Lab 07

Due Date: Week of October, 19, 2016 at the end of the lab period.

Purpose: Demonstrate successful conversion between number based systems.

Procedure:

Covert the following numbers to the desired number base. While you may use a calculator to check your answers, you must show all your work ,(for each individual question)

*This is a pencil and paper exercise, you must show your work. Write neatly, this will prevent you from making mistakes. Clearly indicate your answers to the questions, if I cannot read your work or find your answers easily you will not receive a mark for that question.*

*Keep track of how much time you spent on this lab and include it with your results*

*At the end of the lab period, hand this lab to your lab instructor.*

*If you do not understand, ask your lab instructor for help.*

Part 1

Decimal to Binary

Covert the following decimal numbers to their binary equivalents (**Division method**)

Example: 2710 = 11011

\* Divide by 2

\*Read the remainder from bottom up

Quotient Remainder

27/2=13 1

13/2=6 1

6/2=3 0

3/2=1 1

1

1. 3310 =

2. 5410 =

3. 7810 =

4.16810=

Decimal to Binary 8 bit

Covert the following decimal numbers to their **8 bit** binary equivalents (**Division method**)

1. 3610=

2.6710=

3.9410=

4. 14610=

Part 2

Binary to Decimal

Convert the following **4-bit** numbers from binary to decimal. (**Addition method)**

Example: 01012

=23 + 22 + 21 + 20

=8 + 4 + 2 + 1

= (8\*0) + (4\*1) + (2\*0) + (1\*1)

= 0 + 4 + 0 + 1

= 5

1. 01112 =

2. 00112 =

3. 10012 =

4. 11112 =

Binary to Decimal 8 bit

Convert the following **8-bit** numbers from binary to decimal.

1.0 11110112=

2. 000110012=

3. 100001012=

Part 3

Decimal to Octal

Convert the following decimal numbers to Octal (**Division method)**

Example: 18910 = 2758

Quotient Remainder

189/8=23 5

23/8=2 7

2/8=0 2

\*read from the bottom up

1. 7810 =

2. 37610 =

3. 146310 =

4.567910=

5.810=

Octal to Decimal

Convert the following **octal** numbers to decimal numbers (**Addition method)**

Example: 718 =

= 81 + 80

=8 + 1

= (8\*7) + (1\*1)

= 56 + 1

= 5710

1. 508 =

2. 218 =

3. 3078 =

4. 10128 =

Octal to Binary

Convert the following octal numbers to binary

Example: 42068 = 100 010 000 1102

Take each number and convert it to a 3 bit binary number

4=100, 2=010, 0=000, 6=110

Join the numbers together to get the answer

100 010 000 1102

1. 4168 =

2. 718 =

3. 438 =

4. 258 =

Binary to Octal

Convert the following binary numbers to octal

Example: 1101111000012=67418

Divide the binary number into groups of 3

110 =6 111=7 100=4 001=1 Substitute an octal number for each 3 bit group

1. 0000 1110 10012 =

2. 0001 0000 11112 =

3. 0000 1111 00102 =

4. 1111010112=

Part 5

Decimal to Hexadecimal

Convert decimal to hexadecimal (Division method)

Example: 132410=52C16 (A=10 B=11 C=12 D=13 E=14 F=15)

Quotient Remainder

1324/16=82 12

82/16=5 2

5/16=0 5

\*read from the bottom up

1. 677210 =

2. 4167310 =

3. 4125110 =

4. 2310 =

5. 910 =

Hexadecimal to Decimal

Convert the following hexadecimal numbers to decimal numbers (**addition method)**

Example: 7216=11410

(7\*161) + (2\*160) = 112+2 =11410

1. 7016 =

2. 2516 =

3. 14016 =

4. 5816 =

Hexadecimal to Binary

Convert the following Hexadecimal to Binary

Example:

C4516= 1100 0100 01012

Take each number and convert it to a 4 bit binary number

C16= 11002 416=01002 516= 01012

Join the numbers together to get the answer

1100010001012

1. C4516=

2. 4716=

3. 23B516=

4. FF6716=

5.A3DCF16=

Binary to Hexadecimal

Convert the following binary numbers to hexadecimal

Example: 1101100110112=D9B16

\*Break each number into groups of 4 and convert that number into hexadecimal

1101=D 1001=9 1011=BJoin the numbers and letters together to get the answer

1. 1 0100 0112=

2. 1011 10012 =

3. 1110 11112 =

4. 0100 01012=

5. 0000 1101 0010 10102 =

6. 0101 1010 1000 10102 =