TALLER: FUNDAMENTOS DE PROGRAMACIÓN

1. Convertir los siguientes números binarios al sistema decimal:

1) 00101

4	3	2	1	0
0	0	1	0	1

$0x2^4 + 0x2^3 + 1x2^2 + 0x2^1 + 1x2^0$

$0 + 0 + 4 + 0 + 1 \rightarrow \boxed{5}$

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2) 10101

4	3	2	1	0
1	0	1	0	1

$1x2^4 + 0x2^3 + 1x2^2 + 0x2^1 + 1x2^0$

$16 + 0 + 4 + 0 + 1 \rightarrow \boxed{21}$

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3) 111111

5	4	3	2	1	0
1	1	1	1	1	1

$1x2^5 + 1x2^4 + 1x2^3 + 1x2^2 + 1x2^1 + 1x2^0$

$32 + 16 + 8 + 4 + 2 + 1 \rightarrow \boxed{63}$

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4) 010001

5	4	3	2	1	0
0	1	0	0	0	1

$0x2^5 + 1x2^4 + 0x2^3 + 0x2^2 + 0x2^1 + 1x2^0$

$0 + 16 + 0 + 0 + 0 + 1 \rightarrow \boxed{17}$

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5) 1000001

6	5	4	3	2	1	0
1	0	0	0	0	0	1

$1x2^6 + 0x2^5 + 0x2^4 + 0x2^3 + 0x2^2 + 0x2^1 + 1x2^0$

$64 + 0 + 0 + 0 + 0 + 0 + 1 \rightarrow \boxed{65}$

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6) 100000101

8	7	6	5	4	3	2	1	0
1	0	0	0	0	0	1	0	1

$1x2^8 + 0x2^7 + 0x2^6 + 0x2^5 + 0x2^4 + 0x2^3 + 1x2^2 + 0x2^1 + 1x2^0$

$256 + 0 + 0 + 0 + 0 + 0 + 4 + 0 + 1 \rightarrow \boxed{261}$

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7) 011111101110

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

$0x2^{11} + 1x2^{10} + 1x2^9\ 1x2^8 + 1x2^7 + 1x2^6 + 1x2^5 + 0x2^4 + 1x2^3 + 1x2^2 + 1x2^1 + 0x2^0$

$0 + 1024 + 512 + 256 + 128 + 64 + 32 + 0 + 8 + 4 + 2 + 0 \rightarrow \boxed{2030}$

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8) 1000101001

9	8	7	6	5	4	3	2	1	0
1	0	0	0	1	0	1	0	0	1

$1x2^9 + 0x2^8 + 0x2^7 + 0x2^6 + 1x2^5 + 0x2^4 + 1x2^3 + 0x2^2 + 0x2^1 + 1x2^0$

$512 + 0 + 0 + 0 + 32 + 0 + 8 + 0 + 0 + 1 \rightarrow \boxed{553}$

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9) 11111000111

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

$1x2^{10} + 1x2^9 + 1x2^8 + 1x2^7 + 1x2^6 + 0x2^5 + 0x2^4 + 0x2^3 + 1x2^2 + 1x2^1 + 1x2^0$

$1024 + 512 + 256 + 128 + 64 + 0 + 0 + 0 + 4 + 2 + 1 \rightarrow \boxed{1991}$

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10) 0110

3	2	1	0
0	1	1	0

$0x2^3 + 1x2^2 + 1x2^1 + 0x2^0$

$0 + 4 + 2 + 0 \rightarrow \boxed{6}$

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11) 101001000

8	7	6	5	4	3	2	1	0
1	0	1	0	0	1	0	0	0

$1x2^8 + 0x2^7 + 1x2^6 + 0x2^5 + 0x2^4 + 1x2^3 + 0x2^2 + 0x2^1 + 0x2^0$

$256 + 0 + 64 + 0 + 0 + 8 + 0 + 0 + 0 \rightarrow \boxed{328}$

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12) 1011111110

9	8	7	6	5	4	3	2	1	0
1	0	1	1	1	1	1	1	1	0

$1x2^9 + 0x2^8 + 1x2^7 + 1x2^6 + 1x2^5 + 1x2^4 + 1x2^3 + 1x2^2 + 1x2^1 + 0x2^0$

512 + 0 + 128 + 64 + 32 + 16 + 8 + 4 + 2 + 0 → 766

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13) 1

0
1

$1x2^0$

1

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14) 0

0
0

$0x2^0$

0

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2. Convertir los siguientes números decimales al sistema binario:

15) 34

34/2 → 17/2 → 8/2 → 4/2 → 2/2 → 1

0 1 0 0 0 1 → 100010

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16) 87

87/2 → 43/2 → 21/ 2 → 10/2 → 5/2 → 2/2 → 1

1 1 1 0 1 0 1 → 1010111

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17) 71

71/2 → 35/2 → 17/2 → 8/2 → 4/2 → 2/2 → 1

1 1 1 0 0 0 1 → 1000111

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18) 105

105/2 → 52/2 → 26/2 → 13/2 → 6/2 → 3/2→ 1

1 0 0 1 0 1 1 → 1101001

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19) 235

235/2 → 117/2 → 58/2 → 29/2 → 14/2 → 7/2 → 3/2 → 1

1 1 0 1 0 1 1 1 → 11101011

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20) 256

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

0 0 0 0 0 0 0 0 1

→ 100000000

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21) 512

512/2 → 256/2 →128/2→ 64/2 → 32/2 → 16/2 → 8/2 → 4/2 → 2/2 → 1

0 0 0 0 0 0 0 0 0 1

→ 1000000000

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22) 210

210/2 → 105/2 → 52/2 → 26/2 → 13/2 → 6/2 → 3/2 → 1

0 1 0 0 1 0 1 1 → 11010010

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23) 39

39/2 → 19/2 → 9/2 → 4/2 → 2/2 → 1

1 1 1 0 0 1→ 100111

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24) 101

101/2 → 50/2 → 25/2 → 12/2 → 6/2 → 3/2 → 1

1 0 1 0 0 1 1 → 1100101

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25) 98

98/2 → 49/2 → 24/2 → 12/2 → 6/2 → 3/2 → 1

0 1 0 0 0 1 1 → 1100010

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26) 321

321/2 → 160/2 → 80/2 → 40/2 → 20/2 → 10/2 → 5/2 → 2/2 → 1

1 0 0 0 0 0 1 0 1 → 10100001

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27) 878

878/2→439/2→219/2→109/2→ 54/2 → 27/2 → 13/2 → 6/2 →3/2 → 1

0 1 1 1 0 1 1 0 1 1→ 1101101110

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28) 965

965/2→482/2→241/2→120/2 →60/2 → 30/2 → 15/2 → 7/2 → 3/2 → 1

1 0 1 0 0 0 1 1 1 1 → 1111000101