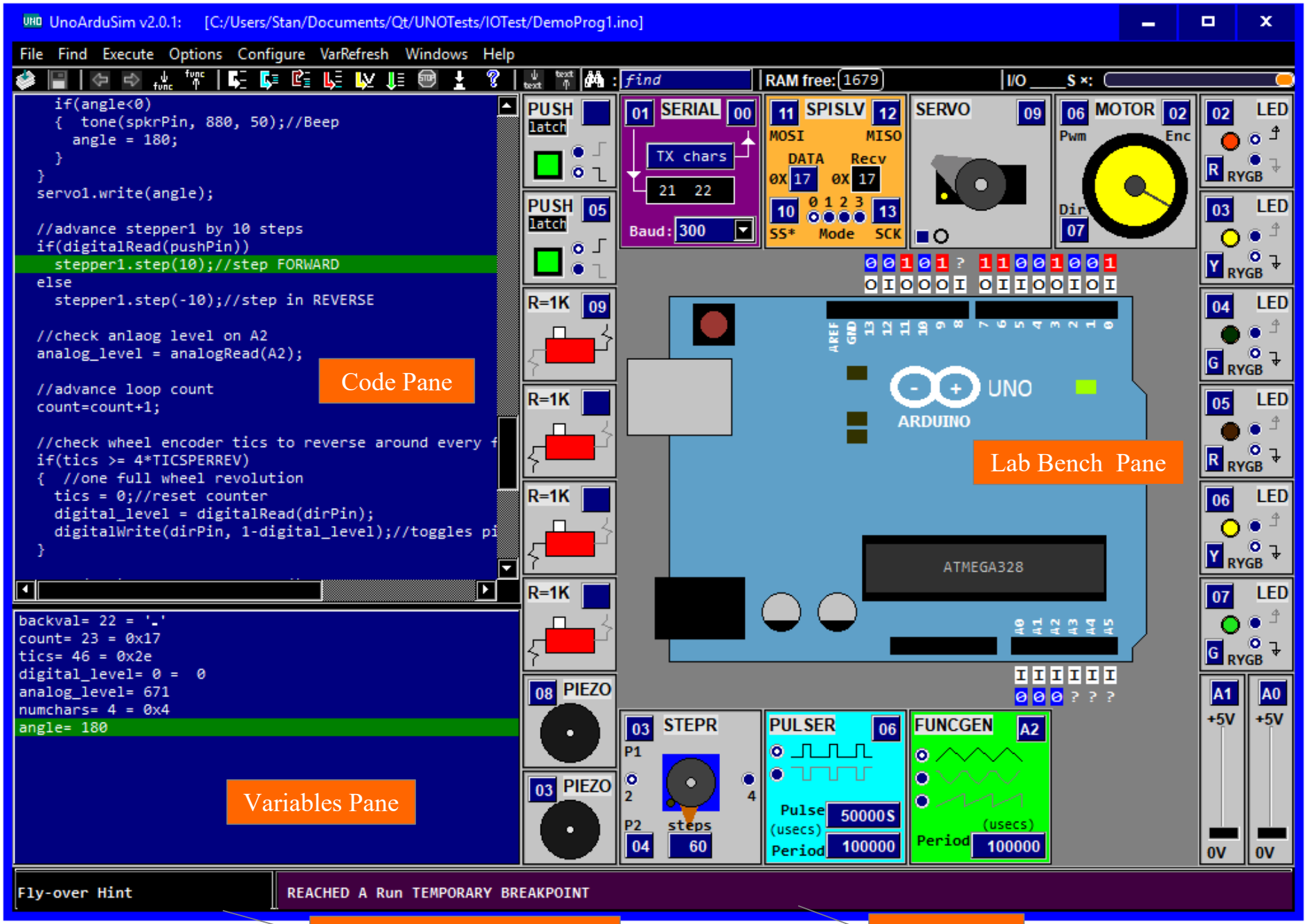
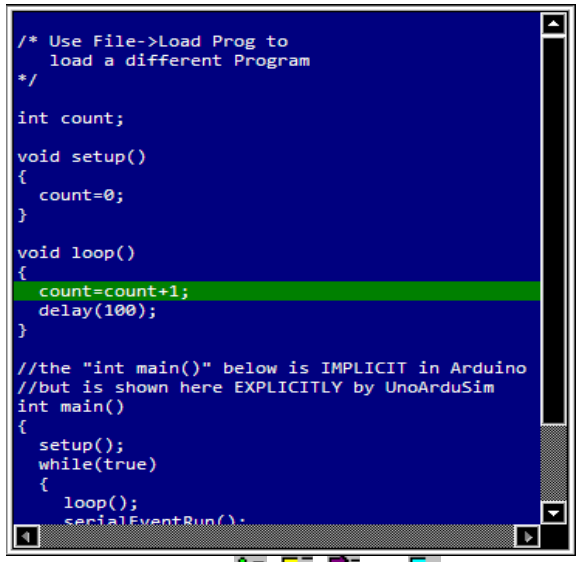
UnoArduSimV2.x Quick Help



Code Pane:



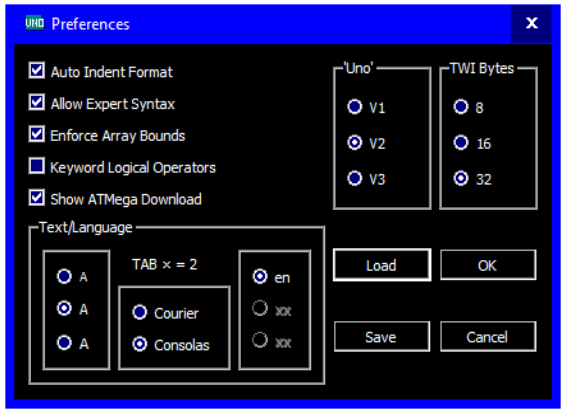
Step or Run using , , , **or** . To **Halt at a specific program line** , first click to highlight that line, and then click **RunTo** . To **Halt when a specific variable is written to,** first click on it to highlight it, and then click **RunTill** .

Jump between functions by clicking anywhere, then use **PgDn** and **PgUp** (or and).

Set search text with , and then **jump to that text** using and

Move between '`#include`' files using .

Preferences:



.

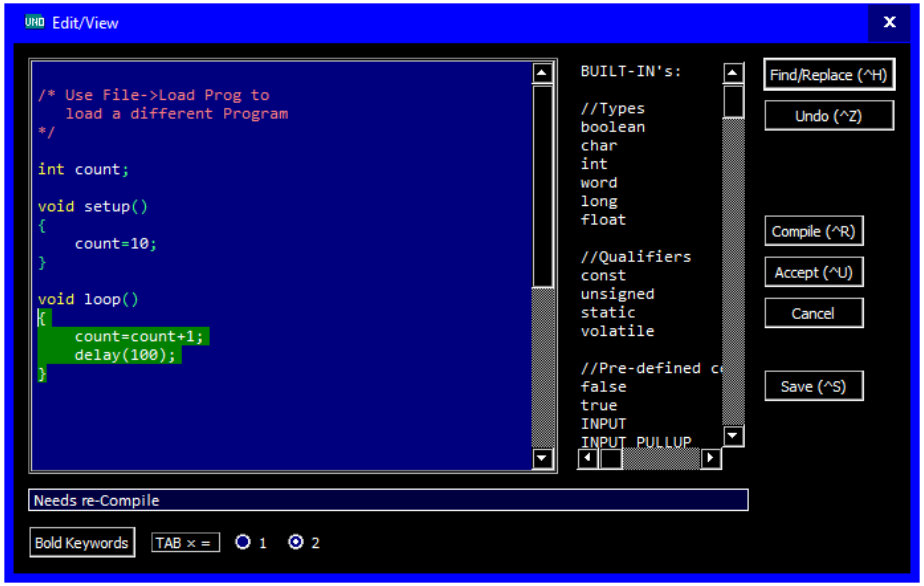
Configure→Preferences to set, save ,and load user choices.

Alternate language(s) set by the user locale, and *by* a *two-letter code on the very first line* of the **myArduPrefs.txt** Preferences file

Edit/View:

To open at a specific line, ***double-click*** on that line n the **Code Pane** or use **File→Edit/View** (and it opens at the last highlighted line)

Tab-indentation will be automatically done if that preference is chosen from **Configure→Preferences** – you can also single or double-size the Tab width.



Add or delete tabs to a group of lines using **right-arrow** or TAB, and **left-arrow** (after first selecting a group of 2 or more consecutive lines)**.**

To add an item (after the caret) **from the right-hand list of Built-ins,** double click on it .

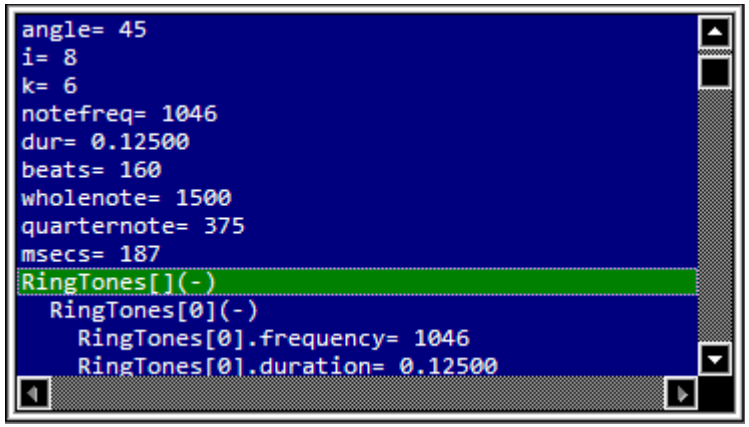
Find (use ctrl-F)**, Find/Replace** (use ctrl-H), **UnDo** (ctrl-Z)**, ReDo** (ctrl-Y)

Compile and leave open (ctrl-R), or **Accept** (ctrl-U) or **Save** (ctrl-S) to close.

Find a brace's **matching brace**-pair partner by double-clicking on it – both braces, plus all text between, become highlighted (as in the image above).

Use **ctrl-PgDn** and **ctrl-PgUp** to jump to next (or previous) empty-line break**.**

Variables Pane:

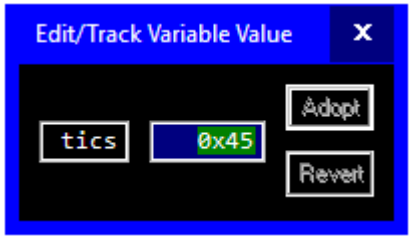


Click on `(+)` to expand, or on `(-)` to collapse arrays and objects.

PgDn and **PgUp** (or and) allow you to quickly jump between variables.

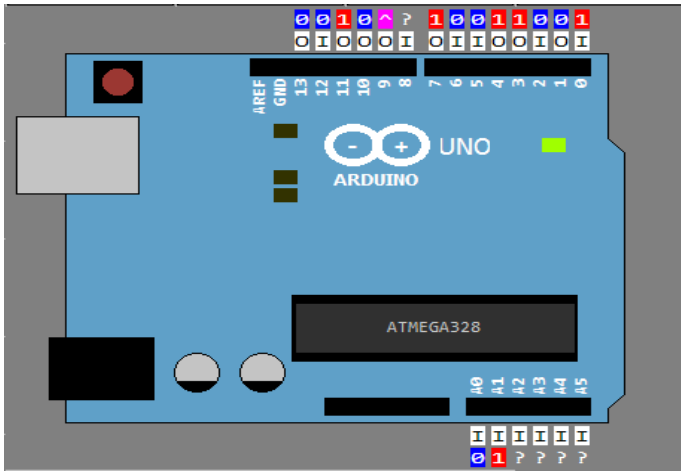
Use the **VarRefresh** menu to control update frequency when executing.

Double-click on any variable to track its value during execution, or to change it to a new value in the middle of (halted) program execution:

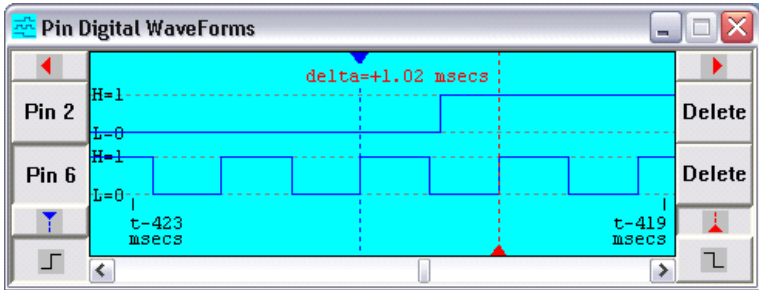


*Or **single-click*** to highlight any variable (or object-member, or array-element) , then use **RunTill** to advance execution up to the next ***write-access*** to that variable or location.

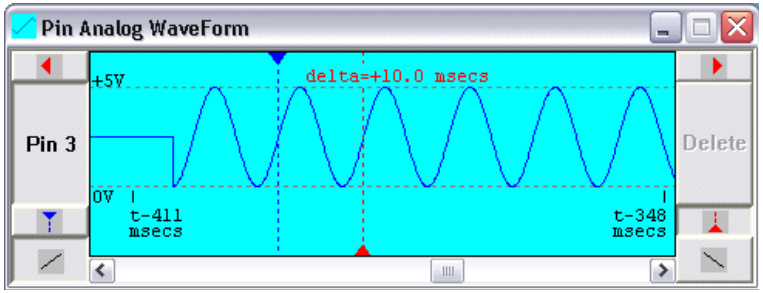
Lab Bench Pane and the 'Uno':



Left-click on any pin to create (or add to) Pin Digital WaveForms:



Right-click on any pin to create a Pin Analog WaveForm window:



To **ZOOM IN** and **ZOOM OUT** use the mouse wheel, or shortcuts ***CTRL-up-arrow*** and ***CTRL-down-arrow***.

Lab Bench Pane 'I/O' Devices

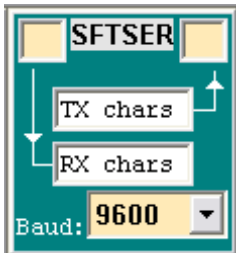
Set numbers and types of each using **Configure→ 'I/O' Devices** . Set pins using a 2-digit value from 00 to 19 (or A0-A5).

'Serial' Monitor ('SERIAL')

Type one or more characters in the upper ('TX chars') edit box and ***hit Return***.

Double-click to open ***a larger window for TX and RX characters.***

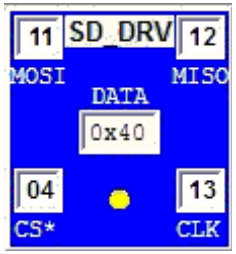
Software 'Serial' ('SFTSER')



Type one or more characters in the upper ('TX chars') edit box and ***hit Return***.

Double-click to open a ***larger window for TX and RX characters****.*

SD Disk Drive ('SD_DRV')

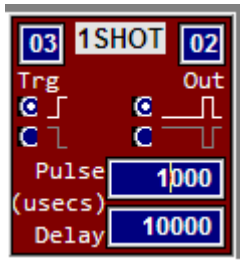


A small 8-Mbyte SD disk driven from SPI signals, and mirrored in an '**SD**' ***subdirectory*** in the **loaded program**'s directory (which will be created if absent)

Double-click *to open* ***a larger window to see Directories, Files,*** **and** ***content***

CS* low to activate.

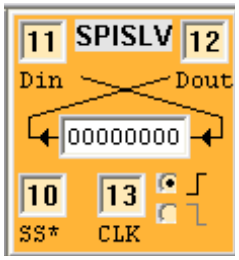
One-Shot ('1SHOT')



A digital one-shot. Produces a pulse of chosen polarity on '**Out**' after a specified delay from either a rising or a falling triggering edge seen on its **Trg** input. Once triggered, it will ignore subsequent trigger edges until the pulse on '**Out**' has been fully completed.

'**Pulse**' and '**Delay**' values (if suffixed with an 'S'). will be scaled from the toolbar 'I/O_____S' slider

Shift Register Slave ('SRSLV')

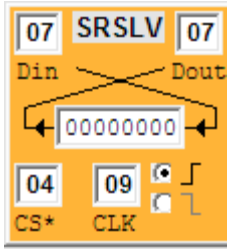


A simple shift-register device.

Edge transitions on CLK will trigger shifting.

SS* low,drives MSB onto Dout.

SPI Slave ('SPISLV')

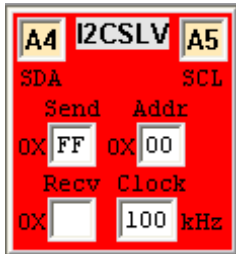


A mode-Configurable SPI slave device ('MODE0','MODE1','MODE2',or 'MODE3')

Double-click *to open* ***a larger window*** to set/view hex '**DATA**' and ***'Recv'*** bytes***.***

SS* low,drives MSB onto MISO.

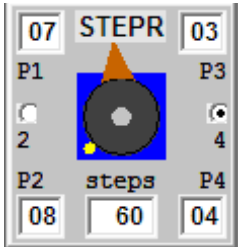
Two-Wire I²C Slave ('I2CSLV')



A *slave-mode-only* I2C device.

Double-click *to open* ***a larger window to set/view hex 'Send'*** and ***'Recv'*** bytes

Stepper Motor ('STEPR)'

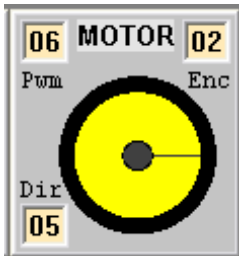


Accepts control signals ***on either 2 or 4 pins. 'Steps' must be a multiple of 4.***

Use '`#include <Stepper.h>`'.

To emulate gear reduction by N in your program , use a modulo-N counter to determine when to actually call '`Stepper.step()`'

DC Motor ('MOTOR')



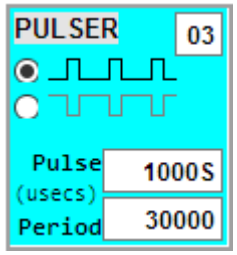
Accepts PWM signals on **Pwm** pin, level signal on **Dir**, and outputs 8 highs and 8 lows per wheel revolution on **Enc**.

Full speed is approximately 2 revs per second.

Servo Motor ('SERVO')

Accepts pulsed control signals on specified pin.
Can be modified to become contunuous-rotation by checking the lower left check-box

Digital Pulser ('PULSER')

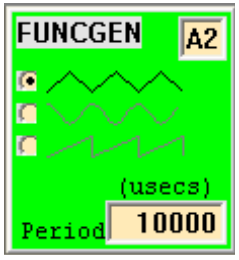


Generates digital waveform signals on specified pin.

Minimum period is 50 microseconds, minimum pulse width 10 microseconds. Both values (if suffixed with an 'S'). will be scaled from the toolbar 'I/O_____S' slider

Choose positive-going pulses (0 to 5V) or negative-going pulses (5V to 0V).

Analog Function Generator ('FUNCGEN')



Generates analog waveform signals on specified pin.

Minimum 'Period' is 100 microseconds, scaled from the toolbar 'I/O_____S' slider (if suffixed with an 'S').

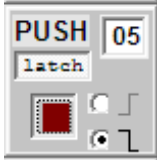
Sinusoidal, triangular, or sawtooth waveforms.

Piezoelectric Speaker ('PIEZO')

"Listen" to signals on any chosen 'Uno' pin.

Push Button ('PUSH)'

A normally-open **momentary** push-button to +5V or ground



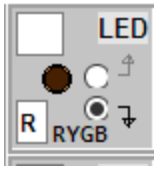
A normally-open **latching** push-button to +5V or ground (depress "latch" button too get this mode).

You can close the push-button by clicking it. or by pressing any keyboard key – contact bouncing will only be produced if you use the **space-bar** key.

Slide Switch Resistor ('R=1K')

A 1 k-Ohm pull-up to +5V OR a 1 k-Ohm pull-down to ground.

Coloured LED ('LED')



R,Y,G, or B LED connected between any chosen 'Uno' pin and either ground or +5V.

Analog Slider

A slider-controlled potentiometer. 0-5V to drive any chosen 'Uno' pin.

Menus

File:

Load INO or PDE Prog 	Allows the user to choose a program file having the selected extension. The program is immediately parsed
Edit/View	Opens the loaded program for viewing/editing.
Save 	Save the edited program contents back to the original program file.
Save As	Save the edited program contents under a different file name.
Next (#include) 	Advances the Code Pane to display the next '`#include`' file
Previous 	Returns the Code Pane display to the previous file
Exit	Exits UnoArduSim.

Configure:

'I/O' Devices	Choose desired number of each type of device (8 large, and 16 small, 'I/O' devices are allowed)
Preferences	Choose automatic indentation, font typeface, optional larger type size, expert syntax, keyword logical operators, enforcing array bounds, showing download, 'Uno' board version, and TWI buffer length

Find :

Find Next Function/Var 	Jump to the next Function in the Code Pane (if it has the active focus), or to the next variable in the Variables Pane (if instead it has the active focus).
Find Previous Function/Var 	Jump to the previous Function in the Code Pane (if it has the active focus), or to the previous variable in the Variables Pane (if instead it has the active focus).
Set Search Text (ctrl-F) 	Activate toolbar Find edit box to define your next-to-be-searched-for text..
Find Next Text 	Jump to the next Text occurrence in the Code Pane (if it has the active focus), or to the next Text occurrence in the Variables Pane (if instead it has the active focus).
Find Previous Text 	Jump to the previous Text occurrence in the Code Pane (if it has the active focus), or to the previous Text occurrence in the Variables Pane (if instead it has the active focus).

Execute:

Step Into (F4) 	Steps execution forward by one instruction, or *into a called function*.
Step Over (F5) 	Steps execution forward by one instruction, or *by one complete function call*.
Step Out Of (F6) 	Advances execution by *just enough to leave the current function*.
Run To (F7) 	Runs the program, *halting at the desired program line* -- you must first click to highlight a desired program line before using Run To.
Run Till (F8) 	Runs the program, *halting when the highlighted Variables Pane variable location is next written to (*click to highlight a desired item before using RunTill).
Run (F9) 	Runs the program.
Halt (F10) 	Halts program execution (*and freezes time*).
Reset 	Resets the program (all value-variables are reset to value 0, and all pointer variables are reset to 0x0000).
Animate	Automatically steps consecutive program lines *with added artificial delay* and highlighting of the current code line.
Slow Motion	Slows time by a factor of 10.

Options:

Step Over Structors/Operators	Fly right through constructors, destructors, and operator overload function during any stepping (i.e. it will not stop inside these functions).
Register-Allocation Modelling	Assign function locals to free ATmega registers instead of to the stack..
Added loop() Delay	Add 1 miilisecond. (by default) to each call to `loop()` (in case user has not added any delays anywhere)
Error on Uninitialized	Flag as a Parse error anywhere your program attempts to use a variable without having first initialized its value.
Show Program Download	Show program download to the 'Uno' board (with attendant delay).

Configure menu commands:

'I/O' Devices	Choose desired number of each type of device (8 large, and 16 small, 'I/O' devices are allowed)
Preferences	Choose automatic indentation, font typeface, optional larger type size, expert syntax, keyword logical operators, enforcing array bounds, showing download, tab size multiplier, 'Uno' board version, TWI buffer length

VarRefresh:

Allow Auto (-) Collapse	Allow UnoArduSIm to collapse displayed expanded arrays/structs/objects when falling behind real-time.
Minimal	Only refresh the variables Pane display 4 times per second.
HighLight Updates	Highlight the last-changed variable value (can cause slowdown).

Help menu commands:

Quick Help File	Opens the UnoArduSim_QuickHelp PDF file.
Full Help File	Opens the UnoArduSim_FullHelp PDF file.
Bug Fixes	View significant bug fixes since the previous release..
Changes/Improvements	View significant changes and improvements since the previous release.
About	Displays version, copyright

Windows:

'Serial' Monitor	Add a serial IO device (if none) and pull up a larger 'Serial' monitor TX/RX text window.
Restore All	Restore all minimized child windows.
Pin Digital Waveforms	Restore a minimized Pin Digital Waveforms window.
Pin Analog Waveform	Restore a minimized Pin Analog Waveform window.