SUHAS JAIN 19CS 30048

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01)	Other the carry out is I and is discard
	the unsigned value of the sum becomes
	the unsigned value of the sum becomes loss than both the original numbers.
	Let original a rumbers be a and b.
Wiles and the same of the same	Let original a rumbers be a and b. $9.6 < 2^{32}$
i .	
22	$S = a + b - 2^{32}$
*	S=a+b-232 discording corry.
-	discording coory.
	$a+b-2^{32} < a+b-b$
	S < q
	Similarly
	s < b
-	
	MIRS COOE:
	addu \$t2, \$t, \$t2
	sltu \$t3, \$t2, \$t,
	* * * * * * * * * * * * * * * * * * *
	If Its stores I then there is ourflow othericus there is no overflow.
	othericuso there is no our floor.
	<i>O</i>
9	
i.	
Sec.	

02)	=) 34A+B = 32A + 2A + B
02)	-) 39 H+15 - 52 H + 2 H + 15
sodis,	Oelt chilt
	lest shift lest shift A I time
	A I time
HIP TO THE TOTAL OF THE TOTAL O	=) To do 2
	7
-	$Z = S + \frac{S + \cdot}{8}$
24	$Z = S + \frac{-8}{8}$
	division by 8 => sicht
81	z = s + z diwing by $8 = sightz = s + z$ by $shift 3 him$
	$Z = S + Z \qquad L \qquad \text{shift 3him}$
	S = 7.7
	2 = 5
	7
	34A = 01100000 + 000.00110
	= 01100110
8 5	
	34A+B = 01100110 + 0011001
	2 0 11 11 11 16
=6	=> After doing 3 right shifts atmost 3 time all the 1's will be exhausted.
	Co. 5+ 8
	$z = s + \frac{1}{8} = 2 = \frac{1}{2}$
	8
-	

	=> Doing Suis de rofor OHS 11111 Set of
	S= 0104111 AS + ASE = 2
	S = 0000 (111) (3 right chilt)
	$\frac{S}{S} = 00001111 \left(\frac{1}{3} \text{ sight shift} \right)$ $\frac{S}{S} = 00001111 \left(\frac{1}{3} \text{ sight shift} \right)$
	C+S = 0000 1 M00 1110
	8 modrigo 8 =
-	
	$S + \frac{S + \frac{S}{8}}{8} = 201111111 + 0001000)$
	8 (3 right sh
The state of the s	
	= 10010000
-	2 * 100 = 1 2 x 2 / 500 s
	$S + S + \frac{S}{8}$
1	
territoria de la compania	
	8.
	· · · · · · · · · · · · · · · · · · ·
	-7 34A + B = 127
-	7 3917 11 - 121
	1 127 128
	127 = 18
Carrier Company	
-	00010010 = 18
o 	Hona Confirmed.
2	

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	Total no. 1 g operations.
ye)	
	(i) S= 32A + 2A 114B10 =2
	(4) this share s) 1010000 = 2
	5 shifts + 1 shift + 2 additions.
0.1	1000 2220 245
	= 8 operations.
-	I way
, (01	(11) 01000 + 1111110 s + 28 3 +2 +2
Here my	s C) 2 = s + - 8
	(C) 2 = 5 T 8 8 (C) 000 00
11:1	
200	= 3x3 + 2 additions
	(1 = 2 + 2 + 2
ERA)	3 night Shift = 8
\	
162 To 1	= 11 operation
,	
	240 + 8 = 120
	Tital = 19 danahida
	(2)
allers and a single state of the same	
	8/2 01001000
-3	prostudy out

03)	(9) M= 10/0/01/11/00/11/01/11/01/10
/	N= 0(01010000 (10) 11011001 0111 0111 0111
	For M = 01 pairs = 8
	10 pairs = 9
in -	For N = 01 pairs = 9
,	10 pairs = 9
	We will choose M as our multiplicand.
2.00	Mo, of additions = 8 (01 paiss)
	No. of subtractions = 9 (10 pairs)
	Bit have touts = 32 (on every step)
	Bit paro tents = 32 (on every step) Shift operations = 32 (on every step)
	(b) $CCT = max of all delays.$ $= 0 - 25ns.$
	= 0-25ns.
	Total operations = 32+32+9+8 = 8/
	Total time = 81 X 0-25 ns.
	= 20.25 ns.
	(ii) Now (CT = 0.05ns (GCD of all)
3	Total Time = 0.05(17×5+32+32×2)
	$0.25 = 0.05 \times 5$ $0.10 = 0.05 \times 2$.
	= (1.5ns

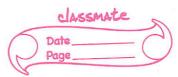
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04)	A = 0 1111110 11110000000000000000000000
	B= 0 111140011 1100 0000 0000 0000 0001 001
9	
	Biased FP exhorant of A = 254 - 127 = 127
	Biased FOP enponent of B = 251 - 127 = 129.
	a) lle shift right the number of mith.
-	smallest en povent
- 1	So, B will shift oright 3 lines.
	Guard bit of B = 0
	Round bit of B = 0
0.20	Sticky bit of B = 1
	b) After shifting is herformed.
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Martissa of A = 11110000 0000 0000 0000 001
	Markissa of B = 0011 (000 0000 0000 0000
	00)
	A+B = 11 .0010) 000 000 000 000 000 010 x 2 127
	Mark
	Renormalising un get.
	Renormalising un get. Saponent = 128 + 127 = 255.
	A+B= 0 [[11 111] 100101000000 0000 0000 001
57	

	4)			æ.	
5	Exponent =			*	
	Martiss =	> \$ t1 > \$ d2			
	■ TX	biāsed			
	· 1/2 =	St, -12) olse mul	Stz n	ust be	hosih
9	(20)	alse mul	201 (anno)	t be	,
	represented	<i>J</i> ,			-4000
	· For (1.	m) X 2 2 2xxx sight shift and only	lor	this	ij.
ė.	un z	sight shift	ent 1:	nes, the	<i>0 ∽</i>
	en sho	ald only	have 0	s often	fly
	docimal.			•	
	c C	0.11	/ 14	\$+-	•
	9+ 14	u pai left fines	il pour	stz	70
	neutres	ou O	if ron	hur ca	· ·
	reposent	represent	ofter un'e	not.	9"
	•				7
	9-> becau	re of b	adding.	BIMBONE WIND COMMUNICATION	
			550		
		2*	3.		
	-	•		-	
-1				190 - 20 - 20 - 20 - 20 - 20 - 20 - 20 -	
				26	*
51					

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06)	a) (0.00(10 111)2
	Noomalized form = 1.10111 x 2-3
	Biased supprent = $-3 + 7 = 4 = 0100$
	Positive so sign bit = 0
	1.10111-
	5 Even rounding to 3 bits of then
	docimal
	= 1.110
	Manhissa = 110 S E M
	SEM
5 2	=) [0/0100 /110/ Am.
	8-bit representation
	•
	b) $(16.0)_{10}$ => $(10000.0)_2 = (1.000 \times 2.9)_2$
	$= (10000.0)_{2} = (1.000 \times 2^{19})_{2}$
7	
	Normaline form.
	Biased Suprent = 4+7=11
	= (011
	Sign bit = 0. (positive number) OS E M
	ØS € M
	0 10 11 000 Ans
	8-bit representation of (16.0) 10
	8-bit representation of (16.0) 10

07)	a) Maninum difference 13
	$= 2^{-23} \times \Gamma \text{ Max exponent}$ $= 2^{-23} \times 2^{12}$ $= 2^{(04)}$
	$=2^{-23} \times 2^{(2)}$
	$= 2^{09}$
-	b) B & man underflow no.
	B = 100000000000000000000000000000000000
	8 zeros 23 ones.
p (8)	=> On multiplication two normalized
	significands (>1) me always get
3	=> On multiplication two normalized significands (>1) we always get significand >1 so only right.
<u> </u>	Shift
	⇒ But in addition we may get significand ≤ 1 so there can be left whift also.
And the second s	significant & so there can be
2	left shift also.
le le	
(<u>1</u>	

8)	a) Total delay for 32- rows = 32 ns. Pelay for 1 8 bit RCA = 8 ns.
	Total delay = 32+8 = 40 ns.

0 a)	a) . a obline o mai = 3 1 A
	and book (nik+1 schi)k+1 ark ber and brit and a
	< nom PPA < [2nd PPA] < [1st PPA]
	adder adder adder
	J J J J
e d	Snr Snr Sn-10k+1 Sr Sn Sn
-	

Since they are connected in series in a RCA fashion, there will add up over a writs.

b)
$$A = 57 = 5 \times 10^{1} + 7$$
 $B = 58 = 5 \times 10^{1} + 8$
Using Karatsuba Algo.

$$AXB = 10^{1+1} \times 5 \times 5 + 10'(6+7)(5+7) - 5 \times 5 - 8 \times 7) + 7 \times 8$$

$$= 2500 + 10(12×13 - 25 - 56) + 56$$

 $\mathcal{J} = 10^{n/2} a_1 + a_0$

 $B = 10^{h/2} b_1 + b_0$

AB = 10 a, b, + 10 1/2 (a, bo + a ob.) + a obo

a, bo + aob, = (a, +ao) (h, +bo) - a, b, -aob.

T(n) = T(n/2) + T(LN/2) + T(1+[n/2])

+ O(n)

=) $T_{\bullet}(n) = O(n^{\log 3}) = O(n^{1.585})$

P. P. Locher Mars will a

oust a unife.

· 1 - 14.0 delan = 0 (a log K)

(Nag 20 = 20 1.20)

6 A = 57 = 5 x 10 + 7

= " KYB = 10 1+1 x 5 x 5 x 10 1 (6+3) (5+3) + 5 x 5

GAL = (LX8 - ...

15 t(15-56-51, x21) 01 + 0050 = ...

15 + 05 1 + 055 =

3306