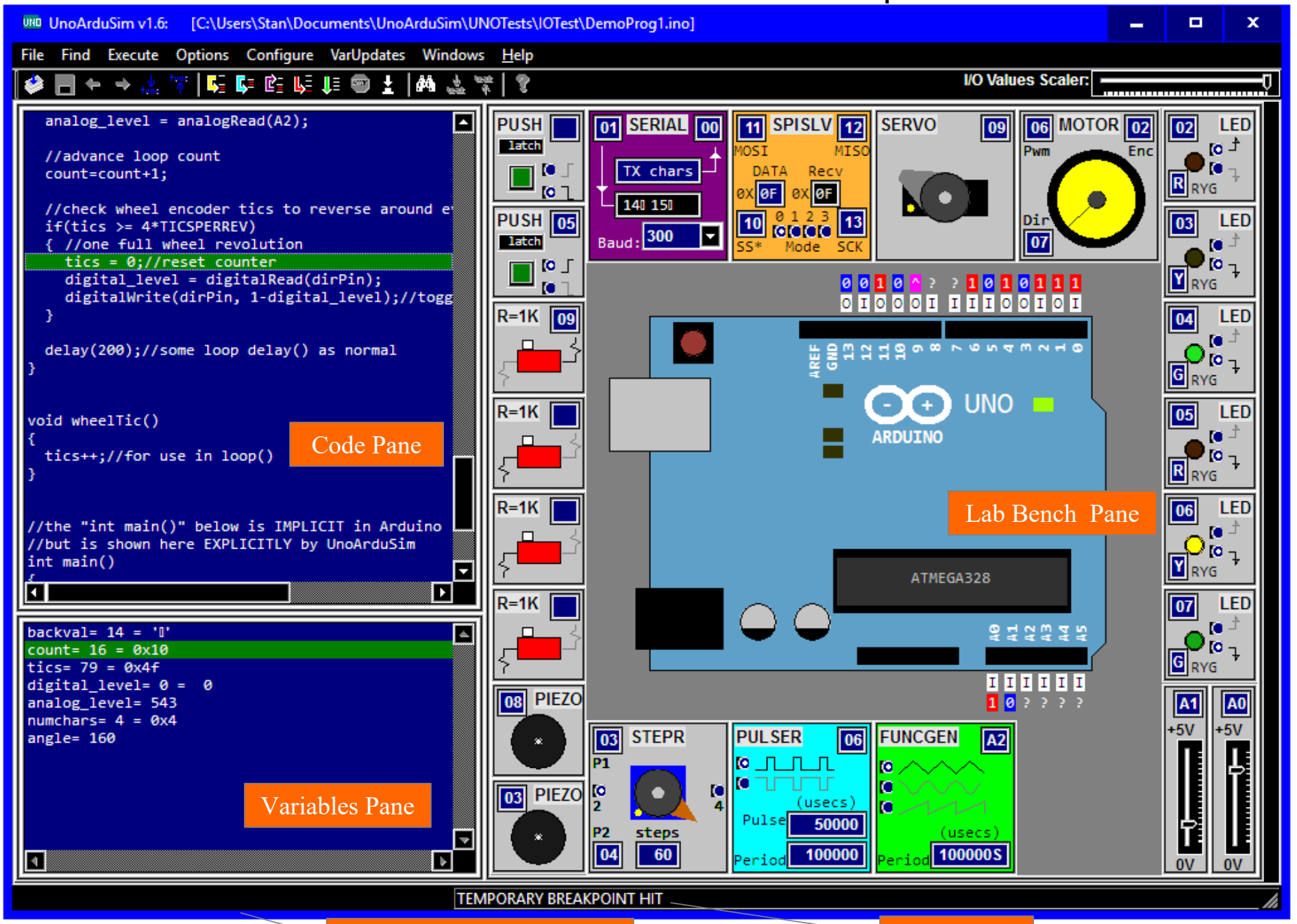
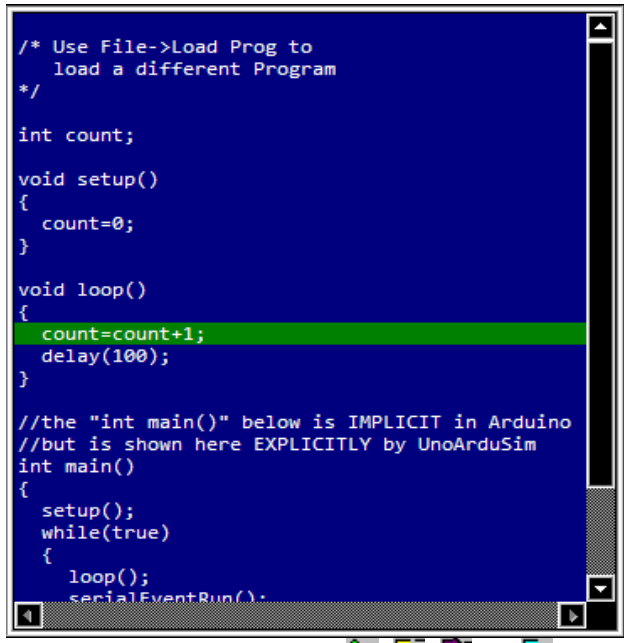
UnoArduSimV1.6.1 Quick Help



Code Pane:



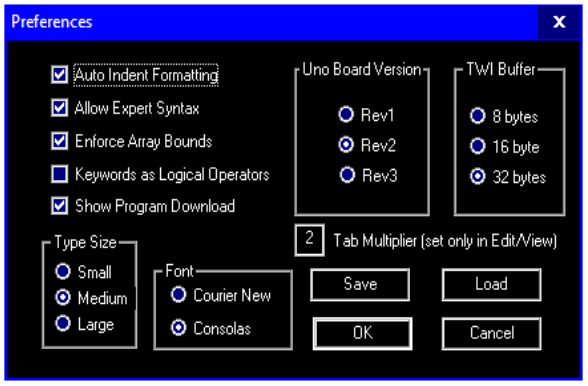
Step or run execution using , , , **or** . **Halt at a specific program line** by first clicking to highlight that line, and then click **RunTo** .

Jump between functions by clicking anywhere, and then using **PgDn** and **PgUp** or and .

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

Move between `#include`'d files using .

Preferences:



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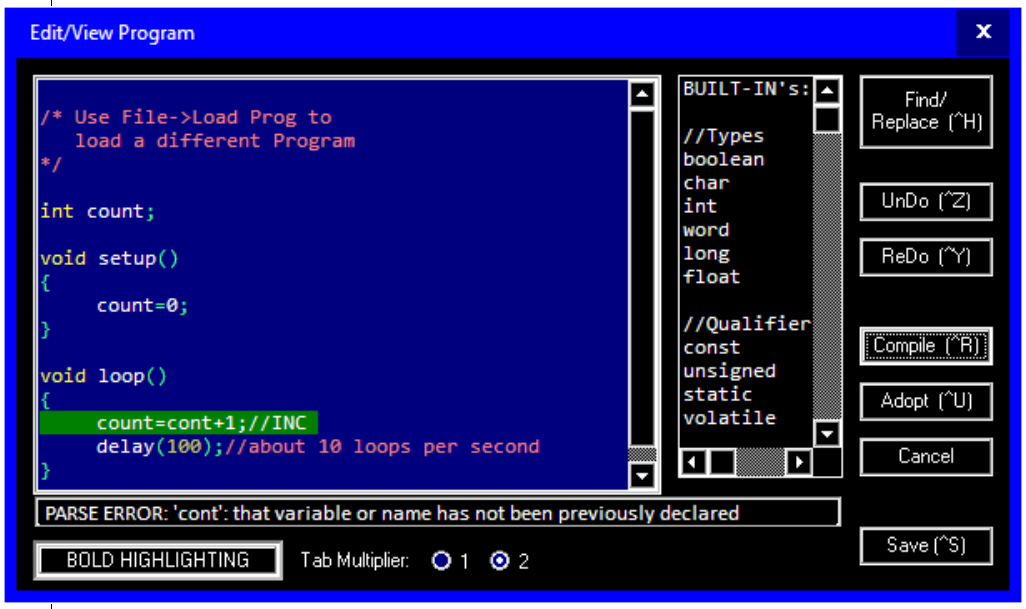
Config→Preferences to set, save and load user choices

Edit/View:



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

Will be auto-tab-indent formatted if chosen from **Config→Preferences**, and you can single-size or double-size the tab width.

To add an item (after the caret) **from the right-hand BUILT-INS list,** double click it .

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)**.**

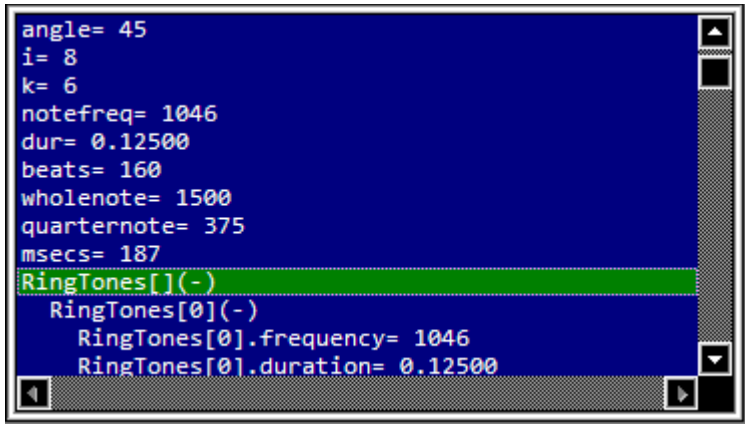
Find (use ctrl-F)**, Find/Replace** (use ctrl-H), **Undo** (ctrl-Z)**, Redo** (ctrl-Y)

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

Find a brace's **matching brace** pair partner by double-clicking on a brace – the barces and all text between them are highlighted (as in the image above).

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

Variables Pane:

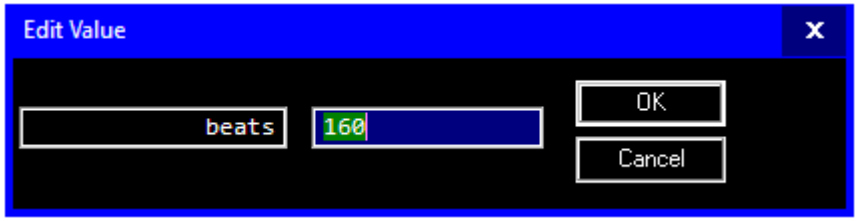


Click on (+) to expand, or on (-) to collapse arrays and objects.

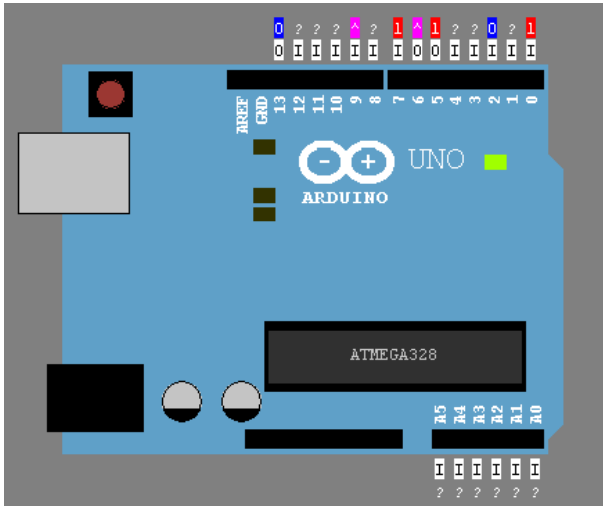
PgDn and **PgUp** or and allows you to quickly jump between variables.

Use the **VarUpdates** menu to control update frequency when **Run**-ning.

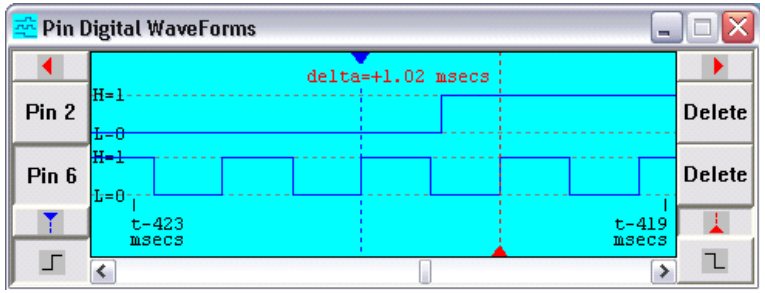
Double-click to change any variable to a new value in the middle of (halted) program execution:



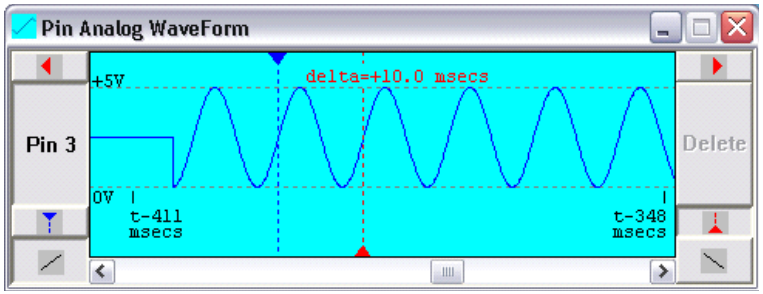
Lab Bench Pane and Uno:



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



Right-click any pin to create 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

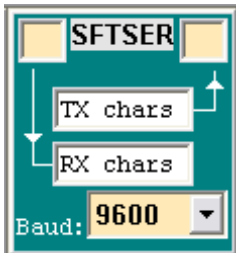
Set numbers and types of each using the **Config→ I/O Devices** menu selection. Set pins using a 2-digit value from 00 to 19.

Serial (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.***

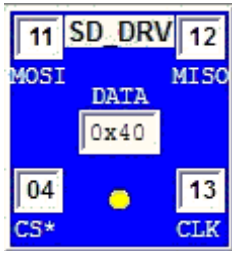
Software Serial (SFTSER)



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)

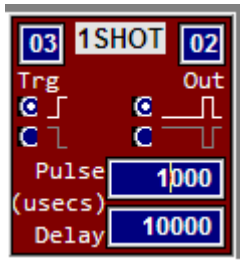


A small 8Mbyte SD drive driven from SPI signals, and mirrored in an '**SD**' ***subdirectory*** in the **loaded program**'s directory (will be created if absent)

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

CS* low to activate.

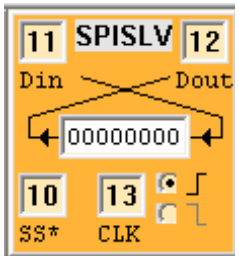
One-Shot (1SHOT



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 are both scalable from the toolbar IO Values Scaler (if suffixed with an 'S').

Shift Register Slave (SRSlave)

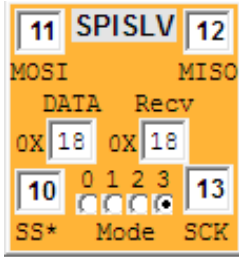


A simple shift-register device.

Edge transitions on CLK to trigger shifting.

SS* low,drives MSB onto Dout.

SPI Slave (SPISLV)

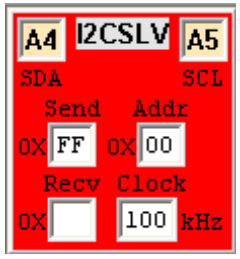


A mode-configurable SPI slave device (MODE0,MODE1,MODE2,or MODE3)

Double-click *to open* ***a larger window*** to set/view hex ***TX and RX bytes.***

SS* low,drives MSB onto MISO.

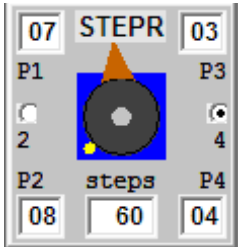
Two-Wire I²C Slave (I2CSLV)



A *slave-mode-only* I2C device.

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

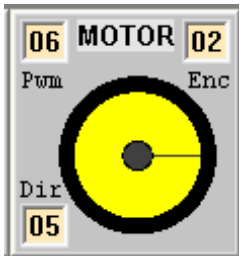
Stepper Motor (STEPR)



Accepts control signals ***on either 2 or 4 pins.***

Use `#include <Stepper.h>`.

DC Motor (MOTOR)



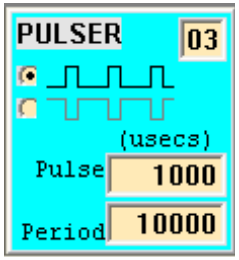
Accepts PWM signals on Pwm pin, level signal on Dir, and outputs 8 highs and 8 lows per wheel revolution on Enc.

Full speed is approximately 2 revs per second.

Servo Motor

Accepts pulsed control signals on specified pin.

Digital Pulser (PULSER)

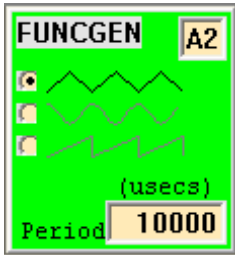


Generates digital waveform signals on specified pin.

Minimum period is 50 microseconds, minimum pulse width 10 microseconds. Both values are scalable from the toolbar IO Values Scaler (if suffixed with an 'S').

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, scalable from the toolbar IO Values Scaler (if suffixed with an 'S').

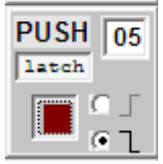
Sinusoidal, triangular, or sawtooth waveforms.

Piezoelectric Speaker (PIEZO)

"Listen" to signals on any chosen Uno pin.

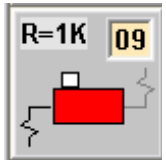
Push Button (PUSH)

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



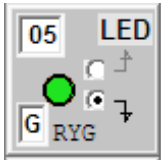
A normally-open **latching** pushbuttin to +5V or ground (depress "latch" button too get this mode)

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, or G LED between any chosen Uno pin band either ground or +5V.

Analog Slider

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

Menus

File menu commands:

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) file 	Advances the CodePane to display the next `#include`'d file
Previous file 	Returns the CodePane display to the previous file
Exit	Exits UnoArduSim.

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 auto-indent formatting, 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

Find menu commands:

Prompt	Click in either the Code Pane or the variables Pane to give it the active focus for this menu's commands.
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 	Pull up a dialog box to edit your 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 menu commands:

Step Into (F2) 	Steps execution forward by one instruction, or *into a called function*.
Step Over (F4) 	Steps execution forward by one instruction, or *by one complete function call*.
Step Out Of 	Advances execution by *just enough to leave the current function*.
Run To 	Runs the program, *halting at the desired program line* -- you must first click to highlight a desired program line before using Run To.
Run 	Runs the program.
Halt 	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 menu commands:

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 200 usec. (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 auto-indent formatting, 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

VarUpdates menu commands:

Allow Auto (-) Collapse	Allow UnoArduSIm to collapse displayed expanded arrays/structs/objects when falling behind real-time.
Allow Reduction	Allow reduced frequency of display updates in the Variables Pane to avoid flicker or reduce CPU load when falling behind real-time– then values shown are only updated periodically, ***but also whenever the program is halted***.
Minimal Updates	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..
Change/Improvements	View significant changes and improvements since the previous release.
About	Displays version, copyright

Windows menu commands:

Serial Monitor	Add Serial IO device (if none) and pull up a larger Serial monitor TX/RX text window.
Restore All	Restore all minimized child windows.
Prompt	Left-Click or Right-Click an Uno Pin to create a Waveform window:
Pin Digital Waveforms	Restore a minimized Pin Digital Waveforms window.
Pin Analog Waveform	Restore a minimized Pin Analog Waveform window.