CSC 1019 Introduction to Programming
Kenneth W. Riddle

ALL CALCULATIONS MUST BE SHOWN!
The space shown every four bits is for readability only.

Show all leading zeros.

1. Binary = 1000 1101 Hexadecimal = 8D Converting first to decimals then to hexadecimal $(0x2^0)+(0x2^1)+(0x2^2)+(1x2^3)=8$ $(1x2^0)+(0x2^1)+(1x2^2)+(1x2^3)=13=D$ = 8D	2. Binary = 1010 1100 Hexadecimal = AC Converting first to decimals then to hexadecimal $(0x2^0)+(1x2^1)+(0x2^2)+(1x2^3)=10=A$ $(0x2^0)+(0x2^1)+(1x2^2)+(1x2^3)=12=C$ = AC
3. Binary = 1000 1001 Hexadecimal = 89 Converting first to decimals then to hexadecimal $(0x2^0)+(0x2^1)+(0x2^2)+(1x2^3)=8$ $(1x2^0)+(0x2^1)+(0x2^2)+(1x2^3)=9$ = 89	4. Binary = 1110 1100 Hexadecimal = EC Converting first to decimals then to hexadecimal $(0x2^0)+(1x2^1)+(1x2^2)+(1x2^3)=14=E$ $(0x2^0)+(0x2^1)+(1x2^2)+(1x2^3)=12=C$ = EC
5. Binary = 1111 1111 Hexadecimal = FF Converting first to decimals then to hexadecimal $(1x2^0)+(1x2^1)+(1x2^2)+(1x2^3)=15=F$ $(1x2^0)+(1x2^1)+(1x2^2)+(1x2^3)=15=F$ = FF	6. Binary = 1101 1000 Hexadecimal = D8 Converting first to decimals then to hexadecimal $(1x2^0)+(0x2^1)+(1x2^2)+(1x2^3)=13=D$ $(0x2^0)+(0x2^1)+(0x2^2)+(1x2^3)=8$ = D8

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7. Hexadecimal = 0xFFFF
Binary = 1111 1111 1111 1111

Converting first to decimals then to binary
$(Fx16^0)+(Fx16^1)+(Fx16^2)+(Fx16^3)$
$(15x16^0)+(15x16^1)+(15x16^2)+(15x16^3)$
$15+240+3840+61440 = 65535_{10}$

2	65535	Remainder
2	32767	1
2	16383	1
2	8191	1
2	4095	1
2	2047	1
2	1023	1
2	511	1
2	255	1
2	127	1
2	63	1
2	31	1
2	15	1
2	7	1
2	3	1
2	1	1
	0	1

8. Hexadecimal = 0x0A1D
Binary = 1101 0001 1010 0000

Converting first to decimals then to binary
$(0x16^0)+(Ax16^1)+(1x16^2)+(Dx16^3)$
$(0x16^0)+(10x16^1)+(1x16^2)+(13x16^3)$
$0+160+256+53248 = 53664_{10}$

2	53664	Remainder
2	26832	0
2	13416	0
2	6708	0
2	3354	0
2	1677	0
2	838	1
2	419	0
2	209	1
2	104	1
2	52	0
2	26	0
2	13	0
2	6	1
2	3	0
2	1	1
	0	1

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9. Hexadecimal = 0x13AB
Binary = 1011 1010 0011 0001
$(1x16^0)+(3x16^1)+(Ax16^2)+(Bx16^3)$
$(1x16^0)+(3x16^1)+(10x16^2)+(11x16^3)$
$1+48+2560+45056 = 47665_{10}$

2	47665	Remainder
2	23832	1
2	11916	0
2	5958	0
2	2979	0
2	1489	1
2	744	1
2	372	0
2	186	0
2	93	0
2	46	1
2	23	0
2	11	1
2	5	1
2	2	1
2	1	0
	0	1

10. Hexadecimal = 0x0309
Binary = 1001 0000 0011 0000
$(0x16^0)+(3x16^1)+(0x16^2)+(9x16^3)$
$0+48+0+36864 = 36912_{10}$

2	36912	Remainder
2	18456	0
2	9228	0
2	4614	0
2	2307	0
2	1153	1
2	576	1
2	288	0
2	144	0
2	72	0
2	36	0
2	18	0
2	9	0
2	4	1
2	2	0
2	1	0
	0	1