LAB 3
2019F_ESE 3014_1

GROUP 16 -

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Simulate all operations performed in the transmitter of a PCM system include continuous time signal, low-pass filter, sampler, quantizer, andencoder. You can choose the techniques we introduced in the course

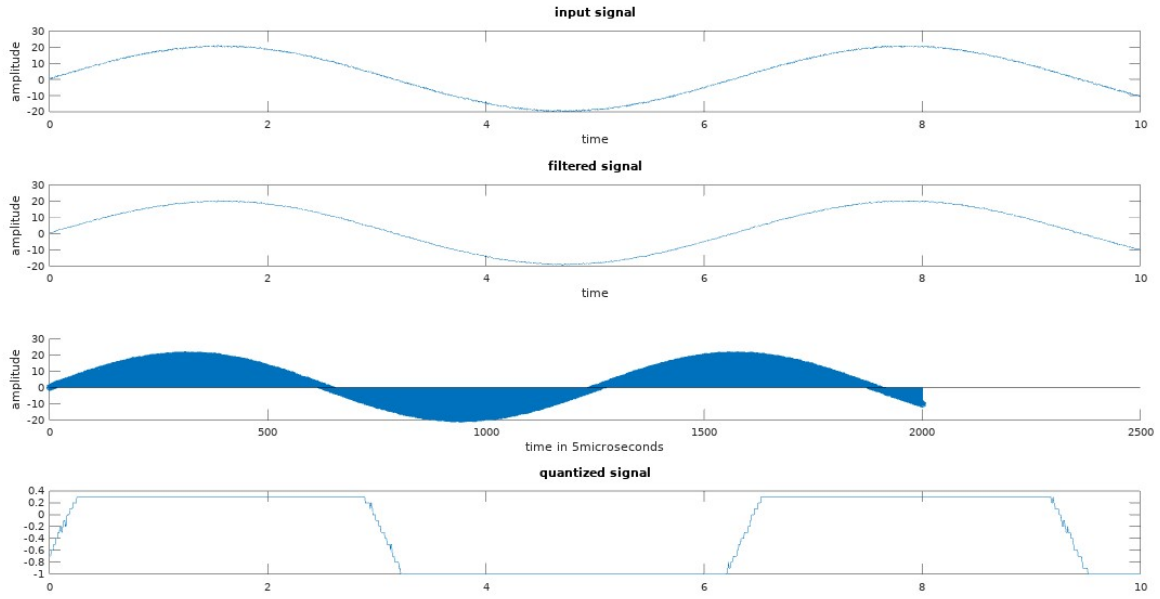
```
>> clear all
>> inpamp = 20; %amplitude of input signal
>> f = 0:0.005:10;


>> inpsig = inpamp*sin(f);  %input signal
>> noise = rand(size(inpsig)); %inputting noise to the input signal
>> inpsig2 = inpsig + noise;
>> subplot(4,1,1);
>> plot(f,inpsig2); %plotting the input signal
>> title('input signal');
>> xlabel('time');
>> ylabel('amplitude');

>> %Low pass filter
>> D = [1,1.414,1]; %denominator of transfer function
>> N = 3.5; %numerator of transfer function
>> filsig = filter(D,N,inpsig2); %filtered signal
>> subplot(4,1,2);
>> plot(f,filsig);
>> title('filtered signal');
>> xlabel('time');
>> ylabel('amplitude');

>> %sampling the signal
>> subplot(4,1,3)
>> stem(filsig);
>> xlabel('time in 5microseconds');
>> ylabel('amplitude');

>>%non-uniform quantization of signal
>> partition = -1:0.5:5;
>> codebook = -1:0.1:(5+0.1);
>> [index,quants] = quantiz(filsig,partition,codebook);
>> subplot(4,1,4);
>> plot(f,quants);
>> title('quantized signal');
```


input signal
amplitude
time
filtered signal
amplitude
time
amplitude
time in 5microseconds
quantized signal

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