CS 2318
01/24/06

Convert ED80 from Hex fpx to Dec

1110 1101 1000 0000

$(-1)^S \times (1.M) \times 2^{E - bias}$ BIAS

↑ Significand

1	5	10
S	E	M

1 | 11011 | 0110000000

S E Significand = M

$-(1.011) \times 2^{12}$

$1\frac{3}{2^3}$ $-1\frac{3}{8} \times 2^{12}$

7440 0|11101|0001000000

000xxx.yyy000

2

3

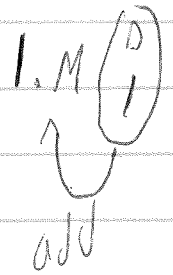
1.745×10^{-3}

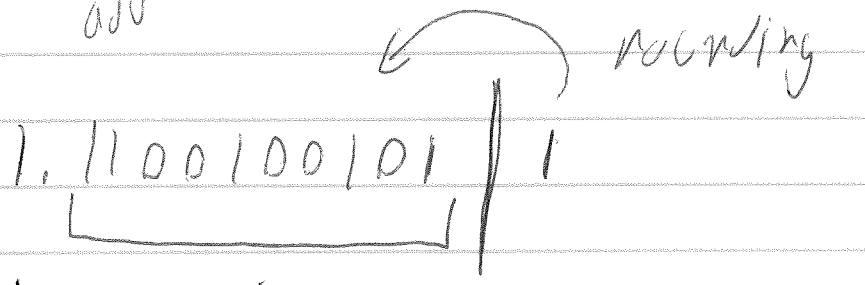
	~~0~~ 0		
0.001745	0		
0.00349	0		1.1100100101 ~~1~~
0.00698	0		
0.01396	0		
0.02792	0		1.1100100101 ~~1~~
0.05584	0		
0.11168	0		
0.22336	0		2^{-10}
0.44672	0		
0.8934	1 ←		Gost
0.78688	1		1
0.57376	1		2
0.14752	0		3
0.29504	0		4
0.59008	1		5
0.18016	0		6
0.36032	0		7
0.72064	1		8
0.44128	0		9
0.88256	1		10
0.76512	1		11
0.53024	1		~~12~~
0.06048	0 0 0 0 ... 0		

odd

3 collect [illegible] bits in mantissa

need M+2 from LO. Leading one

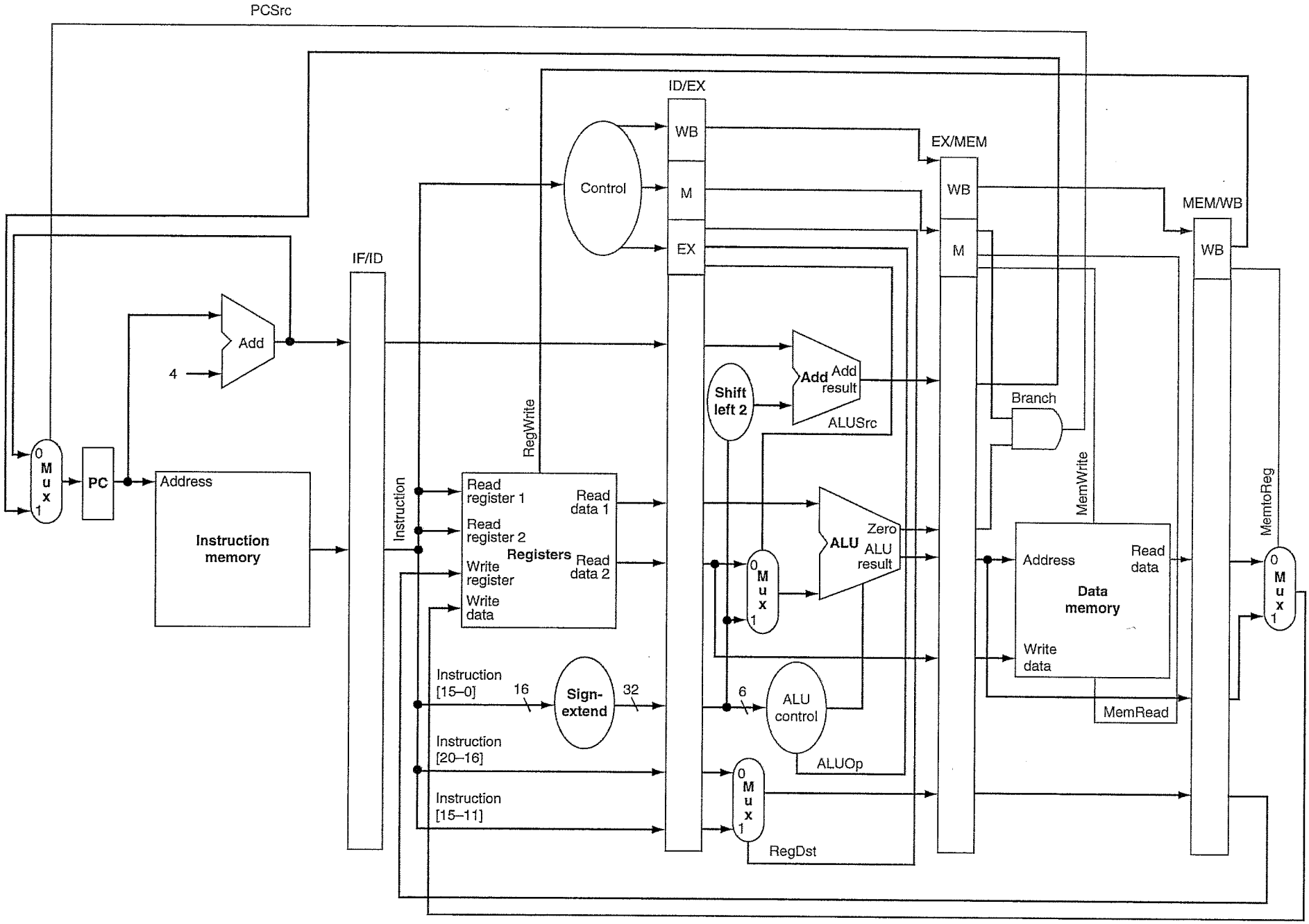




1 is

1.1100100111

0 | 00101 | 1100100100


PCSrc
ID/EX
EX/MEM
MEM/WB
WB
M
EX
Control
IF/ID
Add
4
0
M
u
x
1
PC
Address
Instruction memory
Instruction
RegWrite
Read register 1
Read register 2
Registers
Write register
Write data
Read data 1
Read data 2
Shift left 2
Add
Add result
ALUSrc
Branch
MemWrite
MemtoReg
ALU
Zero
ALU result
Address
Read data
Data memory
Write data
MemRead
Instruction [15–0]
16
Sign-extend
32
6
ALU control
ALUOp
Instruction [20–16]
Instruction [15–11]
RegDst

4

4.5

4	0
2	0
1	1

0.5	1
0	—

100.1

1.001 2^2

-0.111×2^4 to 8px

-1.110×2^3

S	E	M
1	10010	1100000000

5 ~~7500~~ 7500 A

A70A B

0|11101|0100000000000 7500

$+1.01 \times 2^{14}$

1|01010|1100001010 $-1.1100001010 \times 2^{-6}$

$S_c = 1$

$E_c = 10111$ 2^8 $(14 + (-6))$

```
   1.1100001010
   1.01
 --------------
   1110000101 0
   000000000000
  1110000101 0
 --------------
 10.00110011000
```

1.|00011001101010

1. M

New $E_c = 9 + 15$

6

  7B80 A
+ 7300 B

C

0 | 11110 | 11 | 0000 0000   + (1.) M_A 2^{15}
0 | 11100 | 11 | 0000000000   + (1.) M_B 2^{13}

~~1.M_A 1.1110 ... 0~~ $\times 2^{15}$

~~1.M_B (1.0~~ 2^{13}

~~0.0~~1

1.111

00.1.11   0.0111 Aligned

  1111 0 | 0 ...
  0.0111 | 0 ...

10.01 01 0 0000 $2^{15} \to 2^{16}$

1.001010 ... 0   16 + 15 = 31

=> 011111 | 0010100 ...