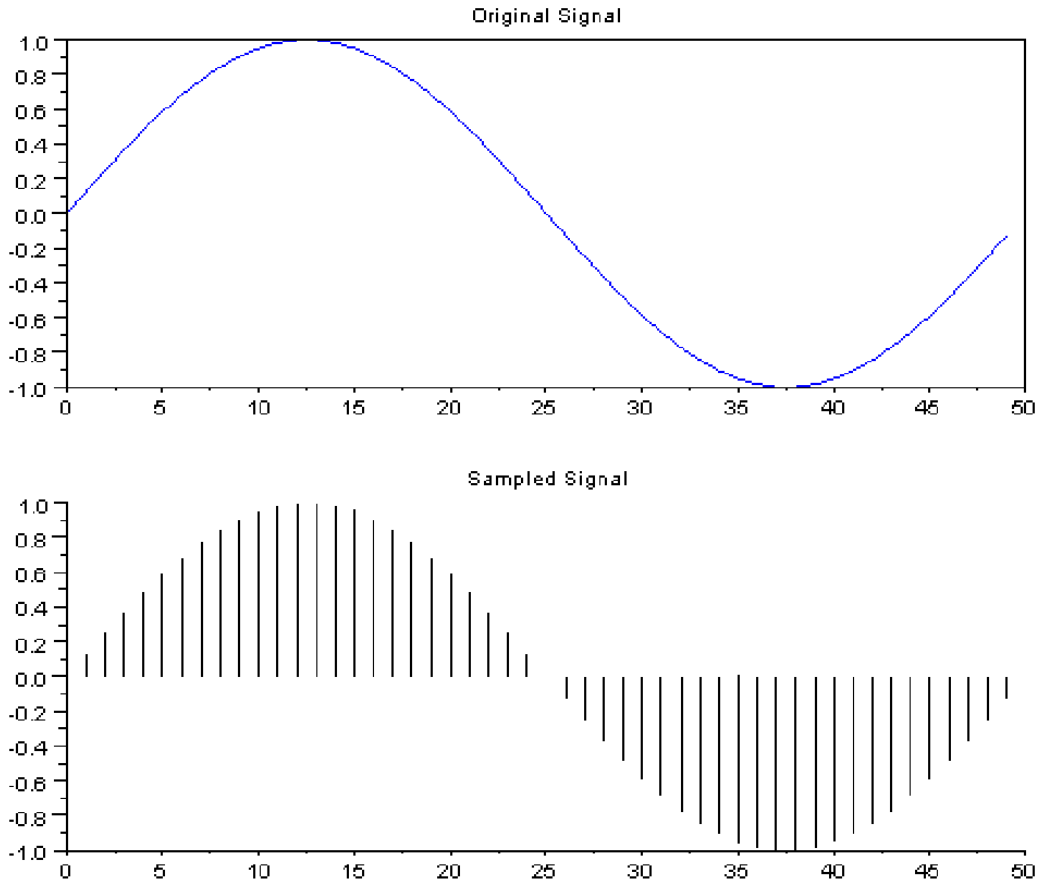
Experiment 1:

Sampling and Reconstruction
Code:

```
clc;
clear;
close;
a = 1 ;
f = 1 ;
fs = 50;
n = 0:fs-1;
xt = a*sin(2*%pi*f*n/fs);
subplot(2,1,1);
title("Original Signal");
plot(n,xt);
subplot(2,1,2);
title("Sampled Signal");
plot2d3(n,xt);
```

Output:

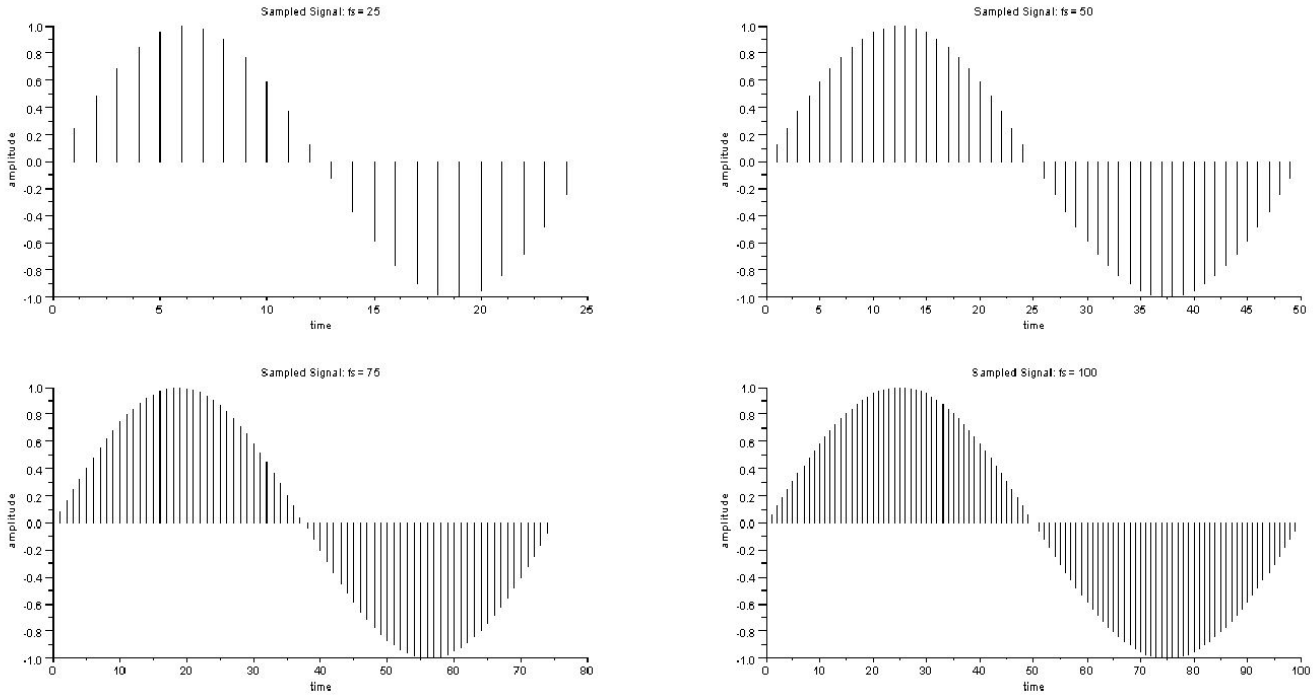


Varying the sample frequency and observe the change.

code:

```
clc;
clear;
close;
a = 1 ;
f = 1 ;
for i = 1:4
  fs = i*25;
  n = 0:fs-1;
  xt = a*sin(2*%pi*f*n/fs);
  subplot(2,2,i);
  title("Sampled Signal: fs = "+string(fs));
  xlabel("time");
  ylabel("amplitude");
  plot2d3(n,xt);
end
plot2d(
```

Output:



Reconstructed Signal from Sampled Signal:

```
clc;
clear;
close;
a = 1 ;
f = 1 ;
k = 1;
for i = 1:4
  fs = i*25;
  n = 0:fs-1;
  xt = a*sin(2*%pi*f*n/fs);
  subplot(4,2,k);
  title("Sampled Signal: fs = "+string(fs));
  xlabel("time");
  ylabel("amplitude");
  plot2d3(n,xt);
  k = k+1;
  subplot(4,2,k);
  title("Reconstructed Signal");
  plot2d(n,xt);
  k = k+1
end
```