David Nguyen

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CSIS 45 Assignment 2

Assignment 2: Hexadecimal Number Assignment

**Hex to Dec Conversion**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| HEX | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| DEC | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Example 1: Convert **1E5DF** into Decimal

15\*16^0                           = 15

13\*16^1                     = 208

  5\*16^2                           = 1,280

14\*16^3                                   = 57,344

  1\*16^4                           = 65,536

                                     ∑ = **124,383** Decimal = 1E5DF Hexadecimal

Example 2: Convert **ABCD** into Decimal

13\*16^0                           = 13

12\*16^1                     = 192

11\*16^2                           = 2,816

10\*16^3                                  = 40,960

                                     ∑ = **43,981** Decimal = ABCD Hexadecimal

Convert the following hexadecimal numbers to decimal (show work):

1. A7

7\*16^0 = 7

10\*16^1 = 160

A7 = 7 + 160 = 167

A7 = 167

2.   2EF

15\*16^0                           = 15

14\*16^1                   = 224

  2\*16^2                           = 512

2EF = 15 + 224 + 512 = 751

2EF = 751

3.   5CD

13\*16^0                           = 13

12\*16^1                   = 192

  5\*16^2                           = 1280

5CD = 13 + 192 + 1280 = 1488

5CD = 1485

4.   1B9A

10\*16^0                           = 10

9\*16^1                   = 144

11\*16^2                           = 2816

1\*16^3                                  = 4096

1B9A = 10 +144 +2816 + 4096 = 7066

1B9A = 7066

**Dec to Hex Conversion**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| HEX | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| DEC | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Example 1: Convert Decimal **300** into Hexadecimal

300 / 16 = 18   ( 18 \* 16 = 288;    300 – 288 = 12; 12 Decimal is Hexadecimal **C**)

18 / 16 = 1      ( 1 \* 16 = 16;       18 – 16 = 2; 2 Decimal is Hexadecimal **2**)

1 / 16 = 0       ( 0\* 16 = 0;         1 – 0 = 1; 1 Decimal is Hexadecimal **1**)

So, 300 Decimal = **12C** Hexadecimal

Example 2: Convert Decimal **1000** into Hexadecimal

1000 / 16 = 62    (62 \* 16 = 992; 1000 – 992 =8;     8Decimal is Hexadecimal **8**)

62 / 16 = 3       (3 \* 16 = 48;      62 – 48 = 14; 14 Decimal is Hexadecimal **E**)

3/16 = 0          (0\*16 = 0;         3 – 0 = 3**;**         3 Decimal is Hexadecimal **3**)

So, 1000 Decimal = **3E8** Hexadecimal

Convert the following decimal numbers to hexadecimal (show work):

5.   75

75/16 = 4.6875 🡪 4 🡪 75 – 4(16) = 11 🡪 11 decimal is hexadecimal B

4 /16 = 0.25 🡪 2 🡪 4 – 0(16) = 4 🡪 4 decimal is hexadecimal 4

Decimal 75 is Hexadecimal 4B

6.   188

188/16 = 11.75 🡪 11 🡪 188 – 11(16) = 12 🡪 12 decimal is hexadecimal C

11/16 = 0.6875 🡪 0 🡪 11 – 0(16) = 11 🡪 11 decimal is hexadecimal B

Decimal 188 is Hexadecimal BC

7.   960

960/16 = 60 🡪 960 – 60(16) = 0 🡪 0 decimal is 0 hexadecimal

60/16 = 3.75 🡪 3 🡪 60 – 3(16) = 12 🡪 12 decimal is hexadecimal C

3/16 = 0.1875 🡪 0 🡪 3 – 0(16) = 3 🡪 3 decimal is hexadecimal 3

Decimal 960 is Hexadecimal 3C0

8.   42951

42951/16 = 2684.4375 🡪 2684 🡪 42951 – 2684(16) = 7 🡪 7 decimal is hex 7

2684/16 = 167.75 🡪 167 🡪 2684 – 167(16) = 12 🡪 12 decimal is hex C

167/16 = 10.4375 🡪 10 🡪 167 – 10(16) = 7 🡪 7 decimal is hex 7

10/16 = 0.625 🡪 0 🡪 10 – 0(16) = 10 🡪 10 decimal is hex A

Decimal 42951 is Hexadecimal A7C7

Convert the following hexadecimal numbers to binary (use Windows calculator):

9.       B8

Hexadecimal B8 🡪 Binary 1011 1000

10.   9E1

Hexadecimal 9E1 🡪 Binary 1001 1110 0001

11.   ABCD

Hexadecimal ABCD 🡪 Binary 1010 1011 1100 1101

12.   57F4

Hexadecimal 57F4 🡪 Binary 0101 0111 1111 0100

Convert the following binary numbers to hexadecimal (use Windows calculator):

13.   1011 1100 1101 0010

Hexadecimal: 8CD2

14.   0100 1110 0111 1001

Hexadecimal: 4E79

15.   1000 0011 1111 0101

Hexadecimal: 83F5

16.   1010 0000 1001 0001

Hexadecimal: A091