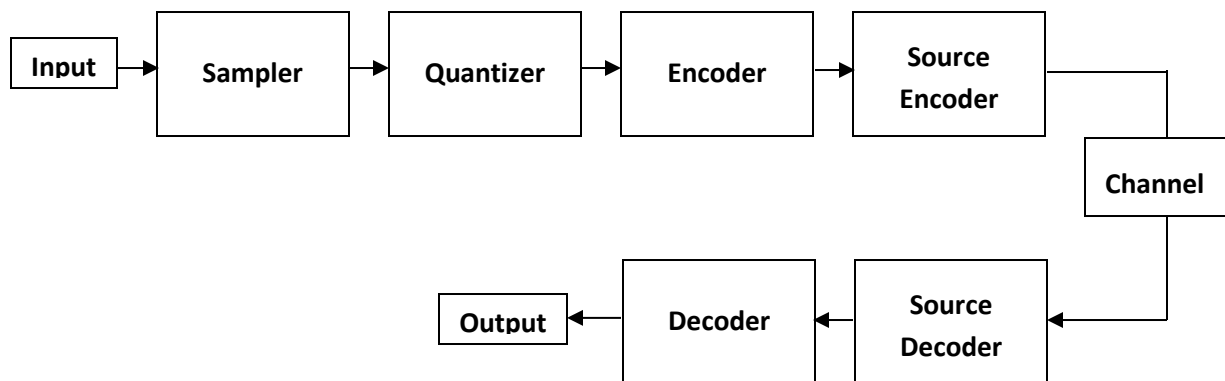


Course: Communication Theory

Lab Assignment 2

Task

You are required to simulate the shown communication block.



Notes:

1. The input is a sinusoidal signal $x(t) = \sin(0.2\pi t)$ with $t=0:0.1:15$.
2. Sample the signal by taking 1 sample every 2 samples.
3. Simulate a 16 level quantizer
4. For simplicity in your code use the encoder to encode with the level number not in binary format for example: instead of giving the first level 0000 encode it as 0 and for the second level instead of encoding it as 0001 encode it as 1
5. Use Huffman Source encoder
6. Simulate a noiseless channel
7. For the decoder use the same scheme shown above in the encoder
8. Use Huffman Source decoder

Course: Communication Theory

Lab Assignment 2

Outputs:

1. Plot the input and output signal on the same figure.
2. Calculate the Sqn_r of the quantizer.
3. List ways that can enhance the approximation of the output figure. State why there is difference between the input and the output signal.
4. Calculate the efficiency of your compression code.
5. Calculate the compression rate.

Useful Commands

huffmandict, huffmanenco, huffmandeco

Deliverables

1. The m-file on a CD
2. A report including the output figure, the values and the comments stated above

Submission

- Submission will be in the office C3.205
- The Assignment will be groups of Four

Any copied assignments will take ZERO