

Lab01_XIAQIN_QIU

1. a) Signed-magnitude: $110111 = -10111 = -23$; $+23 = 010111$;
b) 1's Comp: $110111 = -001000 = -8$; $+8 = 001000$;
c) 2's Comp: $110111 = -001001 = -9$; $+9 = 001001$;
2. $0 = 000000$ in all 3 systems;
 $-0 = 100000$ in Signed-magnitude;
 $-0 = 111111$ in 1's Comp;
no -0 in 2's Comp;
3. Signed-magnitude: $111111 = -31$;
1's Comp: $100000 = -31$;
2's Comp: $100000 = -32$;
4. Signed-magnitude: $-(-31) = +31 = 011111$; not overflow;
1's Comp: $-(-31) = +31 = 011111$; not overflow;
2's Comp: $-(-32) = +32 = 111111 = -000001 = -1$; overflow;
5. $111011 + 001110 = 001001$;
6. $001001 = +9$;
7. in 2's Comp: $111011 = -000101 = -5$;
8. in 2's Comp: $001110 = +14$;
9. $12 + 18 = 30$ is $001100 + 010010 = 011110 = 30$;
10. $13 - 30 = -17$ is $001101 - 011110 = 001101 + (-011110) = 001101 + 100010 = 101111 = -(010001) = -17$;
11. $-25 - 7 = -32$ is $-011001 - 000111 = (-011001) + (-000111) = 100111 + 111001 = 100000 = -32$;
12. $24 + 10$ is $011000 + 001010 = 100010 = -(011110) = -30$ overflow;