

ELEC8550:Computer Arithmetic, Fall 2020

Answer to Assignment 2

Requirements:

- Organize your assignment solution into one single file in Microsoft Word format or PDF. Note that image format (incl. jpg etc) is not acceptable, however, you may convert jpg files to one single pdf file and then submit it.
- Submission must be conducted on-line through Blackboard website.

1. (20 marks)

$$\begin{aligned} 272.64_{10} &= 333.44_{-10} \\ -272.64_{10} &= 1888.76_{-10} \end{aligned}$$

2. (20 marks)

$$\begin{aligned} 7.5_{10} &= 11000.1_{-2} \\ -7.5_{10} &= 1001.1_{-2} \end{aligned}$$

3. (20 marks) (Note to GA: This problem could have multiple correct answers.)

$$\begin{aligned} 30.625_{10} &= 11110.101_2 = 1000\bar{1}0.11\bar{1}_2 \\ -30.625_{10} &= -11110.101_2 = \bar{1}00010.\bar{1}\bar{1}1_2 \end{aligned}$$

4. (20 marks)

$$18_{10} = 10010_2 = 101\bar{1}0_2 = 11\bar{1}\bar{1}0_2$$

5. (20 marks)

$A = 10101_2, B = 10011_2$						
$A + B$ with Table 2.1						
i	5	4	3	2	1	0
$a_i b_i$	11	00	10	10	11	
c_{i-1}	1	0	1	1	1	
u_i		0	0	$\bar{1}$	$\bar{1}$	0
s_i	1	0	1	0	0	0

$D = 10\bar{1}01_2, E = 11010_2$						
$D + E$ with Talbe 2.1						
i	5	4	3	2	1	0
$d_i e_i$		11	01	$\bar{1}0$	01	10
c_{i-1}	1	1	$\bar{1}$	1	1	
u_i		0	$\bar{1}$	1	$\bar{1}$	$\bar{1}$
s_i			$\bar{2}$	$\bar{2}$	0	$\bar{1}$

$D = 10\bar{1}01_2, E = 11010_2$						
$D + E$ with Talbe 2.2						
i	5	4	3	2	1	0
$d_i e_i$		11	01	$\bar{1}0$	01	10
c_{i-1}	1	0	0	1	1	
u_i		0	1	$\bar{1}$	$\bar{1}$	$\bar{1}$
s_i	1	0	1	0	0	$\bar{1}$