26 jul Assignment.

Q.1 1) num = 88 result <<4

$2^{15}\ 2^{14}\ 2^{13}\ 2^{12}\ 2^{11}\ 2^{10}\ 2^{9}\ 2^{8}\ 2^{7}\ 2^{6}\ 2^{5}\ 2^{4}\ 2^{3}\ 2^{2}\ 2^{1}\ 2^{0}$

0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 0 0 0

0 0 0 0 0 1 0 1 1 0 0 0 0 0 0 0

$= 1024 + 256 + 128$

$= 1408.$

88
-84
4
-16
8
-8
0

2) num = -20 result <<3.

$2^{7}\ 2^{6}\ 2^{5}\ 2^{4}\ 2^{3}\ 2^{2}\ 2^{1}\ 2^{0}$

20 ⇒ 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0

binary.

1's ⇒ 1 1 1 1 1 1 1 1 1 1 1 0 1 0 1 1

Add 1 ⇒ + 1

1 1 1 1 1 1 1 1 1 1 1 0 1 1 0 0

1 1 1 1 1 1 1 1 0 1 1 0 0 0 0 0

Q.2 i) num = 75 result = num >> 2

128 64 32 16 8 4 2 1

75 0000 0000 0000 0000
-64 0000 0000 0100 1011
11
-8 0000 0000 0001 0010
3
2
-1
0

(18)

ii) num = -38 result >> 4

38 0000 0000 0000 0000
-32 38 => 0000 0000 0010 0110
6
-4 1's => 1111 1111 1101 1001
2
-2 +1
0 1111 1111 1101 1010
-ve

1111 1111 1111 1101

Q4 int a=25, b=-34, c=19, d=4;

1) int res = (a<<2 | b>>3)

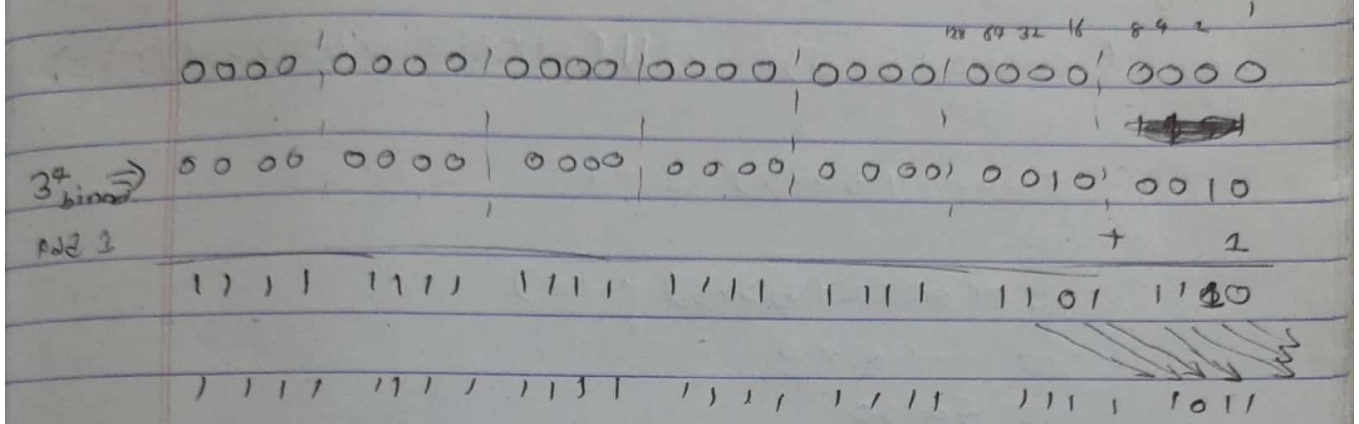
a = 25 b = -34

a = 25

256 128 64 32 16 8 4 2 1
0000 0000 0000 0000 0000 0000 0000 0000
25 0000 0000 0000 0000 0000 0000 1001
0000 0000 0000 0000 0000 0000 0110 0100

res = a<<2 = 100

b = 34 :- -34>>3



-34>>3 = -5

res = (a<<2 | b>>3)
= (100 | -5)

Bitwise OR :-

1 1	1
1 0	1
0 0	1
0 0	0

=> 100 0000 0000 0000 0000 0000 0110 0100
=> -5 1111 1111 1111 1111 1111 1111 1011
1111 1111 1111 1111 1111 1111 1111

res = -1

ii) a=25 b=-34 r=~~19~~ 20 d=4

boolean result:-

res = ((a<<2 | b>>>3)<-10) || ((c++<<2 & b-->>>d)>=23)

(a<<2 | b>>>3) = -1

= ((a<<2 | b>>>3) <-10)

= -1 < -10

= false

res = false || ((c++<<2 & b-->>>d) >= 23)

c++<<2

19 <<2

128 64 32 16 8 4 2 1

0 0 0 0 0 0 0 0

2 ⇒ 0 0 0 1 0 0 1 1

76 ⇒ 0 1 0 0 1 1 0 0

c++ <<2 = 76

(b-->>>d) i.e 34>>>d.

-34 ⇒ 1111 1111 1111 1111 1111 1111 1101 1110

268435453 ⇒ 0000 1111 1111 1111 1111 1111 1111 1101

(b-->>>d) = 268435453

((c++ <<2 & b->>d) >= 23)

(76 & 268435453) >= 23

Anding 76, 268435453

1 1 1
1 0 0
0 1 0
0 0 0

76
0000 0000 0000 0000 0000 0000 0000 0100 1100
268435453
0000 1111 1111 1111 1111 1111 1111 1101
0000 0000 0000 0000 0000 0000 0100 1100

((c++ <<2 & b->>d) = 76

(76 >= 23)

True.

(c++ <<2 & b->>d) >= 23) = true

(False) || (True)

Logical or			
	T	T	T
	T	F	T
	F	T	T
	F	F	F

boolean result = true.