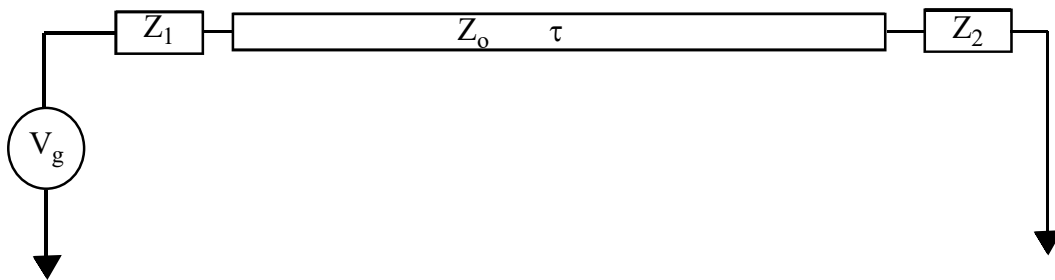


## ECE 546 HOMEWORK No 3 - Due Wednesday, February 21, 2024

### Problem 1

1. Write a program that simulates the response (voltage at near and far ends) of a lossless transmission line terminated with linear resistive loads. Test your program using the example shown below. Use  $Z_0 = 75 \Omega$ ,  $\tau = 2.37 \text{ ns}$ ,  $Z_1 = 50 \Omega$ ,  $Z_2 = 1 \text{ K}\Omega$ . Optimize your code to minimize run time. Show plots of the pulse response at the near and far ends of the line. Give a listing of your program.



The pulse characteristics for  $V_g(t)$  are as shown in the figure below, with

time delay:  $t_d = 1 \text{ ns}$

rise time:  $t_r = 1 \text{ ns}$

fall time:  $t_f = 1 \text{ ns}$

pulse width:  $t_w = 20 \text{ ns}$

pulse amplitude:  $V_{\text{max}} = 4 \text{ volts}$

