```
%setting parameters
M=8;
N=2^M;
n=0:1:N-1;
fo=1000;
T=1/fo;
dt=T/N;
t=n*dt;

%defining the time waveform
A=0;
x=A;
h=9;
for i=1:2:h
x=x+4/pi*1/i*sin(2*pi*fo*i*t);
end

%ploting time waveform
subplot(211);
plot (t,x);
xlabel('t');
ylabel('x(t)');
title('Time Waveform');

%computing FFT

W=1/N*fft(x);
f=n/T;

%ploting frequency spectrum
subplot(212);
fn=n*fo;
for (i=1:1:N/2)
        if (i>1)
            line([fn(i) fn(i)], [0 2*abs(W(i))]);
        else
            line([fn(i) fn(i)], [0 abs(W(i))]);
        end
end;
xlabel('f (Hz)');
ylabel('|W(n)|');
title('Magnitude Spectrum, |W(f)|');
axis([0 2*h*fo 0 A+2]);
```