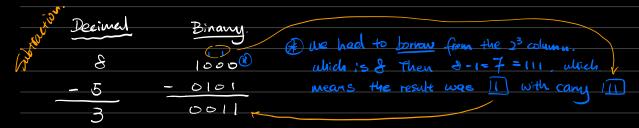
Review of 241 Representing Information. - In computer hardware circuits (logic circuits, memony) all information is represented using only two symbols of (electrical ground), I (power supply voltage) Info. are evended as combinations of \$ = \ ls. Example. Numbers: we represent numbers in bose 2 (binary), because the values of of the digits are only \$5 and 1. SD, all numbers are composed of powers of 2 $eq. (167)_{10} = (?)_{2}$ 167 = 128 + 32 + 4 + 2 + 1 = 27 + 25 +22+21+20=(10100111)2 Each binary digit is called a bit. Four bits is a nible. and 8 bits is byte It's very useful to memorize powers of 2 valves. power. 2048 (2K) 20 1024 K (/M) 21 22 1024M (1G) 1024 (1K) Hexadecimal. (Base 16) we use hex as a short hand for writing a binary value Each. hex digits. is a nible (4 bits)

2 0010 A (010 2 0011 B 011 4 0 100 C 100 5 0101 F 110 F 111 Bg. (1023) 10 = (?) 16. = (024 - 1 = 10000000000-1 = (011111111) 2 = (3 F F) 16 Addition. Subtraction. Decimal Binary. Here Binary. Decimal Binary. Here Binary. $3 A 2 0 0 11 10 10 0 0 10$ $4 0 10 $	9	0000	8	1000			
3 0 100 B 1011 4 0 100 C 1100 5 0 110 E 1100 7 0 111 F 1111 09. (1023) 10 = (?) 16. = $(0.24 - 1) = (0.0000000000000000000000000000000000$	1	0001	9	1001			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2		A	010			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3	001					
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		0100					
E ///0 E /// E /// Addition , Subtraction . Decimal Binary . hex Binary .		0101	T)				
$eg. (1023)_{10} = (?)_{16}.$ $= (024 - 1) = (0000000000 - 1)$ $= (0111111111)_{2} = (3 FF)_{16}$ $3 FF$ $3 \times (6^{2} + 15 \times 16^{6} + 15 \times 16^{6} = 768 + 240 + 18 = 1023$ Addition. Subtraction. Decimal Binary. her Binary.		2110					
8g. $(1023)_{10} = (?)_{16}$ $= (024 - 1) = (0000000000 - 1)$ $= (0111111111)_{2} = (3 + 7)_{16}$ $3 + 7$ $3 \times (6^{2} + 15 \times 16^{4} + 15 \times 16^{6} = 768 + 240 + 16 = 1023$ Addition. Subtraction. Decimal Binary. Hex Binary.							
$= \frac{1024 - 1}{3} = 1000000000000000000000000000000000000$	T		T / //	/			
$= \frac{1024 - 1}{3} = 1000000000000000000000000000000000000$							
$= \frac{1024 - 1}{3} = 1000000000000000000000000000000000000$	eg. (1023),6 = (?),6.						
$= (3 FF)_{L}$ $3 FF$ $3 \times (6^{2} + 15 \times 16^{1} + 15 \times 16^{2} = 768 + 240 + 11 = 1023$ Addition, Subtraction. Beginal Binary. Hex Binary.							
Addition. Subtraction. Definal Binary. Hex Binary.							
Addition. Subtraction. Definal Binary. Hex Binary.			=(011111	11111), =(3	FF)L		
Addition. Subtraction. Definal Binary. Hex Binary.							
$3 \times 16^{2} + 15 \times 16^{4} + 15 \times 16^{6} = 768 + 240 + 15 \times 16^{2} = 7$							
Addition, Subtraction. Decimal Binary. Hex Binary.	3× 162 + 15×16 + 15×16 = 768 + 240+18 =(023						
Decimal Binary. Hex Binary.		<u> </u>					
Decimal Binary. Hex Binary.	Addition S.	Limeting					
	[]000.1000, 24						
	Decime	al Binavy	hex	Binam.			
8 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5			342		0010		
+ (+ 0110 + 1.68 + 000101101000	5		+ 1,68				



-This is ankward, so instead we perform subtration in computer hardware by

e.g.
$$\frac{3}{3}$$
 $\frac{8}{3}$ $\frac{1000}{1000}$ ignore the