

2.1.2 convert digital storage units from one to another, i.e. bit, nibble, byte, kilobyte (KB), kibibyte (KiB), Megabyte (MB), Mebibyte (MiB), Gigabyte (GB), Gibibyte (GiB), Terabyte (TB), Tebibyte (TiB), Petabyte (PB) and Pebibyte (PiB);

Here's a guide to converting between various digital storage units:

Basic Units and Conversions:

1. **Bit:**
 - Smallest unit of data.
 - 1 byte = 8 bits.
2. **Nibble:**
 - 1 nibble = 4 bits.
 - 1 byte = 2 nibbles.
3. **Byte:**
 - 1 byte = 8 bits.
 - 1 kilobyte (KB) = 1,000 bytes (decimal) or 1,024 bytes (binary, as in kibibyte).
 - 1 megabyte (MB) = 1,000 KB (decimal) or 1,024 KiB (binary).
 - 1 gigabyte (GB) = 1,000 MB (decimal) or 1,024 MiB (binary).
 - 1 terabyte (TB) = 1,000 GB (decimal) or 1,024 GiB (binary).
 - 1 petabyte (PB) = 1,000 TB (decimal) or 1,024 TiB (binary).

Summary of Conversions:

Unit	Decimal Value	Binary Value
1 Bit	-	-
1 Nibble	4 bits	4 bits
1 Byte	8 bits	8 bits
1 Kilobyte (KB)	1,000 bytes	1,024 bytes (1 KiB)
1 Megabyte (MB)	1,000 KB (1,000,000 bytes)	1,024 KiB (1,048,576 bytes)
1 Gigabyte (GB)	1,000 MB (1,000,000,000 bytes)	1,024 MiB (1,073,741,824 bytes)
1 Terabyte (TB)	1,000 GB (1,000,000,000,000 bytes)	1,024 GiB (1,099,511,627,776 bytes)
1 Petabyte (PB)	1,000 TB (1,000,000,000,000,000 bytes)	1,024 TiB (1,125,899,906,842,624 bytes)

Key Conversion Factors:

- **Decimal (Base 10):** 1 KB = 1,000 bytes; 1 MB = 1,000 KB; 1 GB = 1,000 MB; etc.
- **Binary (Base 2):** 1 KiB = 1,024 bytes; 1 MiB = 1,024 KiB; 1 GiB = 1,024 MiB; etc.

Examples:

- **Convert 2 GiB to MB:**
 - $2 \text{ GiB} = 2 \times 1,024 \text{ MiB} = 2,048 \text{ MiB}.$
 - $2,048 \text{ MiB} \times 1,000 \text{ KB} = 2,048,000 \text{ KB}.$
- **Convert 1 TB to GiB:**
 - $1 \text{ TB} = 1,000 \text{ GB} \times 1,024 \text{ MiB/GB} = 1,024,000 \text{ MiB}.$
 - $1,024,000 \text{ MiB} \div 1,024 = 1,000 \text{ GiB}.$

This should give you a comprehensive understanding of digital storage unit conversions!