|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Divide: 7 / 2 (0000 0111 / 0010)** | | | | |
| Iteration | Step | Quotient | Divisor | Remainder |
| 0 | Initial Values | 0000 | 0010 0000 | 0000 0111 |
| 1 | 1: rem = rem – div | 0000 | 0010 0000 | **1**110 0111 |
| 2b: Rem<0 => +div, sll Q, Q0=0 | 0000 | 0010 0000 | 0000 0111 |
| 3: shift div right | 0000 | 0001 0000 | 0000 0111 |
| 2 | 1: rem = rem – div | 0000 | 0001 0000 | **1**111 0111 |
| 2b: Rem<0 => +div, sll Q, Q0=0 | 0000 | 0001 0000 | 0000 0111 |
| 3: shift div right | 0000 | 0000 1000 | 0000 0111 |
| 3 | 1: rem = rem – div | 0000 | 0000 1000 | **1**111 1111 |
| 2b: Rem<0 => +div, sll Q, Q0=0 | 0000 | 0000 1000 | 0000 0111 |
| 3: shift div right | 0000 | 0000 0100 | 0000 0111 |
| 4 | 1: 0 => no operation | 0000 | 0000 0100 | **0**000 0011 |
| 2: shift left multiplicand | 0001 | 0000 0100 | 0000 0011 |
| 3: shift right multiplier | 0001 | 0000 0010 | 0000 0011 |
| 5 | 1: rem = rem – div | 0001 | 0000 0010 | **0**000 0001 |
| 2a: Rem>=0 => sll Q, Q0=1 | 0011 | 0000 0010 | 0000 0001 |
| 3: shift div right | 0011 | 0000 0001 | 0000 0001 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Divide: 12 / 4 (0000 1100 / 0100)** | | | | |
| Iteration | Step | Quotient | Divisor | Remainder |
| 0 | Initial Values | 0000 | 0100 0000 | 0000 1100 |
| 1 | 1: rem = rem – div | 0000 | 0100 0000 | 1100 1100 |
| 2b Rem<0 => +div, sll Q, Q0=0 | 0000 | 0100 0000 | 0000 1100 |
| 3: shift div right | 0000 | 0010 0000 | 0000 1100 |
| 2 | 1: rem = rem – div | 0000 | 0010 0000 | 1110 1100 |
| 2b Rem<0 => +div, sll Q, Q0=0 | 0000 | 0010 0000 | 0000 1100 |
| 3: shift div right | 0000 | 0001 0000 | 0000 1100 |
| 3 | 1: rem = rem – div | 0000 | 0001 0000 | 1111 1100 |
| 2b Rem<0 => +div, sll Q, Q0=0 | 0000 | 0001 0000 | 0000 1100 |
| 3: shift div right | 0000 | 0000 1000 | 0000 1100 |
| 4 | 1: rem = rem – div | 0000 | 0000 1000 | 0000 0100 |
| 2a Rem>=0 => sll Q, Q0=1 | 0001 | 0000 1000 | 0000 0100 |
| 3: shift div right | 0001 | 0000 0100 | 0000 0100 |
| 5 | 1: rem = rem – div | 0001 | 0000 0100 | 0000 0000 |
| 2a Rem>=0 => sll Q, Q0=1 | 0011 | 0000 0100 | 0000 0000 |
| 3: shift div right | 0011 | 0000 0010 | 0000 0000 |