

PARAGON CONVENT SCHOOL

SECTOR 24 B CHANDIGARH

CLASS – 7 SUBJECT- COMPUTER

CHAPTER 1 – NUMBER SYSTEM

RECAP

1. The commonly used number system is Decimal number system with the base 10.
2. The right most digit of a number is called the Least significant Digit, whereas the left most digit is called Most significant Digit.
3. The Decimal number system consists of 10 digits, from 0 to 9, and has the base 10.
4. The Binary number system consists of two digits i.e. 0 and 1, and has the base 2.
5. The Octal number system consists of 8 digits from 0 to 7, with the base 8.
6. The Hexadecimal number system consists of 16 digits [ten digits (0 to 9) and six letters (A to F), and has the base 16.

Q A. Fill in the blanks:-

1. The base of Binary number system is 2.
2. The base of Decimal number system is 10.
3. Octal number system consists of 8 digits.
4. The Binary number system is understood by the computer system.
5. The Hexadecimal number system consists of 16 digits, from 0 to 9 and the letters A to F.
6. In Binary subtraction, 1-1 equals to 0.

Q D. Answer the following questions:-

Q 1. What is number system?

Ans. Number system is a set of values use to represent different quantities, such as number of students in a class, number of viewers watching a particular show.

Q 2. What are the rules to convert a Decimal number system into a Binary Number system?

Ans. To convert a Decimal number system into a Binary Number system, follow the given steps:-

Step 1. Divide the given decimal number with base 2.

Step 2. Write down the remainder and divide the quotient again by 2.

Step 3. Repeat the step till the quotient is zero.

Step 4. Write the remainders obtained in each step in the reverse order to form the binary equivalent of the given decimal number i.e. placing the least significant digit at the right and the most significant digit at the left.

3. Q Write the rules to multiply two binary numbers.

Ans. The rules for performing multiplication using binary numbers is same as that of the decimal numbers. The given table illustrates the multiplication of two binary numbers.

a	b	a + b = c
0	0	0+0=0
0	1	0+1=1
1	0	1+0=1
1	1	1+1=0 with carry 1

Q4. Briefly explain Octal number system.

Ans. The Octal number system consists of 8 digits, from 0 to 7, with the base 8. The concept of Octal number system came from the Native Americans as they used to count numbers by using the space between their fingers rather than using their fingers.

Q 5. What do you understand by hexadecimal number system?

Ans. This number system consists of 16 symbols numbers 0 to 9 and the letters A to F that represent decimal numbers from 10 to 15. It means,

A is equivalent to 10,

B is equivalent to 11,

C is equivalent to 12,

D is equivalent to 13,

E is equivalent to 14,

F is equivalent to 15.

The base of this number system is 16.

ACTIVITY

A. Convert the following Decimal numbers into Binary numbers.

a. 68 Remainder

		Remainder
2	68	0
2	34	0
2	17	1
2	8	0
2	4	0
2	2	0
	1	

$$(68)_{10} = (1000100)_2 \text{ Answer}$$

b. 987 Remainder

		Remainder
2	987	1
2	493	1
2	246	0
2	123	1
2	61	1
2	30	0
2	15	1
2	7	1
2	3	1
	1	

$$(987)_{10} = (1111011011)_2 \text{ Answer}$$

c. 657

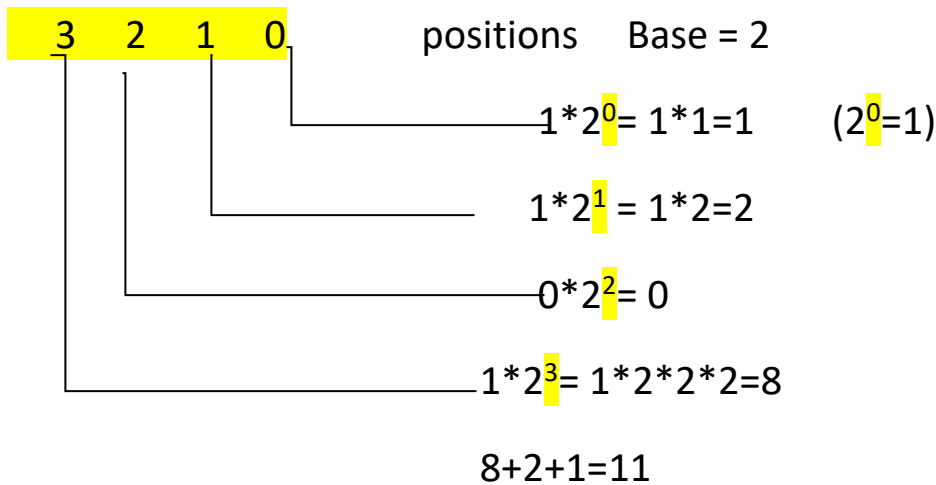
2	657	1
2	328	0
2	164	0
2	82	0
2	41	1
2	20	0
2	10	0
2	5	1
2	2	0
	1	

$(657)_{10} = (1010010001)_2$ Answer

B. Convert the following Binary numbers into Decimal numbers.

a. $(1011)_2$

1 0 1 1



$(1011)_2 = (11)_{10}$ Answer

b. $(100110)_2$

1 0 0 11 0

5 4 3 2 1 0 positions Base = 2

$$= (1 \cdot 2^5 + 0 + 0 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0)$$

$$= (2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 + 2 \cdot 2 + 2)$$

$$= 32 + 4 + 2$$

$$= 38$$

$$(100110)_2 = (38)_{10} \text{ Answer}$$

c. $(10101)_2$

1 0 1 0 1

4 3 2 1 0 positions Base = 2

$$= (1 \cdot 2^4 + 0 + 1 \cdot 2^2 + 0 + 1 \cdot 2^0)$$

$$= (2 \cdot 2 \cdot 2 \cdot 2 + 2 \cdot 2 + 1) \quad (2^0 = 1)$$

$$= (16 + 4 + 1)$$

$$= (21)_{10}$$

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

C. Add the given numbers.

a. $10101 + 00111$

1 0 1 0 1

+ 0 0 1 1 1

1 1 1 0 0 Answer

b. $1000101101 + 1001101$

1 0 0 0 1 0 1 1 0 1

+ 1 0 0 1 1 0 1

1 0 0 1 1 1 1 0 1 0 Answer

c. 1101 + 1001

$$\begin{array}{r} 1\ 1\ 0\ 1 \\ +\ 1\ 0\ 0\ 1 \\ \hline 1\ 0\ 1\ 1\ 0 \end{array} \text{ Answer}$$

D. Find the difference between the following Binary numbers.

a. 10011- 01010

$$\begin{array}{r} 1\ 0\ 0\ 1\ 1 \\ -\ 0\ 1\ 0\ 1\ 0 \\ \hline 0\ 1\ 0\ 0\ 1 \end{array} \text{ Answer}$$

b. 11001001 - 01100110

$$\begin{array}{r} 1\ 1\ 0\ 0\ 1\ 0\ 0\ 1 \\ -\ 0\ 1\ 1\ 0\ 0\ 1\ 1\ 0 \\ \hline 1\ 1\ 0\ 0\ 0\ 1\ 1 \end{array} \text{ Answer}$$

c. 111-001

$$\begin{array}{r} 1\ 1\ 1 \\ -\ 0\ 0\ 1 \\ \hline 1\ 1\ 0 \end{array} \text{ Answer}$$

E. Multiply the following Binary numbers :-

a. 101 * 011

$$\begin{array}{r} 1\ 0\ 1 \\ * \ 0\ 1\ 1 \\ \hline 1\ 0\ 1 \\ 0\ 0\ 0 \\ \hline 0\ 1\ 1\ 1 \end{array} \text{ Answer}$$

b. 1011 * 101

$$\begin{array}{r} 1\ 0\ 1\ 1 \\ \quad \ 1\ 0\ 1 \\ \hline 1\ 0\ 1\ 1 \\ 0\ 0\ 0\ 0 \\ \hline 1\ 0\ 1\ 1\ 1 \end{array} \text{ Answer}$$

c. $101010 * 1011$

$$\begin{array}{r}
 101010 \\
 * \quad 1011 \\
 \hline
 101010 \\
 001010 \\
 000000 \\
 101010 \\
 \hline
 11100110
 \end{array}$$

Answer $(111001110)_2$

F. Perform the division operation :-

a. $1111 \div 11$

$$\begin{array}{r}
 11 \overline{) 1111} \quad 101 \\
 \underline{-11} \\
 11 \\
 \underline{-11} \\
 0
 \end{array}$$

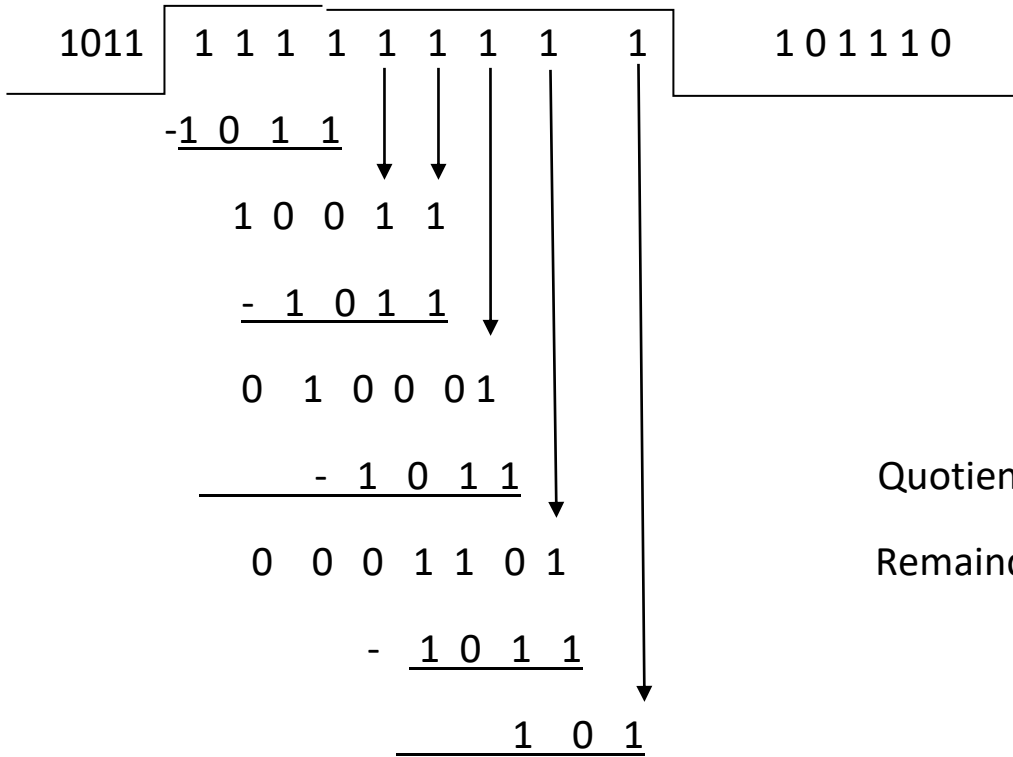
Quotient – 101
Remainder – 0

b. $111001 \div 101$

$$\begin{array}{r}
 101 \overline{) 111001} \quad 1011 \\
 \underline{-101} \\
 1000 \\
 \underline{-101} \\
 0111 \\
 \underline{-101} \\
 10
 \end{array}$$

Quotient - 1011
Remainder- 10

c. $111111111 \div 1011$



Quotient – $(101110)_2$

Remainder – $(101)_2$