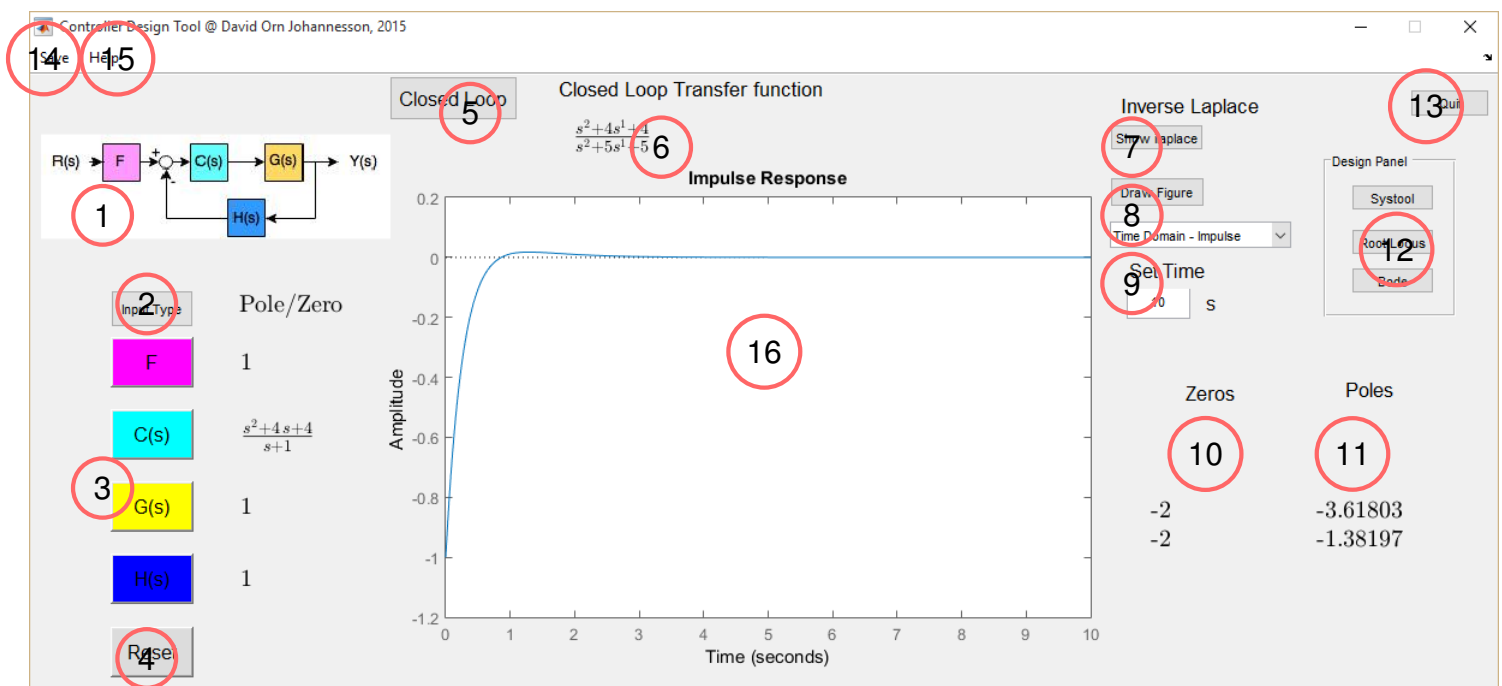


1 About

This is a help manual for the Controller Design Tool, developed by *Davíð Örn Jóhannesson* [davidj11@ru.is] for Reykjavik University. The program is intended to be used as a teaching tool for modern system control theory.

2 Window view



1. This is the layout of the system in question. It has four blocks. F is a multiplication factor, $C(s)$ is the controller, $G(c)$ is the plant to be controlled. $H(s)$ is the feedback block.
2. Here the input type can be controlled. Input types are *Polynomial* and *Pole/Zero* input. The *polynomial* input is typical to *Matlab*, for example $s^3 + 2s^2 - 1 = [1, 2, 0, -1]$, etcetera. The *pole/zero* input is special to this

program. The input should be the inverse signal of the pole/zero location. For example, given a pole $(s - 1)$ the input should be 1. If a sole integrator then the input should be 0, see Figure 1 for further detail.

3. By clicking these boxes a question dialogue opens up to enter the respective inputs to describe the system in question.
4. The reset button sets all blocks to one and clears the figure
5. Choose whether the system has feedback and is closed loop or if it should be open loop. Effectively turning off the feedback circuit or setting $H(s) = 0$.
6. Here the calculated transfer function is shown, the text above changes if examining the closed or open loop system.
7. By clicking the *Show Ilaplace* button matlab will try to calculate the inverse Laplace of the transfer function. Complicated functions can't be calculated exactly.
8. When changing the type of response to examine, changing popup-menu, in the figure set to *Time Domain - Impulse* the *Draw Figure* button must be pressed to receive an updated figure.
9. Here the time length of the time domain response can be changed, this is in seconds.
10. The zeros of the transfer function are shown here
11. The poles of the transfer function are shown here
12. The buttons on the *Design Panel* open the *sisotool* tool from matlab. Type `help sistool` in the matlab command window for further reading.
13. The quit button closes the application and clears the workspace.
14. The save button allows the user to save the current system to a `.mat` file in the workspace.

15. The help button opens this document.
16. The main axis shows the figure defined in the popup-menu (8). It gets updated whenever the blocks change but not when the popup-menu is changed, for that press the draw figure button. The user can also right press the figure for additional options.

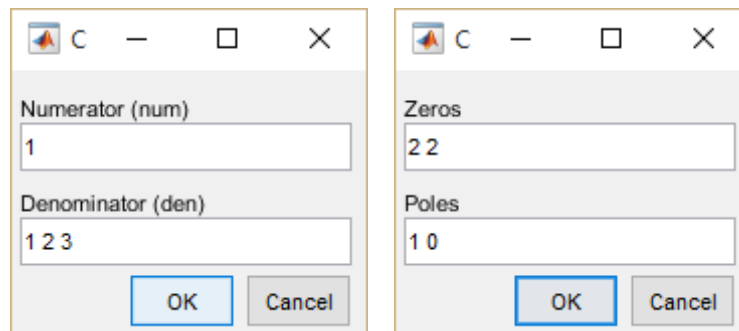


Figure 1: Question dialogue boxes, polynomial input and pole-zero input respectively