Tutorial

CPSC 217

Number conversion (Do it with Pen and Papers)

- Convert the following base 10 number to binary / base 2:
  - $(440)_{10}$ [solution is $(110111000)_2$]
- Convert the following base 10 number to base 8:
  - $(4543)_{10}$ [solution is $(10677)_8$]
- Convert the following base 10 number to base 16:
  - $(4543)_{10}$ [solution is $(11BF)_{16}$]

Number conversion 1

Decimal to Base 2 (divisor = 2)	
Quotient	Remainder
440	
220	0
110	0
55	0
27	1
13	1
6	1
3	0
1	1
0	1

solution is 110111000

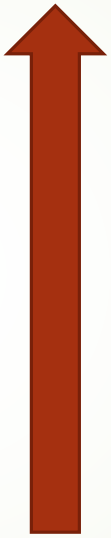
Number conversion 2

Decimal to Base 8 (divisor = 8)	
Quotient	Remainder
4543	
567	7
70	7
8	6
1	0
0	1

solution is 10677

Number conversion 3

Decimal to Base 16 (divisor = 16)	
Quotient	Remainder
4543	
283	15 → F
17	11 → B
1	1
0	1



solution is 11BF

Number conversion (Do it with Pen and Papers)

- Convert the following base 2 number to base 10 or decimal:(
  - $(10111)_2$ [solution is $(23)_{10}$]
- Convert the following base 5 number to base 10 or decimal:
  - $(23104)_5$ [solution is $(1654)_{10}$]
- Convert the following base 16 number to base 10 or decimal:
  - $(4ED)_{16}$ [solution is $(1261)_{10}$]

Number conversion 1

Base 2 to Decimal (Base = 2)		**^ is the power sign**	**Column A**
Digit position	Digits	Base^position	
0 (LSB)	1	2^0 = 1	1 x 1 = 1
1	1	2^1 = 2	1 x 2 = 2
2	1	2^2 = 4	1 x 4 = 4
3	0	2^3 = 8	0 x 8 = 0
4 (MSB)	1	2^4 = 16	1 x 16 = 16
Summation of Column A = solution =			23

Number conversion 2

Base 5 to Decimal (Base = 5)		^ is the power sign	Column A
Digit position	Digits	Base^position	
0 (LSB)	4	5^0 = 1	4 x 1 = 4
1	0	5^1 = 5	0 x 5 = 0
2	1	5^2 = 25	1 x 25 = 25
3	3	5^3 = 125	3 x 125 = 375
4 (MSB)	2	5^4 = 625	2 x 625 = 1250
Summation of Column A = solution =			1654

Number conversion 3

Base 16 to Decimal (Base = 16)		**^ is the power sign**	**Column A**
Digit position	Digits	Base^position	
0 (LSB)	D → 13	16^0 = 1	13 x 1 = 13
1	E → 14	16^1 = 16	14 x 16 = 224
2 (MSB)	4	16^2 = 256	4 x 256 = 1024
Summation of Column A = solution =			1261