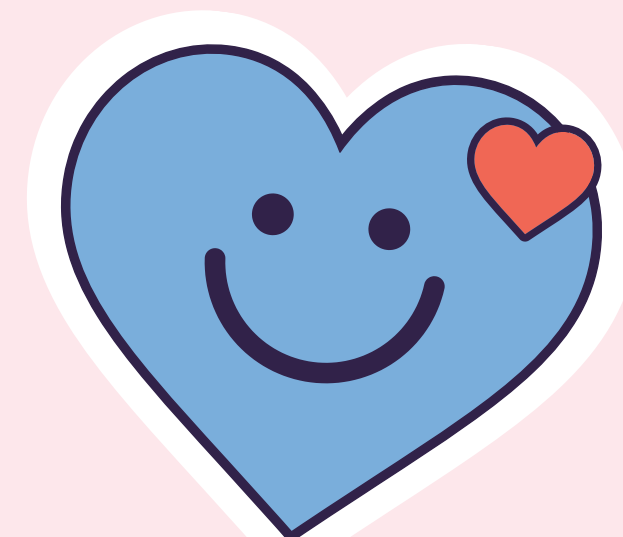


What is Binary Number?

- The binary number has base 2. It uses the digits 0 and 1 only.
- The value of a digit in the binary system depends on the value of its place in the number. Multiply the digit by its place value to determine the value of a digit.
- All digital computer use this number system and convert the data input from the decimal format into its binary equivalent.



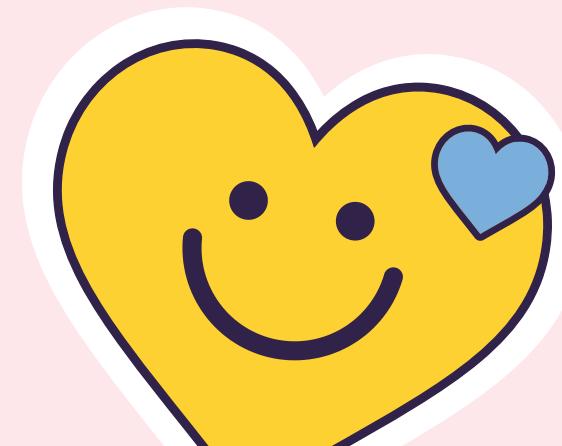


Number	Binary Code	Number	Binary Code
0	0	16	10000
1	01	17	10001
2	10	18	10010
3	11	19	10011
4	100	20	10100
5	101	21	10101
6	110	22	10110
7	111	23	10111
8	1000	24	11000
9	1001	25	11001
10	1010	26	11010
11	1011	27	11011
12	1100	28	11100
13	1101	29	11101
14	1110	30	11110
15	1111	31	11111

What is Decimal Number?



- It consists of ten digits i.e. 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 to represent any number. The decimal system is also known as the Base System 10 because there are ten digit choices from 0 to 9.
- The value of a digit in the decimal system depends on its place value in the number in question. The value of a digit is calculated by multiplying it by its place value.



Number Conversions

Conversion of a Decimal Number into Binary Number

★Division method★



i. Divide the decimal number by base 2.



ii. Put the reminder on right side.



iii. Keep dividing the quotient till we get the quotient less than 2.



iv. Record reminders from bottom to top to get the answer.

Example:

Example: $(21)_{10}$



	Number	Reminder
2	21	
2	10	1
2	5	0
2	2	1
	1	0

Answer: $(21)_{10} = (10101)_2$

Conversion of a Binary Number into Decimal Number

★ Expansion method ★



i. Multiply each binary number with 2 having the power 0 for last position, starting from the right digit.



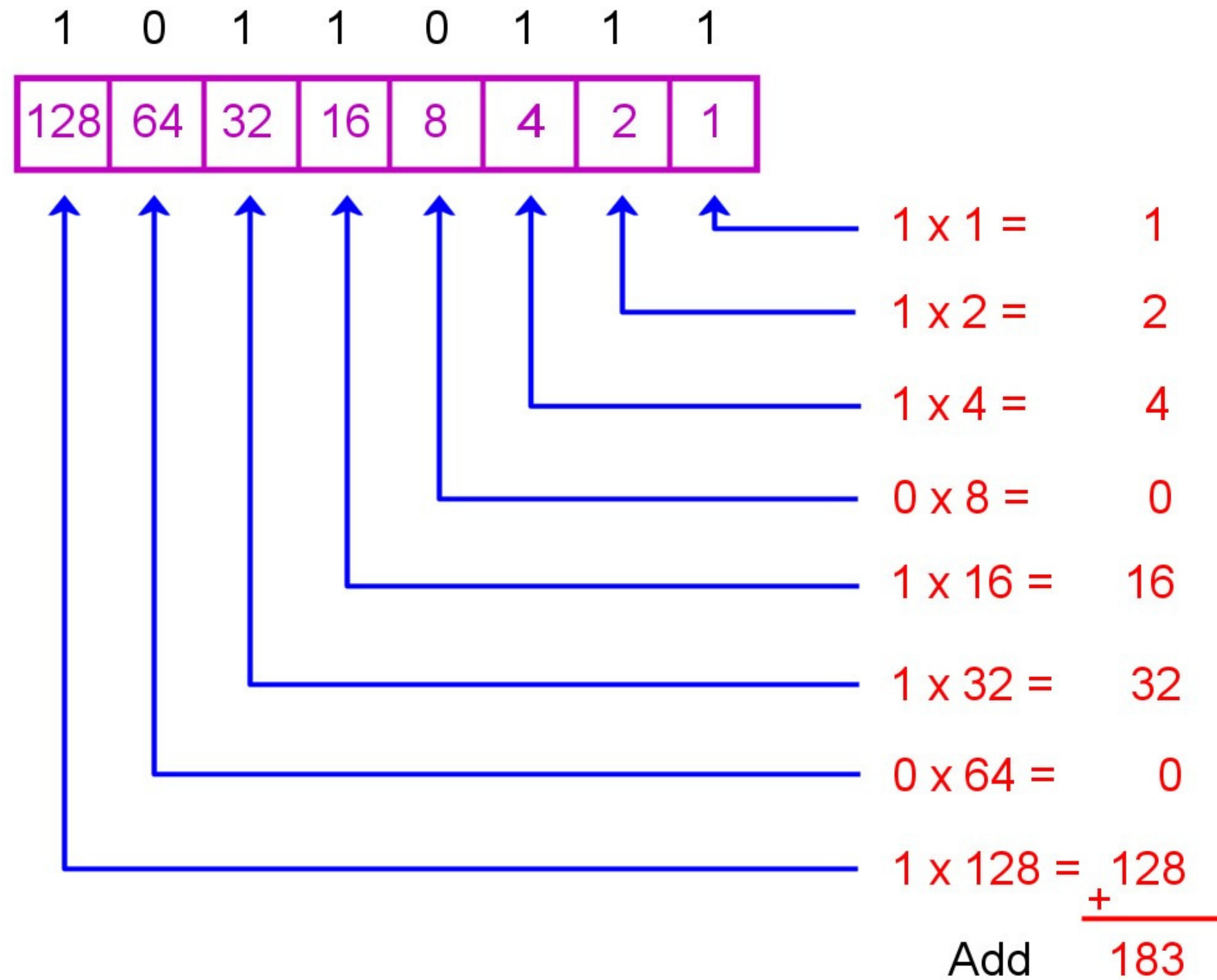
ii. Increase the power one by one, with base as 2



iii. The sum is a decimal number.

Example:

Convert 10110111 to Decimal



10110111 = 183 decimal