Tender Heart High School

06.05.2024

Class: VII Computers

Topic: Number System, Ch: 2 **prabhdeep kaur**

Good Morning Students.
Students, this lesson is of Class VII for the Subject of Computers. Sub-topic is Conversion of Binary to Decimal Number which is Covered in chapter: 2 of your text book.

Students in previous assignment, we discussed the Conversion of Decimal number to Binary number. I hope the steps of conversion are clear to you.
Students today we will learn the Conversion method of Binary to Decimal number. To Convert a binary number into its equivalent decimal number, follow the given steps

1. Take a Binary number.
2. Start from the extreme right digit and multiply each binary number with its positional value, which is in terms of Power of 2.
3. Increase the power one by one, keeping the base fixed as 2.
4. Calculate the Sum of all the products to get the decimal number.

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Let us take an example
Binary number (1011)

$1 \times 2^0 = 1$
$1 \times 2^1 = 2$
$0 \times 2^2 = 0$
$1 \times 2^3 = 8$
11

Note: Students $2^0 = 1$
$2^1 = 2$
$2^2 = 4$
$2^3 = 8$

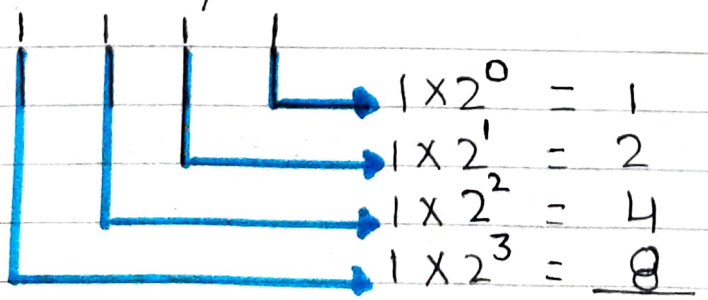
So, $(1011)_2 = (11)_{10}$

Let us take another example
Binary number (11100)

$0 \times 2^0 = 0$
$0 \times 2^1 = 0$
$1 \times 2^2 = 4$
$1 \times 2^3 = 8$
$1 \times 2^4 = 16$
28

So, Students Binary number 11100 is equivalent to Decimal number 28.

Let us take one another example
Binary number 1111



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So, Students Binary number $(1111)_2$ is equivalent to Decimal number $(15)_{10}$
Students now try to do these questions for practise

1. $(1010)_2 = (\quad)_{10}$
2. $(1001)_2 = (\quad)_{10}$
3. $(110001001) = (\quad)_{10}$
4. $(10101)_2 = (\quad)_{10}$
5. $(100100)_2 = (\quad)_{10}$

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Good Morning Students,

Students, this lesson is of Class VII for the Subject of Computers. Sub-topic is Octal Number System and HexaDecimal Number System, which is Covered in Chapter: 2 of your text book

Octal Number System is one of the types of number representation technique, in which there value of base is 8. That means there are only 8 digits, from 0 to 7. In early days octal number System was mostly used in minicomputers. The Concept of octal number system came from Native Americans as they used to count numbers by using the space between their fingers rather than using their fingers. The procedure of octal to Decimal conversion is Similar to 'Binary to Decimal' conversion. The only difference is the change of base.

OCTAL TO DECIMAL

$(345)_8$

5×8^0 5

4×8^1 32

3×8^2 192

$(229)_{10}$

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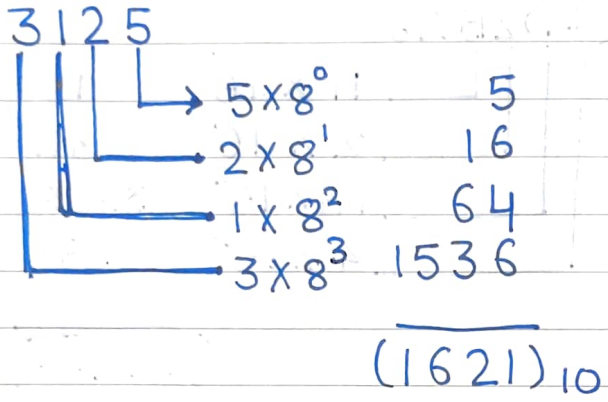
Example 2:

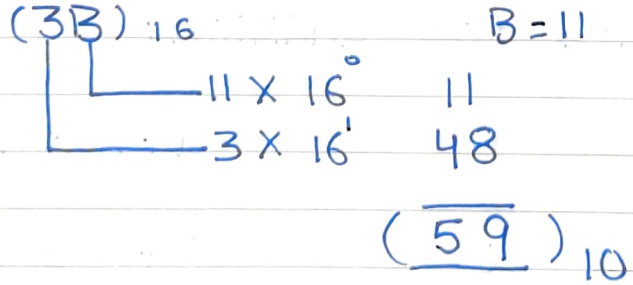


HEXADECIMAL NUMBER SYSTEM

This number system consists of 16 digits. They are the same as the decimal digits up to 9, but then there are the letters A, B, C D, E and F in place of the decimal numbers 10, 11, 12, 13, 14 and 15. The base of this number system is 16. This number system is also known as 'Hex'.

Hexa to Decimal

Example 1:



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Example :2

$(4D2B)_{16}$

11×16^0 11
2×16^1 32
13×16^2 3328
4×16^3 16384

$(19755)_{10}$

COMPUTER ARITHMETIC

Computer understands only the binary code so the data input to the computer by the user is converted into binary code for processing. The processing may involve various kinds of arithmetic operations, such as addition, subtraction, multiplication, division etc. on the binary numbers.

Addition of two binary digits follow these rules for addition:

a	b	a+b=c
0	0	0+0=0
0	1	0+1=1
1	0	1+0=1
1	1	1+1=10

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Addition Example 1

```
  10101
+  1010
-------
  11111
```

Example 2

```
  10111
   1101
-------
 100100
```

1. While adding 1+1, the output will be 10, where 0 is written under the same column and carry over 1.
2. During adding 1+1+1, the output will be 11, where 1 is written under the same column and carry over 1.

Children, I am ending my lesson here. you are directed to read assignment carefully and also try to Solve questions

(1) 11011 + 101

(2) 10111 + 1011

(3) 11111 + 1111

(4) $(5D6)_{16} \rightarrow (\quad)_{10}$

(5) $(575)_{8} \rightarrow (\quad)_{10}$