Lab 1a — Negative Numbers in different Bases

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CSC-17A

$127_{10} \rightarrow 01111111_2$ (1 Byte integer Base 2)

10000000 (1's complement)

$+1$

$10000001 \leftrightarrow -127_{10}$ (2's complement)

$\frac{010}{2}\ \frac{000}{0}\ \frac{001}{1} \rightarrow 201_8$

$\frac{1000}{8}\ \frac{0001}{1} \rightarrow 81_{16}$

$10101_2 \rightarrow 21_{10}$

$21_{10} \rightarrow 00010101$ (1 Byte integer Base 2)

11101010 (1's comp.)

$+1$

$11101011 \rightarrow -21_{10}$ (2's complement)

$\frac{011}{3}\ \frac{101}{5}\ \frac{011}{3} \rightarrow 353_8$

$\frac{1110}{14}\ \frac{1011}{11} \rightarrow EB_{16}$

$71_8 \rightarrow 57_{10}$

$57_{10} \rightarrow 00111001$ (1 Byte integer Base 2)

11000110

$+1$

$11000111 \rightarrow -57_{10}$ (2's complement)

$\frac{011}{3}\ \frac{000}{0}\ \frac{111}{7} \rightarrow 307_8$

$\frac{1100}{12}\ \frac{0111}{7} \rightarrow C7_{16}$

$AB_{16} \longrightarrow 171_{10}$

$171_{10} \longrightarrow 1\ 0\ 1\ 0\ 1\ 0\ 1\ 1_2$ (1 Byte int Base 2)

$0\ 1\ 0\ 1\ 0\ 1\ 0\ 0$ (1's comp.)

$+\ 1$

$0\ 1\ 0\ 1\ 0\ 1\ 0\ 1 \longrightarrow$ 2's complement

$\frac{001}{1}\ \frac{010}{2}\ \frac{101}{5} \longrightarrow 125_8$

$\frac{0101}{5}\ \frac{0101}{5} \longrightarrow 55_{16}$

Final result table:

Base 10	Base 2	Base 8	Base 16
-127	10000001	201	81
-21	11101011	353	EB
-57	11000111	307	C7
-171	01010101	125	55