1	1
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■

$$b_0 = 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 = 0$$

$$b_1 = 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 = 0$$

$$b_2 = 1 \oplus 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 = 0$$

$$b_3 = 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 = 1$$

L'errore si trova sul 3^{bit} $(1000)_2 = 8$

(3^{bit} di controllo)

196 83

$$1) w = FF_00_{16} = \begin{pmatrix} 1111 & 1111 & 0000 & 0000 \end{pmatrix}_2$$

IL MCSSAGGIO HA SISOCRO DI SBIT DI CORINOLLO
21 20 15 18 17 16 15 14 13 12 11 10 2 8 7 6 5 4 3 2 1

$$W = 1 \ 1 \ 1 \ 1 \ 1 \ 64 \ 1 \ 1 \ 1 \ 0 \ 0 \ 0 \ 0 \ 1, \ 0 \ 0 \ 0 \ 6, \ 0 \ 6, \ 6.$$

A horizontal row of ten identical blue square icons with rounded corners, evenly spaced across the page.

A horizontal row of small blue icons representing various mobile applications, including what appear to be social media, messaging, and utility apps.

A horizontal row of blue square tiles placed on a white grid. The tiles are arranged in a staggered pattern, similar to a brick wall. There are 10 tiles visible in the row.

b.             

A horizontal row of eight empty boxes, each containing a number from 1 to 8. The boxes are arranged in a single row, with a small gap between them.

$$b_0 = -1 \oplus 1 \oplus -1 \oplus 1 \oplus -1 \oplus 0 \oplus 1 \oplus 0 \oplus 1 \oplus 0 \oplus 0 = 1$$

$$b_1 = 1 \oplus 1 \oplus -1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 0 = 0$$

$$b = 1 \oplus 1 \oplus -1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 = 1$$

$$b_2 = -1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 = 1$$

$$b_1 = 1\Theta_1 \Theta_1 \Theta_1 \Theta_1 = 1$$

Quirky

Opera

$$R_1 = 0FF089_16 = (00\ 01111\ 1119\ 0000\ 1000\ 0001)_2$$

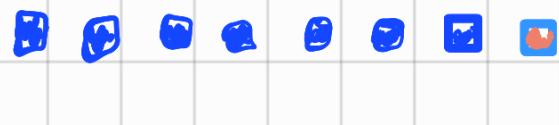
21 20 15 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

$R_1 = 0\ 1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 0\ 0\ 1\ 0\ 0\ 0\ 1.6\ 0\ 1$

A horizontal row of twelve blue icons, each representing a different video recording or camera function. From left to right, the icons include: a camera with a grid overlay, a camera with a play button, a camera with a double arrow, a camera with a double play button, a camera with a double double arrow, a camera with a double double play button, a camera with a double double double arrow, a camera with a double double double play button, a camera with a double double double double arrow, a camera with a double double double double play button, a camera with a double double double double double arrow, and a camera with a double double double double double play button.

A horizontal row of small blue icons, each containing a white symbol. From left to right, the symbols represent: a hand holding a card, a document with a checkmark, a document with a question mark, a document with a plus sign, a document with a minus sign, a document with a gear, a document with a lightbulb, a document with a gear and a lightbulb, a document with a gear and a checkmark, a document with a gear and a question mark, a document with a gear and a plus sign, a document with a gear and a minus sign, a document with a gear and a gear.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20



$$\begin{aligned}
 b_0 &= 0 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 1 = 1 \\
 b_1 &= 1 \oplus 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 0 = 0 \\
 b_2 &= 0 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 1 = 1 \\
 b_3 &= 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 1 = 0 \\
 b_4 &= 0 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 = 1
 \end{aligned}$$

L' effect de trou sur $\pi(10101)_2 = 21$

$$R_1 = 1\text{ F7 089}_h = (00.1 \wedge 111 \ 0111 \ 0000 \ 1000 \wedge 001)_2$$

	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
R	1	1	1		1	1	0	1	1	1	0	0	0	0	1	0	0	0	0	1	0	1
b ₁	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b ₂	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b ₃	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b ₄	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$$\begin{aligned}
 b_0 &= 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 1 = 0 \\
 b_1 &= 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 0 = 0 \\
 b_2 &= 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 1 = 0 \\
 b_3 &= 1 \oplus 1 \oplus 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 1 = 0 \\
 b_4 &= 1 \oplus 1 \oplus 1 \oplus 1 \oplus 1 \oplus 0 = 1
 \end{aligned}$$

L' effect de trou sur $\pi(10000)_2 = 16$

