AMERICAN INTERNATIONAL UNIVERSITY BANGLADESH

Assignment Title:	Lab Report		
Assignment No:	3	Date of Submission:	15-02- 2022
Course Title:	Data Communication		
Course Code:	00408	Section: E	
Semester:	Spring 2021-22	Course Teacher:	Tanjil Amin

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Title: Analog Signal quantization using MATLAB

Contents

Performance Task Question's Answer

Using Method-1(Loop)

```
A=1;
B=9;
C=4;
D=1;
E=0;
F=3;
G=7;
H=2;
fs=50000;
t=0:1/fs:0.05;
xt=(H+5)*cos(2*pi*((D+E+5)*10)*t)+ (H+7)*sin(2*pi*((E+F+10)*10)*t);
Nsamples=length(xt);
quantised_out=zeros(1,Nsamples);
del=(max(xt)-min(xt))/(2^H+2);
Llow=min(xt)+del/2;
Lhigh=max(xt)-del/2;
for i=Llow:del:Lhigh
      for j=1:Nsamples
         if(((i-del/2)<=xt(j))&&(xt(j)<=(i+del/2)))
            quantised_out(j)=i;
         end
      end
end
plot(t,xt,'r-.','linewidth',1.5);
hold on;
plot(t,quantised_out,'k-.','linewidth',1.5);
xlabel('time');
ylabel('amplitude');
title('example of manual quantization method 1');
legend('Original signal','quantized signal');
```

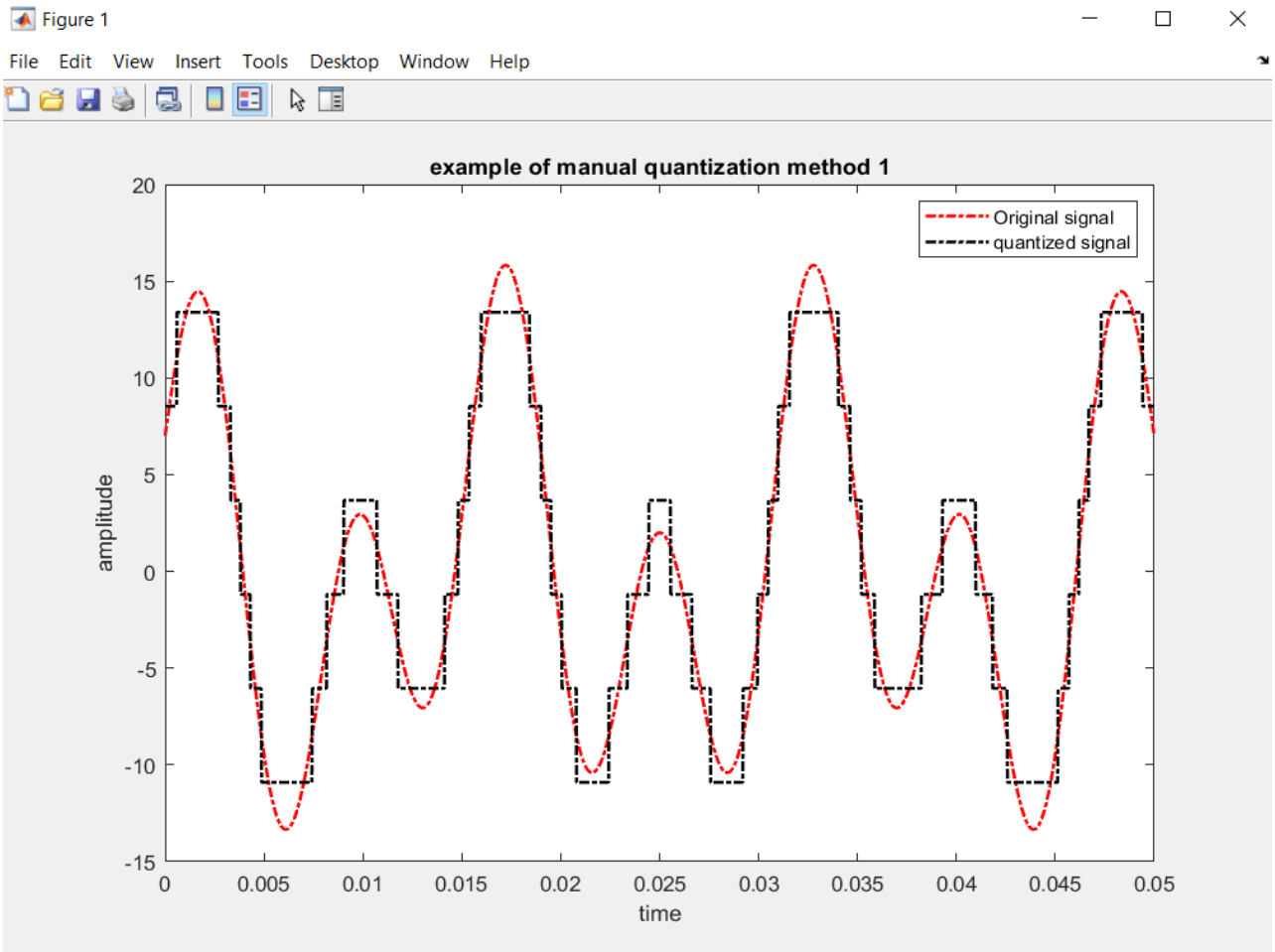

Figure 1: quantization using method-1

Using Method-2(Calculation)

```
A=1;
B=9;
C=4;
D=1;
E=0;
F=3;
G=7;
H=2;
fs=50000;
t=0:1/fs:0.05;
xt=(H+5)*cos(2*pi*((D+E+5)*10)*t)+ (H+7)*sin(2*pi*((E+F+10)*10)*t);
L=(12-2^H);
```

```
delta=(max(xt)-min(xt))/(L-1);
xtq=max(xt)+(round((xt-min(xt))/delta)).*delta;
plot(t,xt,'r-.','linewidth',1.5);
hold on;
plot(t,xtq,'k-.','linewidth',1.5);
xlabel('time');
ylabel('amplitude');
title('example of manual quantization method 2');
legend('Original signal','quantized signal');
```

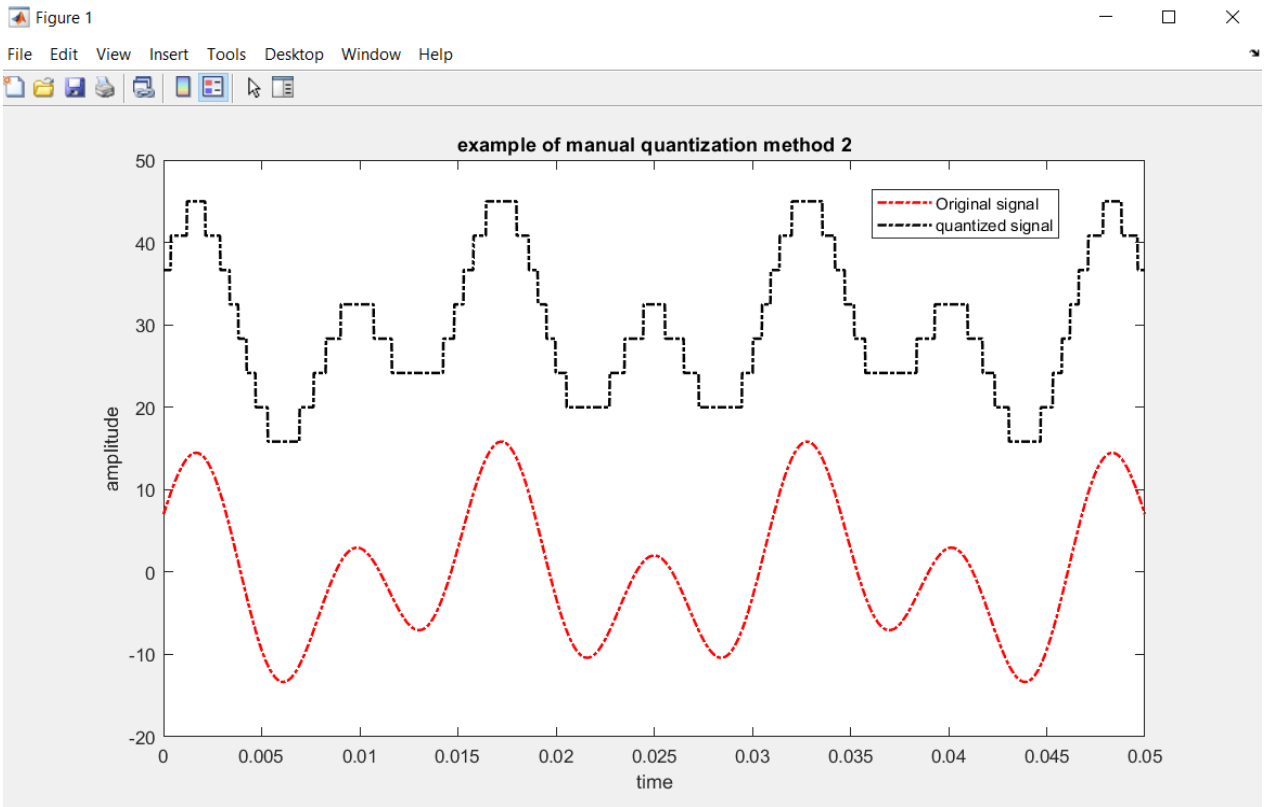

Figure 2: quantization using method-2