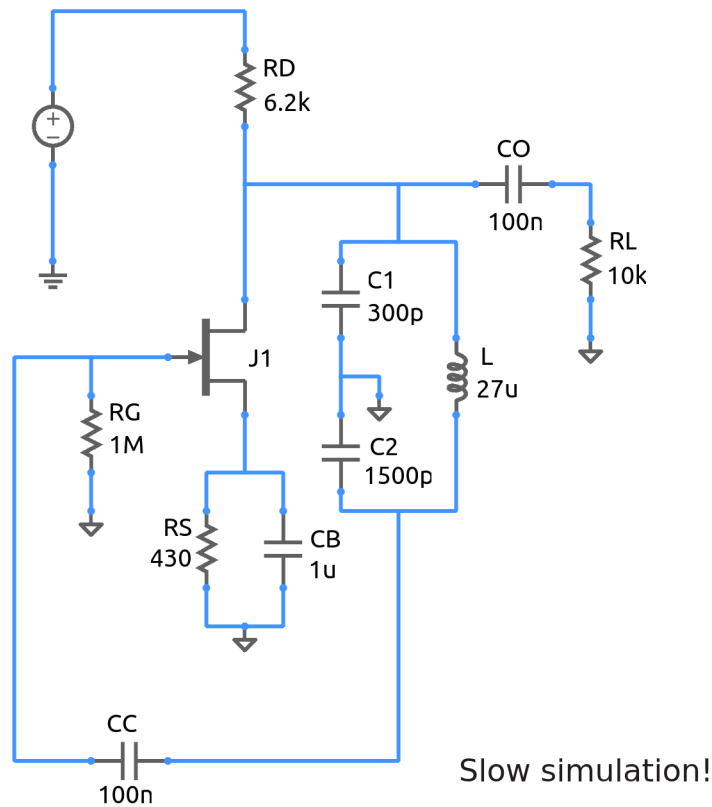


colpitts\_osc.sqproj



Ref: Simulating oscillators using SPICE by C. Ferris and J. Hamann  
IEEE Circuits and Devices, 1996.

A Colpitts oscillator circuit is shown in the figure. The frequency of oscillation is given by

$$\omega_0 = \frac{1}{\sqrt{L \left( \frac{C_1 C_2}{C_1 + C_2} \right)}}. \quad (1)$$

## Exercise Set

1. Estimate the frequency of oscillation using the above formula.
2. Run the simulation, and plot  $V_o$  versus time. From the plot, find the frequency of oscillation and compare it with your estimate.

## References

1. C. D. Ferris and J. C. Hamann, "Simulating oscillators using SPICE," *IEEE Circuits and Devices Magazine*, May 1996.

2. A. S. Sedra, K. C. Smith, and A. N. Chandorkar, *Microelectronic Circuits: Theory and Applications*, Fifth edition, Oxford University Press, 2009.