

# Lunar IDE

## User's Manual

Program and Manual by Jonah Scheinerman

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# 1 ... Getting Started

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## 1-1 ... What is Lunar IDE?

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Lunar IDE is an Integrated Development Environment (IDE) for the TI-83+(se) / TI-84+(se) Texas Instruments calculators. An IDE is program editor which provides tools to make programming easier. This IDE is made to edit programs in the TI BASIC language. This editor provides tools which should make editing easier for beginning programmers. It is also a good code resource for learning how to code in BASIC and use some of the assembly language subroutines that I use. Read on to learn more about using Lunar IDE and I hope you enjoy.

## 1-2 ... Installation

---

To install Lunar IDE send the following programs to your calculator via a link cable:

```
LUNARIDE.8xo  
LUNARIDE.8xp  
Pic1.8xi  
Pic2.8xi
```

Pic1 and Pic2 can be archived.

Your calculator must have xLIB installed in order to run the program. xLIB can be downloaded [here](#). To enable xLIB go into your applications menu by pressing [APPS] and then scroll down to xLIB, press [ENTER], [1], [3].

## 1-3 ... Running the IDE

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Running the IDE will take some getting used to, it is not as simple as running any other program on the calculator. To begin, you must ungroup the group "LUNARIDE." This can be done by pressing [2nd], [+], [8], [>] and then scrolling down to LUNARIDE and pressing [ENTER].

Then, run the program LUNARIDE. Once you quit out of Lunar IDE it will ask you whether it should "Clean Up?" If you say yes, all of the contents of the LUNARIDE group will be deleted and the next time you run the program you will have to ungroup it again. If no is selected, you will not have to ungroup it again.

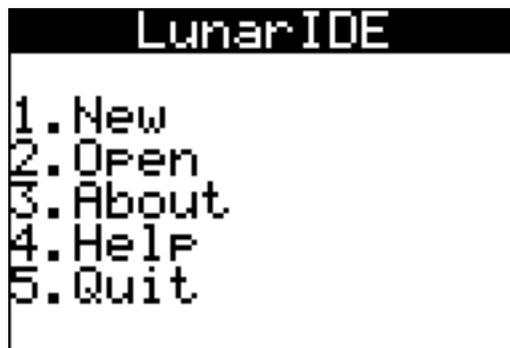
## 2 ... The Interface

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### 2-1 ... The Main Menu

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The main menu will be displayed every time that you launch Lunar IDE. With all menus in Lunar IDE you will have to push one of the numeric keys to access any of the functions in that menu. Press the key corresponding to the number of that item. The menu has five options shown below:



The main menu

- 1 ... **New**: This will create a new program. See section 3-1.
- 2 ... **Open**: This will open an already started program. See section 3-2.
- 3 ... **About**: This will display the title screen. After you press any key, it will show you a brief about screen. After pressing any key, you will be returned to the main menu.
- 4 ... **Help**: This will open a help screen that will tell you the hotkeys for Lunar IDE.
- 5 ... **Quit**: This will quit Lunar IDE.

### 2-2 ... Line Viewing

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After opening a saved program or creating a new program you will be shown the line viewer. The line viewer will display 8 lines of the selected program. The current line will be inverted. You can use the up and down arrow keys to scroll through the lines. If you want to edit a line press the [ENTER] key. If you want to insert blank lines, press the [-] key to insert a line before the current line, or the [+] key to insert a line after the current line. You can press [GRAPH] at any point to quit or [MODE] at any point to view the options menu (See section [3-4](#)). If the line is greater than 15 characters long, you can

use the left and right arrows to scroll through. If the up or down keys are pressed, the line will be returned to its starting position and you will go down a line.

```
:real<14
: If Ans<3000: The
:ClrHome
:Pause "Not enou
:real<14
: If Ans<3000
:Goto 0:End
:3→0:Asm(Pr9mZCE
```

The line-viewing screen

## 2-3 ... Line-Editing

---

If, from the line-viewing interface, you press [ENTER] you will be taken to the line-editing interface. You can return to the line viewer at any point by pressing [ENTER]. The screen will look like this:

```
1 2
L13-----[a]
: If Ans>_3000
3 4
5 6 7
[←] [→] [ON] -----
```

The line-editing screen

**1 ... The Line Number:** This indicates what line you are editing. The number after the L is the line number.

**2 ... The Capitalization Status:** This indicates what kind of letters your keystrokes will produce. The letter between the brackets indicates this:

- A = Uppercase
- a = Lowercase
- # = Numerical
- 2 = 2nd Functions

- 3 ... The Command Line:** This is the current line that is being edited.
- 4 ... The Cursor:** This is an underscore (“\_”) that indicates where the letters that you type will appear.
- 5 ... The Previous Arrow:** This is an indicator arrow that corresponds with the [Y=] key. If you press [Y=], it will go to the previous line to edit.
- 6 ... The Next Arrow:** This is an indicator arrow that corresponds with the [WINDOW] key. If you press [WINDOW], it will go to the next line to edit.
- 7 ... Auto-Complete Toggle:** This indicates whether auto-complete (see section [3-3-1](#)) is on or off. The state can be changed using the [ZOOM] key.

For more information editing, go to section [3-3](#).

## 3 ... Usage and Features

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### 3-1 ... Creating New Programs

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Upon opening Lunar IDE you will be shown the main menu with four options. One of these options is "1.New" Press [1] to select this option. You will be shown this screen:

```
Program Name
^
Type "/CANCEL"
to return.
```

New program prompt screen

Type in the desired program name. If you input "/CANCEL" Lunar IDE will return you to the main menu. If the name you inputted is too long, then it will prompt you for the name again. If the program already exists it will show you a menu that says "Program exists." If you select "1:Overwrite" the program will be deleted and a new program of the same name will be created. If you select "2:Cancel" Lunar IDE will ask you for the name again.

#### 3-1-1 ... "Done" Remover

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After this you will be shown this screen:

```
Remove "Done"?
1.Yes
2.No
```

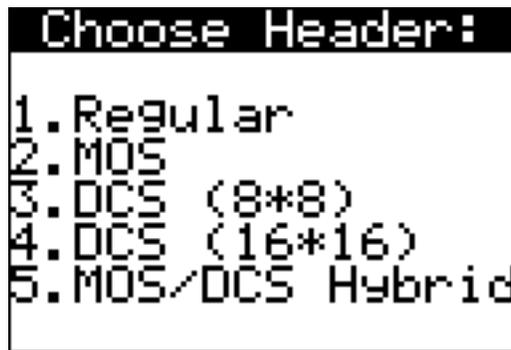
Remove "Done" menu

If you select one, "1.Yes" Lunar IDE will change the last line of the program to `Output(1,1,"` which will remove the done that is displayed at the end of a program. If you select two, "2.No" Lunar IDE will leave the last line of the program blank.

### 3-1-2 ... The Header Helper

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After this you will be shown this screen:



Header Helper selector

This is the Header Helper screen. The Header helper is designed to make life easier when setting up the header for your program. If you are unaware what a header is, read this:

A header is a one or two line identification placed at the beginning of a program so that a calculator shell will recognize it. The shell [MirageOS](#) uses a one-line token to allow MirageOS to see the program. The shell [Doors CS 6](#) uses a two-line token to allow you to create a custom icon for Doors CS. Doors will automatically recognize your program but this gives you a 8x8 or 16x16 icon.

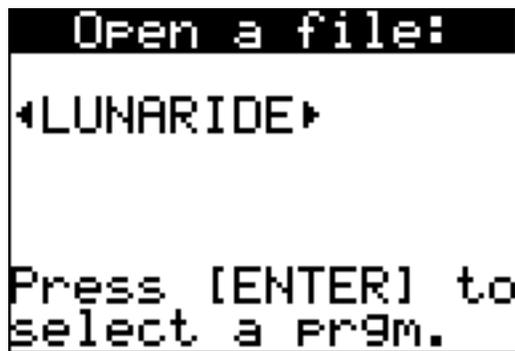
- 1 ... **Regular**: This will not create a header.
- 2 ... **MOS**: This will prompt for a description, which will serve as the token for MirageOS.
- 3 ... **DCS (8\*8)**: This will create a standard 8x8 icon and generate the two-line header for Doors CS.
- 4 ... **DCS (16\*16)**: This will create a standard 16\*16 icon and generate the two-line header for Doors CS.

5 ... MOS/DCS Hybrid: This will prompt for a description, which will be combined with a 16\*16 Doors CS icon so that the program is recognizable in MirageOS and has a special icon in Doors CS.

## 3-2 ... Opening Programs

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Upon opening Lunar IDE you will be shown the main menu with four options. One of these options is "2.Open" Press [2] to select this option. You will be shown this screen:



Open program prompt screen

From this point, you can press the left and right arrow keys to scroll through the program possibilities. When you have found the program you want, press [ENTER]. You will not be able to select any program that is a non-compiled assembly language program; instead, you will receive this alert:



Alert screen when an asm program is selected.

## 3-3 ... Editing

---

When editing a line in Lunar IDE, you only see one line, and that line only. When in the editor, you can switch to a line view at any time by pressing

---

[ENTER] (from there you can press [ENTER] to edit the selected line). For specifics on the editing interface, go to section [2-3](#).

The letter/symbol in the upper right-hand corner indicates the current typing mode. To switch between uppercase and lowercase modes press the [ALPHA] key and to switch between numerical and symbolic mode press the [2nd] key. If you are in an uppercase or lowercase mode and want to switch to symbolic or numeric, press [2nd], and numeric mode will be turned on. Also, pressing the [VARS] key, will display a character matrix to the screen. Press the arrow keys to move the bottom and right arrows and press enter to select the highlighted character. This will insert the character into the text before your cursor. To exit from the matrix without selecting a character, press [CLEAR].

In order to have full flexibility in Lunar IDE you can use the arrow keys to move your cursor ("\_") through the text. Use the left and right keys to move your cursor left and right, respectively. Use the up key to go to the beginning of the current line and the down key to move to the end.

### 3-3-1 ... Auto-Complete

---

When typing in code in Lunar IDE, you may wonder where all the commands are located menu-wise. The answer is: nowhere. In the IDE you will never have to open a menu in order to access commands. All that is necessary is to type in the first 2-5 letters of the command name. Lunar IDE uses a feature called Auto-Complete which will take any token you are inputting and complete it. For instance, say you wanted to type in the command Output( which has two unique letters in the beginning. You would type in Ou and Lunar IDE would complete this and replace those two letters with Output(. Then, if you press [DEL], Lunar IDE will erase the entire token, not just the opening parenthesis. The amount of letters necessary to input the token varies depending on whether the first couple letters are unique in of themselves.

### 3-3-2 ... Executing/Recalling Programs

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In the normal program editor, if one wanted to execute another program, one would go into the [PRGM] menu, scroll over to EXEC and select a program. If you had wanted to recall a program, that would have been prefaced with a [2nd], [STO>]. In Lunar IDE the process is similar. To execute or recall a program, press the [XT0n] key and then scroll through the programs using the left and right arrows until you find the program you want.

If you want to execute the program press [2nd], if an `Asm(` token is necessary it will automatically be inserted. If you want to recall the program press the [ENTER] key and the program will be recalled. NOTE: Recalling programs is quite slow, you will see how many lines have been inserted and how many are left to go, but this will take quite some time for any decently sized program.

## 3-4 ... The Options Menu

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The options menu can be accessed at any point by pressing [MODE]. The options menu will be displayed at the top of the screen and it has three sub-menus: File, Edit and Tools which can be opened using [Y=], [WINDOW] and [ZOOM]. When in a menu, move up and down using the up and down arrows, move from menu to menu using the left and right arrow keys or the appropriate function key. To select a menu option press [ENTER] or [2nd]. To close a sub-menu press the [CLEAR] key, to close the entire menu system press the [GRAPH] key. The three submenus look like this:

File	Edit	Tools
File E New Open About Help Quit	Edit To Copy Paste Search Goto...	Tools Run r3m Edit Icon (Un)Lock Startup Power off

The Options Menu

### File:

**New:** This will allow you to create a new program. (See: [3-1](#))

**Open:** This will open a different program to edit. (See: [3-2](#))

**About:** This will display the about screens.

**Help:** This will display the help screen.

**Quit:** This will quit Lunar IDE.

### Edit:

**Copy:** This will copy the line that was last being viewed or edited and save it on the "clipboard."

**Paste:** This will replace the current line with the line that is currently occupying the "clipboard." If this function is used, the clipboard will remain intact.

**Search:** This will search through the program to find a specified phrase.

**Goto:** This will jump to the line specified.

## Tools:

**Run Prgm:** This will begin executing the current program. Afterwards, Lunar IDE will restart and return to the beginning.

**Edit Icon:** This will test to see if the program has a Doors CS header. If it does, it will open the icon-editing interface.

**(Un)Lock:** This will switch the program between locked and unlocked.

**Startup:** This will ask you whether you want to open the last program that was edited at startup. The information for the last program and whether you selected yes or no is stored in the AppVar "LunarIDE" which, if deleted, will lose that data.

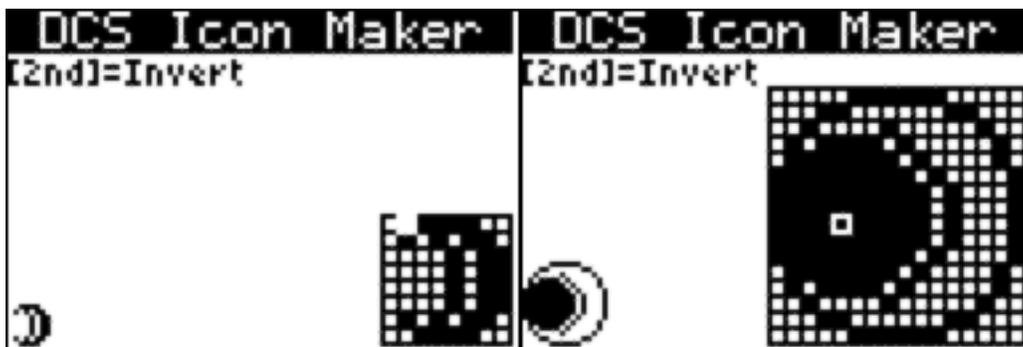
**Power Off:** Will turn your calculator off. When you press on, it will return you to the last edited point.

## 3-4-1 The Icon Editor

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From the main menu if [ 6 ] is pressed, the icon editor will be launched. If your program does not contain the proper first line (either :Description, :DCS6 or :DCS) the icon editor will not launch and will return you to the last location of editing or viewing. If your program does contain the proper first line, the icon editor will be launched and it will automatically generate the proper sized grid (for DCS6/MOS: 16x16, for DCS:8).

The icon generator will look like one of the following:



DCS Icon editor in 8x8 and 16x16 mode

After the grid has finished generating, the top left box will go white on the outside. That is the current box. You can use the arrow keys to move this box around. If you press [2nd], the inside of the box will invert and in the bottom left-hand corner of the screen, the corresponding pixel will invert. The bottom left hand corner of the screen is the small view of the icon.

When you have settled upon a design you like, press [ENTER]. The small view will begin inverting pixel, four at a time. This will tell you how much of the hexadecimal code has been generated so far. When it is finished generating the code, it will show you a screen with two options, overwrite or invert. Overwrite will overwrite the second line of your programs code and replace that with the hexadecimal code. Insert will insert a new line containing the hex code between your current first and second lines. Once you have selected an icon, you will be returned to the last editing point.

## 4 ... Information and Credits

### 4-1 ... HotKeys Reference

Key	Function
[MODE]	Opens the options menu at any time (except in menus)
[GRAPH]	Quits the program at any time (except in menus).
[ALPHA]	Toggles between upper and lowercase in the editor.
[2nd]	Toggles between numeric and 2 <sup>nd</sup> symbols in the editor.
[VARS]	Opens the character matrix.
[Y=]	Moves back one line in the editor.
[WINDOW]	Moves forward one line in the editor.
[ZOOM]	Editor: Toggles auto-complete
[CLEAR]	Clears the current line.
[XT0n]	Executes / Recalls programs.
[ENTER]	Toggles between editor and line viewer.
Up arrow	Viewer: Goes up one line. Editor: Goes to the beginning of the line.
Down arrow	Viewer: Goes down one line. Editor: Goes to the end of the line.
Right arrow	Viewer: Scrolls a line >15 characters to the right. Editor: Moves the cursor to the right.
Left arrow	Viewer: Scrolls a line >15 characters to the left. Editor: Moves the cursor to the left.
[+]	Adds a line below the current line.
[-]	Adds a line above the current line.
[STAT]	Displays program information at any time (except in menus).
[DEL]	Editor: Backspace

### 4-2 ... Credits and Help

#### Special Thanks to:

- Iambian Zenith (Iambian) for Celtic2
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- David Lindstrom for Program Tools
- Pat Stone for Program Tools Extra
- Daniel Weisz (magicdanw) for the Homescreen → Graph utility

## Lunar IDE User's Manual

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- Brandon Wilson for RunApp

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- Bryce Taylor (b-flat) *Penguin Studios / OTBP*
- Rhyan Hassan (rthprog)

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