HINTS FOR THE BONUS PROGRAMMING ASSIGNMENT:

- The F.S.E is given in Table A.1 in Appendix A (textbook page 838).
- Examining the F.S.E. written in table, we can see that
    - The series An (the coefficients multiplying the cosines) is NONZERO while the series Bn (the coefficients multiplying the sines) is ZERO for all n.
    - The EVEN terms (i.e. n = 2, 4, 6, …) of the series An are ZERO
- To plot or analyze s(t) you can use the interval –T/4 < t < 3T/4 – where s(t) is +A for –T/4<t<T/4 and s(t) is –A for T/4 < t < 3T/4.
- Alternatively, you can use the interval 0 <t<T but then s(t) is given by
  s(t) = +A for 0<t<T/4, s(t) = -A for T/4 < t < 3T/4, and s(t) = +A for 3T/4 < t < T.

Below is a sketch of a matlab code that evaluates plots the F.S.E. You can use the code as GUIDANCE ONLY. You CAN NOT submit the same code. You must do it in your OWN LANGUAGE.

```
clear all
A = 1; f0 = 1;
t = 0:0.01:1;
ks = [0 1 3 10];
s_es = zeros(length(ks), length(t));
for j = 1:length(ks)
    k = ks(j);
    n = 1:2:k;
    An = A*4.*(-1).^((n-1)/2)./(pi*n);
    for i=1:length(n)
        s_es(j,:) = s_es(j,:) + An(i)* cos(2*pi*n(i)*f0*t);
    end
end
```

Note the code above DOES NOT plot s(t).

- A similar code is found in the Notes on FourierAnalysis _coe_092_341 (slide 42) posted on the web.
    - The code in the slides assumes the square function is ranging between 0 and A. Our s(t) in the programming assignment is ranging between –A and +A.