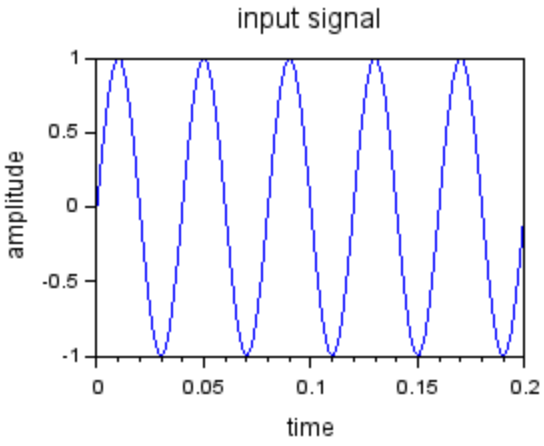
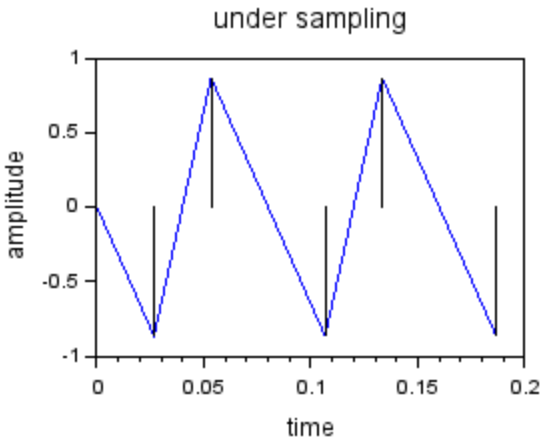
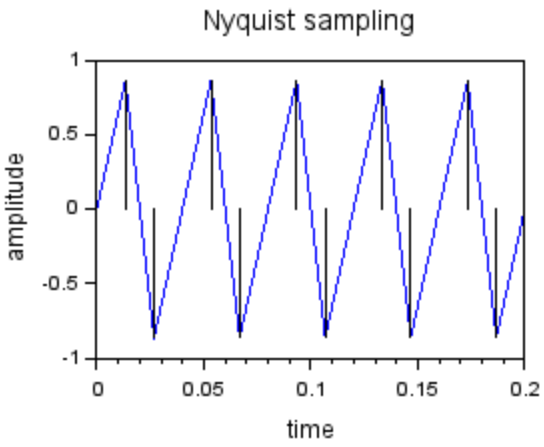
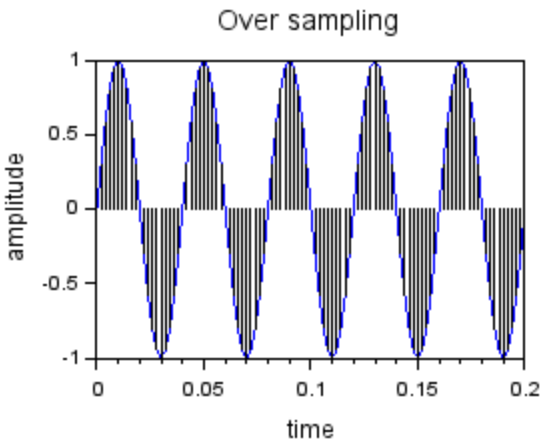
To verify the sampling theorm in scilab

```
clc;
clear;
fm = input("enter input signal frequency");
k = input("enter number of cycles");
ti = 0:1/(fm*fm):k/fm;
x1 = sin(2*%pi*fm*ti);
subplot(2,2,1);
plot(ti,x1);
title("input signal");
xlabel("time");
ylabel("amplitude");

fs1 = 1.5*fm;
n1 = 0:1/(fs1):k/fm;
x2 = sin(2*%pi*fm*n1);
subplot(2,2,2);
plot(n1,x2);
plot2d3(n1,x2);
title("under sampling");
xlabel("time");
ylabel("amplitude");

fs2 = 3*fm;
n2 = 0:1/(fs2):k/fm;
x3 = sin(2*%pi*fm*n2);
subplot(2,2,3);
plot(n2,x3);
plot2d3(n2,x3);
title("Nyquist sampling");
xlabel("time");
ylabel("amplitude");

fs3 = 20*fm;
n3 = 0:1/(fs3):k/fm;
x4 = sin(2*%pi*fm*n3);
subplot(2,2,4);
plot(n3,x4);
plot2d3(n3,x4);
title("Over sampling");
xlabel("time");
ylabel("amplitude");
```


input signal
amplitude
time
1
0.5
0
-0.5
-1
0
0.05
0.1
0.15
0.2


under sampling
amplitude
time
1
0.5
0
-0.5
-1
0
0.05
0.1
0.15
0.2


Nyquist sampling
amplitude
time
1
0.5
0
-0.5
-1
0
0.05
0.1
0.15
0.2


Over sampling
amplitude
time
1
0.5
0
-0.5
-1
0
0.05
0.1
0.15
0.2