1000 Hz Sine

Generation and display of a sinusoidal waveform in Python.

In [1]:
```
import numpy as np
import matplotlib.pyplot as plt
```

In [2]:
```
%matplotlib notebook
fsz = (7,5)  # figure size
fsz2 = (fsz[0],fsz[1]/2.0)  # half high figure
```

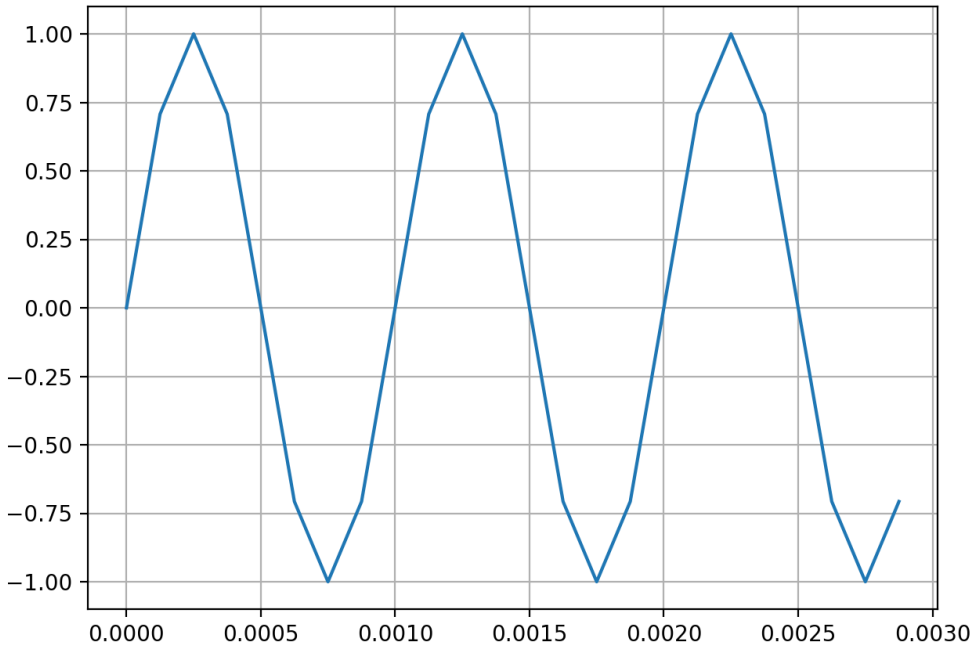
In [3]:
```
# initial parameters
Fs = 8000   # sampling rate
fm = 1000   # frequency of sinusoid
tlen = 1.0  # length in seconds
```

In [4]:
```
# generate time axis
tt = np.arange(np.round(tlen*Fs))/float(Fs)
# generate sine
xt = np.sin(2*np.pi*fm*tt)
```

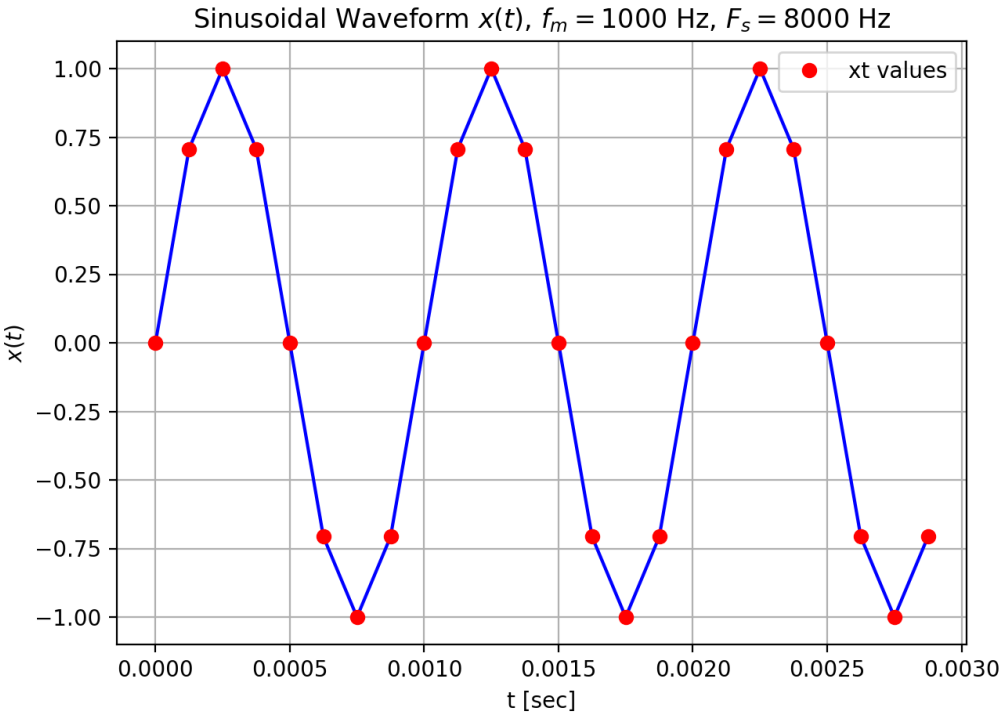
In [5]:
```
# print the first 12 values of x(t)
print('xt = {}'.format(xt[:12]))
```

```
xt = [ 0.00000000e+00  7.07106781e-01  1.00000000e+00  7.07106781e-01
  1.22464680e-16 -7.07106781e-01 -1.00000000e+00 -7.07106781e-01
 -2.44929360e-16  7.07106781e-01  1.00000000e+00  7.07106781e-01]
```

In [6]:
```
plt.figure(1, figsize=fsz)
plt.plot(tt[:24], xt[:24])
plt.grid()
plt.savefig('sine_1000a.eps')
```



In [7]:
```
# create a labeled graph
plt.figure(2, figsize=fsz)
plt.plot(tt[:24], xt[:24], '-b')
plt.plot(tt[:24], xt[:24], 'or', label='xt values')
plt.ylabel('$x(t)$')
plt.xlabel('t [sec]')
strt2 = 'Sinusoidal Waveform $x(t)$'
strt2 = strt2 + ', $f_m={}$ Hz, $F_s={}$ Hz'.format(fm, Fs)
plt.title(strt2)
plt.legend()
plt.grid()
plt.savefig('sine_1000b.eps')
```



In [ ]:
```
```