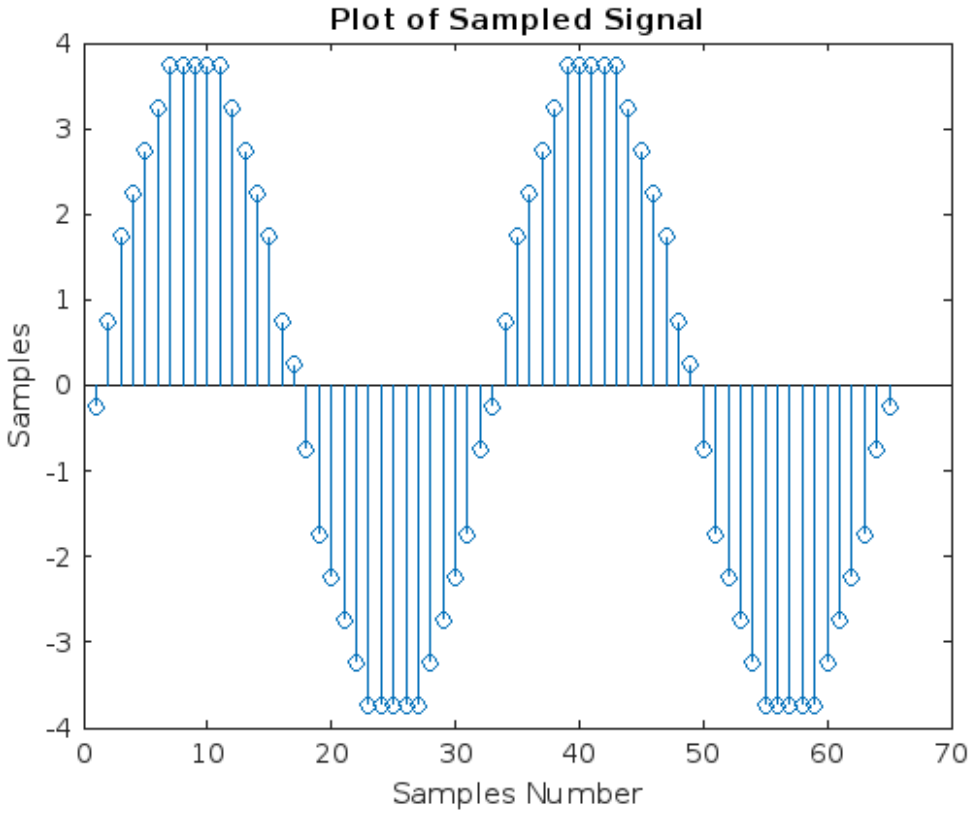
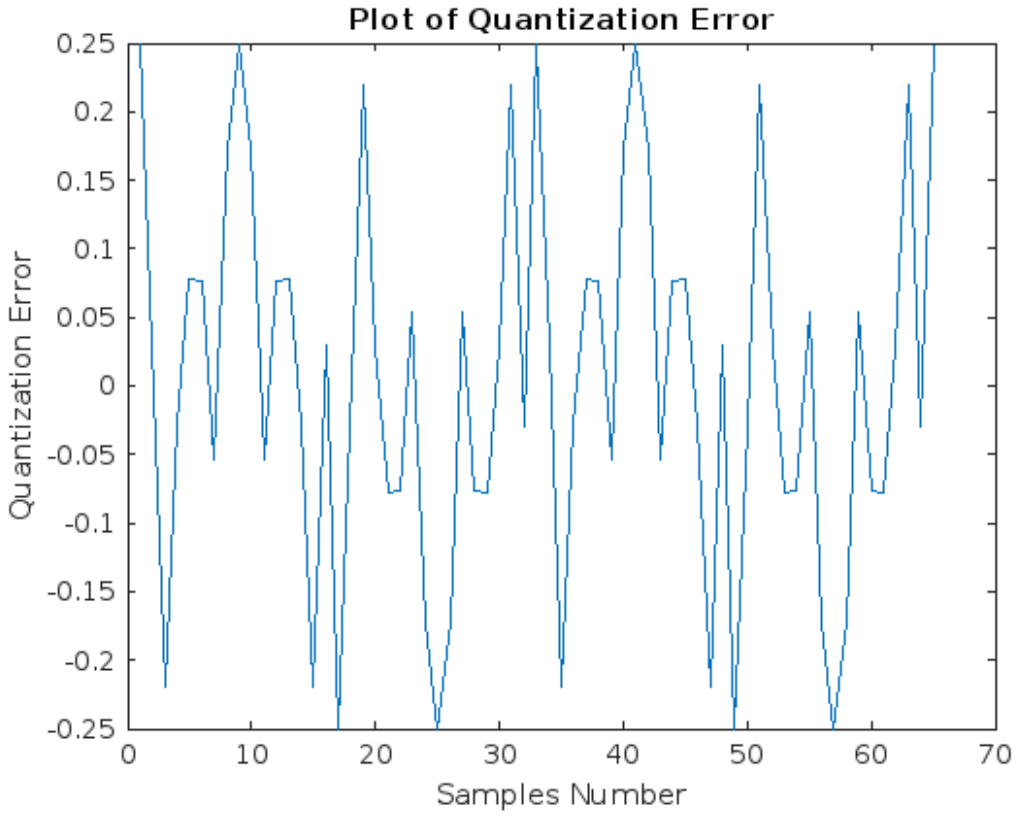
```
clc;
close all;
clear all;
disp('Generate 0.02-second sine wave of 100 Hz');
amp= 4;
fs =3200; % Sampling rate
T = 1/fs; % Sampling interval
t = 0:T:0.02; % Duration of 0.02 second
sig1=amp* sin (2*pi*100.*t);
min_sig=min(sig1);
max_sig=max(sig1);
sig = amp* sin (2*pi*100.*t);
nbits= 4;
quint_level=2^nbits;
s = (max_sig-min_sig)/quint_level;
for jj = min_sig:s:max_sig
     sig(sig<=jj+s& sig>=jj)=((2*jj)+s)/2;
end
figure
stem(sig);
title('Plot of Sampled Signal')
xlabel('Samples Number')
ylabel('Samples')
figure
qun_error=sig1-sig;
plot(qun_error);
title('Plot of Quantization Error')
xlabel('Samples Number')
ylabel('Quantization Error')
```

Generate 0.02-second sine wave of 100 Hz


Plot of Sampled Signal
Samples
Samples Number
4
3
2
1
0
-1
-2
-3
-4
0
10
20
30
40
50
60
70


Plot of Quantization Error
Quantization Error
Samples Number
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
-0.25
0
10
20
30
40
50
60
70

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