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Curso: 2do Software "B"

Fecha: 24/07/2023

- Realizar ejercicios de suma, resta, multiplicación y división en binario y decimal
- Comparar resultados obtenidos en ambos sistemas para evaluar la precisión

- Suma decimal y binario

$$\begin{array}{r} 25_{10} \\ +\ 17_{10} \\ \hline 42_{10} \end{array}$$

$25_{10} \rightarrow 11001_2$

$17_{10} \rightarrow 10001_2$

$42_{10} \rightarrow 101010_2$

$$\begin{array}{r} 11001_2 \\ +\ 10001_2 \\ \hline 101010_2 \end{array}$$

$$\begin{array}{r} {\scriptstyle 2} \\ 135_{10} \\ +\ 89_{10} \\ 47_{10} \\ \hline 271_{10} \end{array}$$

$135_{10} \rightarrow 10000111_2$

$89_{10} \rightarrow 01011001_2$

$47_{10} \rightarrow 00101111_2$

$271_{10} \rightarrow 100001111_2$

$$\begin{array}{r} {\scriptstyle 1\ 1\ 1\ 1\ 1\ 1\ 1} \\ 10000111_2 \\ +\ 01011001_2 \\ 00101111_2 \\ \hline 100001111_2 \end{array}$$

- Resta decimal y binario

$$\begin{array}{r} 50_{10} \\ -\ 23_{10} \\ \hline 27_{10} \end{array}$$

$50_{10} \rightarrow 110010_2$

$23_{10} \rightarrow 010111_2$

$27_{10} \rightarrow 011011_2$

$$\begin{array}{r} 110010_2 \\ -\ 010111_2 \\ \hline 011011_2 \end{array}$$

$$\begin{array}{r} 200_{10} \\ -\ 75_{10} \\ \hline 125_{10} \end{array}$$

$200_{10} \rightarrow 11001000_2$

$75_{10} \rightarrow 01001011_2$

$125_{10} \rightarrow 01111001_2$

$$\begin{array}{r} 11001000_2 \\ -\ 01001011_2 \\ \hline 01111101_2 \end{array}$$

Multiplicación decimal y binario

$$
\begin{array}{r}
13_{10} \\
\times\ 6_{10} \\
\hline
78_{10}
\end{array}
$$

$13_{10} \rightarrow 1101_2$
$6_{10} \rightarrow 0110_2$
$78_{10} \rightarrow 1001110_2$

$$
\begin{array}{r}
1101_2 \\
\times\ 0110_2 \\
\hline
0000 \\
1101 \\
1101 \\
0000 \\
\hline
1001110_2
\end{array}
$$

$$
\begin{array}{r}
23 \\
\times\ 19 \\
\hline
207 \\
+\ 23 \\
\hline
437
\end{array}
$$

$23_{10} \rightarrow 10111_2$
$19_{10} \rightarrow 10011_2$
$437_{10} \rightarrow 110110101_2$

$$
\begin{array}{r}
10111_2 \\
\times\ 10011_2 \\
\hline
10111 \\
10111 \\
+\ 00000 \\
00000 \\
10111 \\
\hline
110110101_2
\end{array}
$$

División decimal y binario

$$
\begin{array}{r|l}
156 & 12 \\
\hline
-\ 12 & 13 \\
\hline
036 & \\
-\ 36 & \\
\hline
00 &
\end{array}
$$

$156_{10} \rightarrow 10011100_2$
$12_{10} \rightarrow 00001100_2$
$13_{10} \rightarrow 1101_2$

$$
\begin{array}{r|l}
10011100 & 00001100 \\
\hline
-\ 1100 & 1101 \\
\hline
001110 & \\
-\ 1100 & \\
\hline
001100 & \\
-\ 1100 & \\
\hline
(0000) &
\end{array}
$$

$$
\begin{array}{r|l}
45 & 5 \\
\hline
-\ 45 & 9 \\
\hline
00 &
\end{array}
$$

$45_{10} \rightarrow 101101_2$
$5_{10} \rightarrow 00101_2$
$9_{10} \rightarrow 1001_2$

$$
\begin{array}{r|l}
101101 & 00101 \\
\hline
-\ 101 & 1001 \\
\hline
000101 & \\
-\ 101 & \\
\hline
000000 &
\end{array}
$$

• Suma binario y decimal

$$
\begin{array}{r}
1010_2 \\
+\ 1101_2 \\
\hline
10111_2
\end{array}
\qquad
\begin{array}{l}
1010_2 \longrightarrow 10_{10} \\
1101_2 \longrightarrow 13_{10} \\
10111_2 \longrightarrow 23_{10}
\end{array}
\qquad
\begin{array}{r}
10_{10} \\
+\ 13_{10} \\
\hline
23_{10}
\end{array}
$$

$$
\begin{array}{r}
10101_2 \\
11011_2 \\
+\ 10010_2 \\
01100_2 \\
\hline
1001110_2
\end{array}
\qquad
\begin{array}{l}
10101_2 \longrightarrow 21_{10} \\
11011_2 \longrightarrow 27_{10} \\
10010_2 \longrightarrow 18_{10} \\
01100_2 \longrightarrow 12_{10} \\
1001110_2 \longrightarrow 78_{10}
\end{array}
\qquad
\begin{array}{r}
21_{10} \\
27_{10} \\
+\ 18_{10} \\
12_{10} \\
\hline
78_{10}
\end{array}
$$

• Resta binario y decimal

$$
\begin{array}{r}
110101_2 \\
-\ 011011_2 \\
\hline
011010_2
\end{array}
\qquad
\begin{array}{l}
110101_2 \longrightarrow 53_{10} \\
011011_2 \longrightarrow 27_{10} \\
011010_2 \longrightarrow 26_{10}
\end{array}
\qquad
\begin{array}{r}
53_{10} \\
-\ 27_{10} \\
\hline
26_{10}
\end{array}
$$

$$
\begin{array}{r}
1011100_2 \\
-\ 0100011_2 \\
\hline
0111001_2
\end{array}
\qquad
\begin{array}{l}
1011100_2 \longrightarrow 92_{10} \\
0100011_2 \longrightarrow 35_{10} \\
0111001_2 \longrightarrow 57_{10}
\end{array}
\qquad
\begin{array}{r}
92_{10} \\
-\ 35_{10} \\
\hline
57_{10}
\end{array}
$$

• Multiplicación binario y decimal

$$
\begin{array}{r}
101_2 \\
*\ 100_2 \\
\hline
000 \\
000 \\
101 \\
\hline
10100_2
\end{array}
\qquad
\begin{array}{l}
101_2 \longrightarrow 5_{10} \\
100_2 \longrightarrow 4_{10} \\
\\
10100_2 \longrightarrow 20_{10}
\end{array}
\qquad
\begin{array}{r}
5_{10} \\
*\ 4_{10} \\
\hline
20_{10}
\end{array}
$$

$$
\begin{array}{r}
110_2 \\
*\ 101_2 \\
\hline
110 \\
000 \\
110 \\
\hline
11110_2
\end{array}
\qquad
\begin{array}{l}
110_2 \longrightarrow 6_{10} \\
101_2 \longrightarrow 5_{10} \\
\\
11110_2 \longrightarrow 30_{10}
\end{array}
\qquad
\begin{array}{r}
6_{10} \\
5_{10} \\
\hline
30_{10}
\end{array}
$$

Tema | Día | Mes | Año | ESTILO

• División binaria y decimal

```
 1 0 0 1 0 | 10
-10        |----
 0 0 0 1 0 | 1001
   -  1 0  |
   -------  |
     0 0    |
```

$10010_2 \rightarrow 18_{10}$

$10_2 \rightarrow 2_{10}$

$1001_2 \rightarrow 9_{10}$

```
 18 | 2
-18 |---
 00 | 9
```

```
 1 0 1 0 0 | 100
-1 0 0     |-----
 0 0 1 0 0 | 101
   - 1 0 0 |
   ---------|
     (0 0 0)|
```

$10100_2 \rightarrow 20_{10}$

$100_2 \rightarrow 4_{10}$

$101_2 \rightarrow 5_{10}$

```
 20 | 4
-20 |---
 00 | 5
```

Notas