**The rules of binary addition are as follows:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 + 0 = 0  0 + 1 = 1  1 + 0 = 1  1 + 1 = 0 with a carry-over of 1(10)  1+1+1=1 with a carry-over of 1(11) | **Binary Addition Table**   |  |  |  | | --- | --- | --- | | + | 0 | 1 | | 0 | 0 | 1 | | 1 | 1 | 10 | |

**“Carry-overs”** of binary addition are performed in the same manner as in decimal addition. With the help of the above rules addition of three or more binary numbers can be worked out but this has little use in digital computers.

For addition of fractional binary numbers, the binary point of the two numbers are placed one below the other just like the decimal points and the usual rules are followed.

**A clear concept on few examples will make the procedure of binary addition:**

**Find the sum of the following numbers:**

**i) 10101 and 11011  
  
Solution:**  
  
10101 and 11011  
  
       1 1 1 1      Carry overs  
  
       1 0 1 0 1  
  
       1 1 0 1 1  
  
    1 1 0 0 0 0  
  
  
**ii) 11001 and 111  
  
Solution:**  
  
11001 and 111  
  
       1 1 1 1      Carry overs  
  
       1 1 0 0 1  
  
            1 1 1  
  
     1 0 0 0 0 0  
  
  
  
**iii) 10101.101 and 1101.011  
  
Solution:**  
  
10101.101 and 1101.011  
  
       1 1    1 1   1 1     Carry overs  
  
       1 0 1 0 1 . 1 0 1  
  
          1 1 0 1 . 0 1 1  
  
     1 0 0 0 1 1 . 0 0 0  
  
**iv) 111.0111 and 10011.001  
  
Solution:**  
  
111.0111 and 10011.001  
  
        1 1 1      1 1       Carry overs  
  
           1 1 1 . 0 1 1 1  
  
      1 0 0 1 1 . 0 0 1     
  
      1 1 0 1 0 . 1 0 0 1