Homework Assignment #1

Assigned: 17/10/2020
Due: 23/10/2020 11:55 **AM**
Notes:

- Submit your homework on SuCourse+. You can write on paper, take a picture and upload it on SuCourse+.
- Show your solutions clearly.

1. Find the binary, octal, hexadecimal representations of the numbers below. You can first find the binary and use it to find the others. For the signed number, assume 4-digit 2's complement form. For the fractional part, for each representation, show at most 5 digits. (**20 pts**)

   a. **(5)** 683
   b. **(5)** 13.675
   c. **(5)** -1.875
   d. **(5)** 87.127

2. Fill in the following table (**12 pts**)

Decimal	**Binary**	**Octal**	**Hexadecimal**
912			
	11111011		
		712	
			ABC1

3. Assume that you are using an 8-digit 2's complement binary system. Show the range of integers that can be represented with this 2's complement signed number system. (**8 pts**)

4. Calculate the binary equivalent of 1/3 using only eight (8) bits in the fraction. Then convert the resulting binary number back to decimal. What is the error (if there is any) in the binary representation? (**10 pts**)

5. Realize the following operations using 8-digit 2's complement signed number system. Verify the correctness of your operation by converting the result from 2's complement signed number system to decimal.

   a. **(5)** 127-120
   b. **(5)** 12-127
   c. **(5)** 19+(-63)
   d. **(5)** -110+98
   e. **(5)** -85+(-15)

f. **(5)**-110+111