|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Positive power of 2**  **(whole number)** | | | | | | **Negative power of 2**  **(fractional number)** | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Weight** |  |  |  |  |  |  |  |
| **bin** |  |  |  |  |  |  |  |
| **Position** | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Weight** |  |  |  |  |
| **bin** |  |  |  |  |
| **Position** | -1 | -2 | -3 | -4 |

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | **Carry** |  |
|  |  |  |  | MSB |
|  |  |  |  | ↓ |
|  |  |  |  |
|  |  |  |  | LSB |

|  |  |  |  |
| --- | --- | --- | --- |
| **Carry** | 1 | 1 |  |
|  |  | 1 | 1 |
|  |  | 1 | 1 |
| **Sum** | 1 | 1 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | 1 | 1 |
|  |  | 0 | 1 |
| **Borrow** | 1 | 1 |  |
| **Difference** | 1 | 1 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | 1 | 1 | 1 | 0 | 1 | 0 |
|  |  | 1 | 1 |  |  |  |
|  |  | 0 | 0 | 0 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |  | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | **binary** |
| 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |  | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | **2’s complement** |