Assignment

BITS AND BYTES

Determine the 1's complement of each of the following binary numbers.

1) 11011100
1's complement : 00100011

2) 01101001
1's complement: 10010110

3) 01010010
1's complement: ~~010~~ 10101101

Determine 2's complement of the following binary numbers

1) 0011 1010
2's compliment
↳ 11000101
+ 1
11000110

2) 10110011

+1

10110100

2's compliment

01001100

+1

01001101

3) 01101100

2's compliment

10010011

+1

10010100

Express each of the following decimal numbers as an 8-bit number in the 2's compliment

1) -34

Binary of 34 0100010

1's compliment

1011101

3) -46 and 25

Binary of -46 : 00.0111110

2's compliment

11100001

+1

11100010

Binary of 25 in 8 digit form

: 00011000

2's complimentof -110 -10010010

2's complimentof -84 -01010100

11011110

Carry is ignored so the 8 bit digit are

10111110

(Cover flow occured)

Ans: 11111010

4) -110 -84

Binary of 110

01101110

2's compliment form

10010001

+1

10010010

Binary of 84

01010100

2's com pliment form

10101011

+1

10101100

Convert each of the following pairs of decimal to 8 bit binary add them keep your answers in 2's complement form.

1) 33 and 15

+33 Binary 8 digit form 00100001

+15 Binary 8 digit form 00001111

01110000

Ans 01100000

2) 56 and −27

56 Binay 8 Digit form

27 " " " and 2's compliment form → 00011011

↓

00011011

2's compliment

11100100

+ 1

11100101

1 1 1

+ 00111000

11100101

11001101

(carry is ignored) So the 8 bit digit is zero

10011101

2) +103
1's compliment form: 01100111

2) -99
Binary of 99: 01100011
1's compliment form of -99: 10011100

Express each of the following decimal numbers as and 8 bit binary in 2's compliment form

1) -68
Binary of 68: 01000100
2's compliment form: 10111011
+1
10111100

2) ~~+101~~ -109
Binary of 109: 01100011
2's compliment form
10011100
+1
10011101

5) 90 and 80

Binary 8 digit number of 90 :

Binary 8 digit number of 80 :

$$\begin{array}{r} 01011010 \\ +\ 01010000 \\ \hline 10101010 \end{array}$$

∴ The 8 digit binary number is

10101010

8) −120 and 72

Binary of 120 : 01111000

2's compliment of −120

$$\begin{array}{r} 10000111 \\ +\ 1 \\ \hline 10001000 \end{array}$$

Binary of 72 : 01001000

$$\begin{array}{r} -\ 10001000 \\ +\ 01001000 \\ \hline 11010000 \end{array}$$

The 8 bit digit binary number is

11010000