ELEC9721: Digital Signal Processing Theory and Applications

Lab 4: Finite Word Length

1. Show your preparation program working on the following numbers

X	I	F
0.7	2	2
-8/3 (-2 2/3)	3	3
9.8765	4	4

i.e. show the number represented, its binary, and the % error

[*3 marks*]

2. Write a matlab function to generate the decimal number from fixed point representation in the form of a string without using any inbuilt commands related to these numbering formats

   Inputs:
   - fixedX - the fixed point representation (as a string)
   - Number of bits for I and F (optional)

   Outputs:
   - Decimal number.

   function [X]= FixedPointToDecimal (fixedx,I,F)
   e.g. [3.625]= FixedPointToDecimal (011.101, 3,3);

   Hint: First write it only for positive numbers and then include that one for negative numbers with 2's complements.

   Show this working for the examples above

   [*7 marks*]