In [1]:
```python
import numpy as np
import matplotlib.pyplot as plt
#generate a square wave
t=np.linspace(0,1,500,endpoint=False)
square_wave = np.where(np.sin(2*np.pi*t) >= 0,1,-1)
#compute FFT
fft_data = np.fft.fft(square_wave)
#get frequency axis
freq_axis = np.fft.fftfreq(len(square_wave),t[1]-t[0])
#plot square wave and fft magnitude
fig, ax = plt.subplots(2,1)
ax[0].plot(t,square_wave)
ax[0].set_xlabel('Time(s)')
ax[0].set_ylabel('Amplitude')
ax[1].plot(freq_axis,np.abs(fft_data))
ax[1].set_xlim([0,10])
ax[1].set_xlabel('Frequency(Hz)')
ax[1].set_ylabel('Magnitude')
plt.show( )
```
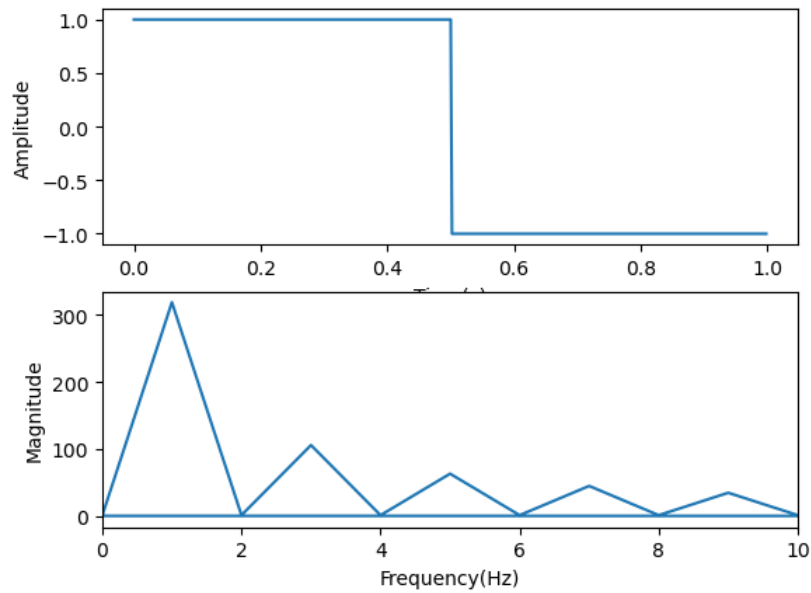

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