Overview of the Liberty BASIC Environment:

This chapter will introduce you to:

The Liberty BASIC browser ; The Liberty BASIC Trace Window BASIC editors

The Liberty BASIC browser

When you start Liberty BASIC, you get a window that looks like this:

			~~~~		Liber	ty BAS	IC [] c	:\libe	rty 21	38112	~~~~~	
	22.2	<u>F</u> ile	<u>E</u>	dit	Dire <u>c</u>	tories	F <u>i</u> les	Sg	ource	<u>H</u> elp		
+		a: b: <b>c:</b> d:		fwl ged hai liba mo mo ms pro	 oworks. ngman ety use c dos comm			•	ascii.b bigrap blank.l boxes. brncht button button calc.b	as h.bas bas bas st.bas s.bas s.bas s1.bas as		
+				pul st2 sta	blish 86 cker			+	calc1.l circles clock	bas .bas has		
<b>1</b>	0	ascii	.b	as		332	92-0	13-02	2 10	:41:30	а	
		bigra	ph	.ba	S	498	92-0	17-07	22	:31:36	а	
	ĥ	blank	• D	as		387	92-0	4-27	7 19	:13:56	а	
		boxes	• D	as		881	92-6	15-20	5 20	:25:14	а	
		Drnch	ts	C.D	as	256	92-0	4-09	/ 21	:34:02	а	
		DUCCO	ns	.Da:	5	1011	92-0	0 0-	1 21	.18:30	a	
		00000	ns	1.0	dS	1071	92-6	18-Z1	/ ZZ	34:42	d	
	1	Calc	h	-		U 5101	92-0	10-20 14-91	5 ZJ 1 22	. 18:0Z	d	
		calc.	иа: Б	5		2101 E970	92-0	0-31	9 22	.21.14 .90.Eh	a	
		circ]	• U (	d5 b3	-	2070	92-0	17-00 17-00	) I/ ) 90	.20.24 .99.EA	a	
		clock	е5 Б	.va: .c	5	2186	92-0	12-10 10-20	5 20 5 99	.22.30 .46.56	а -	
	Ĵ	CIOCK	• • •	05 vt		2100	92 0	19 2. 19 1 J	, 22	.40.30 .51.JQ	a 2	
•		+	•••			2107	72 0					

The window has four panes. Starting in the upper-left-hand corner, the first pane is where you select the disk drive on which your work is or will be stored. To its right is a pane where you select the directory where your work is. The next pane contains a list of ***.bas** files. The big pane comprising the lower half of the window is a source editor, which displays file details (see illustration above) until you select a file to edit.

Each of the panes in the browser has a pull-down menu. Each pull-down menu can also be popped-up. To pop up a menu, point into that pane with the mouse and press the right-hand mouse button once. We will use the pull-down menus for our examples here.

Let's begin by creating a BASIC program file. Pull down the **Files** menu and select **Create**.

	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			~~~~~		~~~~~~		
	Liberty BASIC [] c:\liberty 2138112							
<u>F</u> ile <u>E</u>	dit Dire <u>c</u> tori	ies	F <u>i</u> les	S <u>o</u> ure	ce	<u>H</u> elp		
a: h:	fwl geoworks		Remo	ove				
C:	hangman		Rena	те		ſ		
d:	liberty		Copy Print BASIC Editor					
	mouse					s	s	
	mqc msdos					:		
	procomm	Create						
	publish	[Mode	;				
	stacker		Read	Entire	: F%(:		
ascii.bas 332		92-03	- 62	10:4	11:30	а		
bigraph.bas 498		92-07	-07	22:3	31:36	а		
hlank has 387			92-BT	-97	10.1	13-56	a	

You will be asked to type the name of your new BASIC program. Type **ellipses**, then strike return or click on **OK**.

	ereur 	Prompter
	SF 9431148(1754)	File name? (No path name permitted)
]		ellipses
1	2012年2月11日1日 安全市	OK

Then click on $\underline{\mathbf{Y}}\mathbf{es}$ or press Enter.



The file will be created, and you will be given an empty source editor pane.

Now type in the source code below, so that your window looks like the illustration.

' draw some ellipses

nomainwin

```
open "Ellipses" for graphics as #1

print #1, "down"

print #1, "place 130 130"

for x = 30 to 230 step 10

print #1, "ellipse "; x ; " "; 260 - x

next x

print #1, "flush"

input r$

close #1
```



Now pull down the **<u>File</u>** menu and select **<u>Save</u>** and your program will be saved to disk.

		~~~~~~	~~~~~~		~~~~		~~~~~~
		Libert	iy BAS	IC [] c:\	libe	rty 20	31616
<u>F</u> ile	<u>E</u> dit	Dire <u>c</u> t	ories	F <u>i</u> les	S	ource	<u>H</u> elp
<u>N</u> ev	v Work	space	Alt+N		+	button	s.bas
<u>O</u> pen			Alt+0			button:	s1.bas
<u>S</u> ave			Alt+S			calc1.	bas
Save As			Alt+A			circles	.bas
Print			Alt+P			clock.l	bas ver has
Res	tore		Alt+R			demo.t	)92
	pu	DIISN				draw.b	as

Now let's run the program.

Liberty BASIC [] c:\liberty 2031616								
<u>F</u> ile	<u>E</u> dit	Dire <u>c</u> tories	S <u>o</u> urce	<u>H</u> elp				
a:	fw	I		<u>R</u> un				
b: c:	ge ha	oworks ngman		<u>D</u> ebug				
d: lib		liberty		<u>B</u> ranch Labels				
_	mouse			circles.bas				

and we get:



Now close the window.

# Using the Debugger:

Let's take a closer look at how our **ellipses** program works using the debugger. Pull down the **Source** menu and select **Debug**.

	Liberty BASIC [] c:\liberty 2031616								
<u>adit Directories Files Source H</u> elp									
	fw	L		<u>R</u> un					
	ge ha	oworks ngman		<u>D</u> ebug					
liberty				<u>B</u> ranch Labels					
	mo	use	Circles	.bas					

A dialog will appear asking if you want to watch variables. Respond by clicking on  $\underline{\mathbf{Yes}}$  or by pressing Enter.



A Trace Window will appear, and also another window labeled **Program named - 'ellipses.bas'** 

- 4		Trace Window
	<u> </u>	e <u>E</u> dit
]		
1		
		' draw some ellipses
		nomainwin
		open "Ellipses" for graphics as #1
		print #1, "down"
		print #1, "place 130 130"
		for x = 30 to 230 step 10 print #1 "ellinse "· y · " "· 260 - y
		next x
		print #1, "flush"
		input r\$ close #1
		CIUSE #1
	S	itep Walk Run

Select the Trace Window to bring it to the foreground and to make it the active window. Notice that it has two panes. The pane on the top shows variables as they change value. The pane on the bottom shows each line of code as it executes.



The three buttons on the bottom of the window let you pick three different modes of execution:

- Step Step one line at a time through program execution
- $\ensuremath{\textbf{Walk}}$  Run the program non stop highlighting each line as it executes
- Run Run full speed. Do not highlight each line

Execution always begins in Step mode when the **Debug** option is used.

Now let's click on the **Step** button once. Your Trace Window should look like:

•	•		Trace Window
		<u>F</u> ile	<u>E</u> dit
1		Ιſ	
]			
1		Ιr	
			' draw some ellipses
			nomainwin
			open "Ellipses" for graphics as #1 print #1, "down"
			print #1, "place 130 130"
			for x = 30 to 230 step 10
			next x
			print #1, "flush"
			input r\$ close #1
]			
		St	ep Walk Run

Now we see that the **nomainwin** statement has been executed. The **nomainwin** command does nothing in **Debug** mode, only in **Run** mode. See the text in chapter 3 on **NOMAINWIN**. When we click on **Step** again, the **open** statement will open a graphics window for us labeled **Ellipses**. Try it.

' dra <del>w</del> some ellipses
nomain <del>w</del> in
open "Ellipses" for graphics as #1
print #1, "down"
print #1, "place 130 130"
for x = 30 to 230 step 10
print #1, "ellipse "; x ; " "; 260 - x
next x
print #1, "flush"
input r\$
close #1

Now notice that the Trace Window now highlights the next line, and that a graphics window appears labeled **Ellipses**.



Now click on Step twice more. The two statements:

print #1, "down" print #1, "place 130 130"

will be executed. You won't be able to immediately see the effect of these two statements. The first one tells the window's graphic pen to be 'lowered' to the surface of its 'paper'. The second statement places the pen at 130 in x and y.

Now click on Step again. Now look at the variables pane in the Trace Window.

			Trace Window
Ē	ile	<u>E</u> dit	
	<b>x</b> =2	30	

This shows that the variable  $\mathbf{x}$  has been assigned the value 30. Each and every time that  $\mathbf{x}$  (or any other variable), changes, we will be informed as to just what that change is.

Now click on Step again. The line:

print #1, "ellipse "; x ; " "; 260 - x

will be executed, and you will see this:



Now click on **Step** a dozen or so times, watching the value of **x** change and seeing several new ellipses drawn. Finally, click on **Walk** and the program will run non-stop, highlighting each line as it goes, and displaying each new value of **x**. When this is done, you may close the graphics window, the Trace Window, and the window labeled: **Program named: 'ellipses.bas'**.

When you close this third window, Liberty BASIC will ask if you want to terminate **ellipses.bas**. Respond by pressing Enter or clicking on  $\underline{Y}es$ .

## Creating a tokenized file:

Liberty BASIC provides a facility that greatly speeds program loading. To do this, you must create a ***.TKN** file from your **.BAS** source file. This is a simple matter. We will tokenize the **dialog3.bas** source file as an example. Bring up the **dialog3.bas** file as shown here:



Now pull down the Source menu and select Make *.TKN File, like so:

Liberty BASIC [] c:\liberty 2293760								
<u>File E</u> dit Dire <u>c</u> tories F <u>i</u> les <u>Source</u> <u>H</u> elp								
a:	files		<u>R</u> un					
D: C:	b: float G: fwl			<u>D</u> ebug				
d:	geoworks		<u>B</u> ranch Labels					
	hangman Ibsource		<u>M</u> ake *	TKN File				
liberty			dialog	3.bas				
mouse mqc			digtest.bas draw1.bas					

Liberty BASIC will compile dialog3.bas into a tokenized format and save it. When it is ready you will see:



Clear the dialog box by pressing Enter or by clicking on OK.

Now we are ready to run the *.TKN file. Pull down the Files menu and select *.**TKN** as shown:

		Liberty BAS	IC [] c:\liberty 2293760					
<u>F</u> ile	<u>E</u> dit	Dire <u>c</u> tories	F <u>i</u> les	So <u>u</u> rce	<u>H</u> elp			
a: b: C: d:	file floa fwl gea hau lbs ibs mo mq ms	s at pworks ngman ource atty use c dos	<u>R</u> em Re <u>n</u> a <u>C</u> opy <u>P</u> rint BASI Cre <u>a</u>	ove ame 7 C <u>E</u> ditor te	as er.bas eas eas bas bas bas eas eas			
'Dialog Box Example #3								

'Dialog Box Example #3

The list of ***.BAS** files will be replaced by a list of ***.TKN** files. Select the **dialog3.tkn** file as shown:



Now pull down the **Source** menu and select **Run**. Liberty BASIC will compile your program almost twice as quickly as when running from a ***.BAS** file. To see a list of ***.BAS** files again, pull down the **Files** menu and select ***.BAS**.

# Shortcuts:

Here is a list of key combinations that activate useful features in Liberty BASIC:

Shift + Del	Cut
Ctrl + Ins	Copy
Shift + Ins	Paste
Clear	Del
Select All	Ctrl + A
Print Selection	Ctrl + P
Find/Replace	Ctrl + F
Find Again	Ctrl + G
Open Scratchpad	Alt + N
Open a File Editor	Alt + O
Save	Alt + S
Save As	Alt + A
Print	Alt + P

These features are also available in the  $\underline{File}$  and  $\underline{E}dit$  pull-down menus.