

// Justin Choi (jc8mc) 16/02/2017 radixWorksheet.pdf

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Lab section 5:00-6:15PM

Lab 4 - Radix Conversion Worksheet

Convert:

1. $0x4F45$ into octal

$$4 * 16^3 + F * 16^2 + 4 * 16^1 + 5 * 16^0 = 16384 + 3840 + 64 + 5 \\ = 16384 + 3840 + 64 + 5 = 20293 \text{ (base 10)}$$

$$20293 / 8 = 2536 \text{ r } 5$$

$$2536 / 8 = 317 \text{ r } 0$$

$$317 / 8 = 39 \text{ r } 5$$

$$39 / 8 = 4 \text{ r } 7$$

$$4 / 8 = 0 \text{ r } 4$$

$$\therefore 0x4F45 = 20293_{10} = \mathbf{47505_8}$$

2. 269_{10} into radix 7

$$269 / 7 = 38 \text{ r } 3$$

$$38 / 7 = 5 \text{ r } 3$$

$$5 / 7 = 0 \text{ r } 5$$

$$\therefore 269_{10} = \mathbf{533_7}$$

3. 110011011110_2 into decimal

$$1100 \ 1101 \ 1110 = 0xCDE$$

$$0xCDE = 12 * 16^2 + 13 * 16^1 + 14 * 16^0 = 3072 + 208 + 14 = 3294_{10}$$

$$\therefore 110011011110_2 = \mathbf{3294_{10}}$$

4. $2BD_{19}$ into decimal

$$2BD_{19} = 2 * 19^2 + 11 * 19^1 + 13 * 19^0 = 722 + 209 + 13 = 944_{10}$$

$$\therefore 2BD_{19} = \mathbf{944_{10}}$$

5. Given the following positive binary integer in two's complement:
0101001101011101

- a) Convert the number to hexadecimal:

$$\therefore 0101\ 0011\ 0101\ 1101 = \mathbf{0x535D}$$

- b) Negate the number.

Flip the bits: 1010 1100 1010 0010

Add 1: 1010 1100 1010 0011

$$\therefore \mathbf{1010\ 1100\ 1010\ 0011}$$