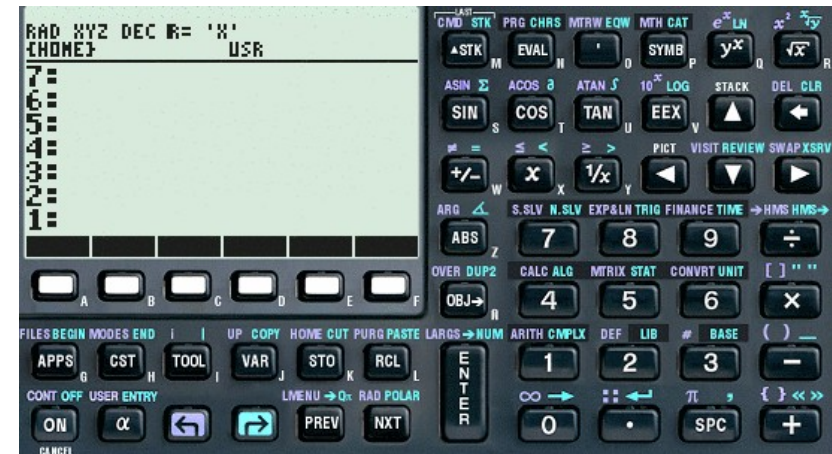


NR58 v1.01

Emu48+ kml scripts for the HP50g

Nicolás F. Rivero
2022-10-01



I. OVERVIEW

- Set of scripts for the HP50g calculator.
- Experimental version of the HP50g with expanded keyboard.
- 55 real usable keys with full alpha and shift planes functionality.

- Classic 48 series inspired keyboard design.
- Large ENTER, “Z” separated from ÷ key, quick access to RAD and POLAR mode changes, etc.
- Intelligent host keyboard mapping. Special characters work in any shift or alpha state, and whenever possible, preserve them.
- Direct access to shifted functions also work in any alpha or shift state and preserve them.
- Direct access to alpha plane by clicking on the letters, same as shifted functions. Control and shift modifiers produce small caps or Greek letters.
- On screen quick reference help and calculator font toggle.
- Several flavours to suit different pointing devices and screen sizes, including landscape versions.
- GUI configuration program for easier management of the scripts. (Windows only)
- Command line parameters to automate script setup before launching Emu48. Launch the same calculator state file with different scripts from a batch file or shortcut! (Windows only)

II. REQUIREMENTS

II.1. Hardware requirements

- PC or Android platform capable of running Emu48+.

II.2. Software requirements

- Emu48+ version 1.60+ or later, either Android or Windows version.
- HP50g ROM image named 'rom.49g'.
- One time execution of the 'NR58_AssignKeys.49prog.HP' calculator program (included in the package) in order for the extra keys to work correctly, and also to prevent auto turn off ('STARTOFF' variable will be created or replaced in HOME).

II.3. Limitations

- The calculator should always be kept in USER mode and with single alpha-lock. These settings are automatically adjusted when 'NR58_AssignKeys.49prog.HP' is executed¹.
- Some USER key assignments are not available since they are used to make the additional script keys to work. Shift-hold plane is used to have the minimum impact in calculator usage. See APPENDIX II for a complete list.

III. INTEGRITY OF CALCULATOR PROGRAMS PROVIDED

III.1. Install script key assignments

File: NR58_AssignKeys.49prog.HP

Checksum: # 38582d

Bytes: 2386.5

III.2. Reset modified keys to default functions

File: NR58_ResetKeys.49prog.HP

Checksum: # 55528d

Bytes: 241.5

IV. INSTALLATION

IV.1. Installation

1. Copy all the included files to your Emu48+ PC directory².
2. Run an existing emulation of the HP50g in Emu48+, or create a new emulator document for the HP50g³.
3. Put the calculator in RPN mode.
4. Inside the emulated calculator download (load object) the 'NR58_AssignKeys.49prog.HP' program and run (EVAL) it.

¹ 'NR58_ResetKeys.49prog.HP' program is provided in order to restore default functions of modified keys.

² In Android Follow Emu48 for Android instructions.

³ Please refer to Emu48 and Emu48+ documentation if necessary.

- Optional: Save the object left in stack level 1 to be able to restore preexisting overwritten keys, modified flags and 'STARTOFF' variable⁴.
- Now you can choose one of the provided NR58 scripts if not already done in step 2. *Notice that before step 4, extra calculator keys will not work as expected.*

IV.2. Uninstallation

- Inside the emulated calculator download (load object) the 'NR58_ResetKeys.49prog.HP' program and run (EVAL) it. Optional: Use the saved program during installation to restore preexisting keys and flags, instead. (This can be done later.)
- Now change the kml script to any standard script.
- Optionally erase all NR58 script files from the host directory.

V. DESCRIPTION

V.1. Motivation

Since my physical calculators get scarce use these days, I wondered if it would be possible to have the power of the HP50g with a more comfortable and productive RPN/RPL keyboard layout. Something that would make the emulated calculator more usable for quick calculations without loosing its power.

These scripts are inspired in the HP48 series. The voyager series also have loosely influenced the landscape versions. Additional keys and key relocation has been taken up to what it was considered possible without breaking HP50g operation or cluttering the interface.

⁴ Only modified keys and flags will be restored to the state previous to 'NR58_AssignKeys.49prog.HP' program execution. Other keys and flags will not be changed.

V.2. Flavours

NR58 G/GX flavour, Only Screen
 NR58 G/GX flavour, Portrait, Small touch screen
 NR58 G/GX flavour, Portrait, Standard
 NR58 G/GX flavour, Portrait, Standard - View edge
 NR58 G/GX flavour, Landscape, Small touch screen
 NR58 G/GX flavour, Landscape, Standard
 NR58 G/GX flavour, Landscape, Standard - View edge
 NR58 S/SX flavour, Only Screen
 NR58 S/SX flavour, Portrait, Small touch screen
 NR58 S/SX flavour, Portrait, Standard
 NR58 S/SX flavour, Portrait, Standard - View edge
 NR58 S/SX flavour, Landscape, Small touch screen
 NR58 S/SX flavour, Landscape, Standard
 NR58 S/SX flavour, Landscape, Standard - View edge

Four basic flavours are available. One with large touch key areas for small displays with touch screen, a standard version with direct access to shifted keys for large displays or mouse users, including a variant showing the edge and adding direct access to most Emu48+ menu commands. Finally a version that shows only the calculator's LCD is also included.



Large touch key area example.
Small touch screen versions.



Direct access to shifted functions.
Standard versions.

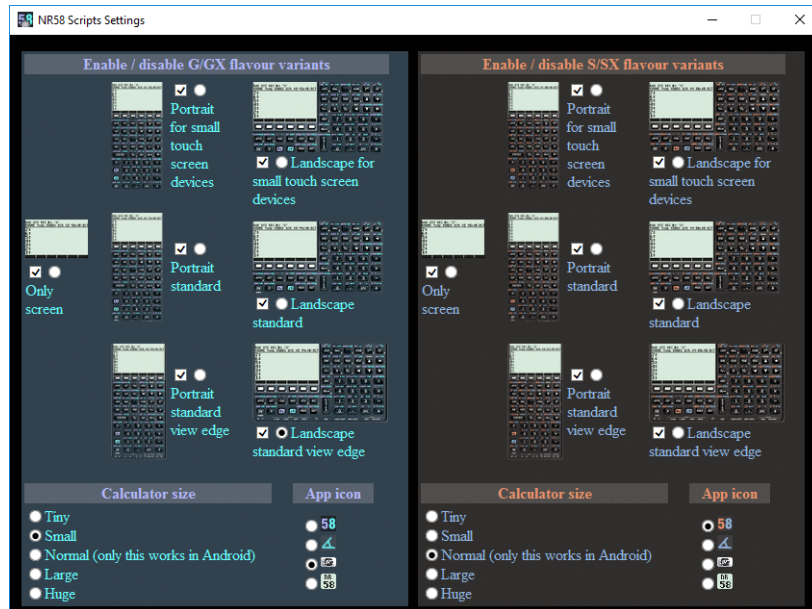


Direct access to shifted functions and letter.
Standard versions.

Except for the Screen Only version, all the other scripts have their landscape counterpart.

All versions have the option of G/GX or S/SX colors.

Calculator size⁵ and app icon can be selected using the configuration program (Windows only) included in the package.



The configuration program allows to disable some of the scripts to unclutter the kml list in Emu48, and to choose size and icon for each flavour.

An additional option (radio buttons next to calculator thumbnails) allows to create a “Variant” script that enforces the version chosen and shows the same kml file name to the emulator. In this way you can change the script externally before executing the emulator.

- 5 Please note that the only working size in Android is Normal. If you copy the scripts from a Windows installation, please run the configuration app and choose Normal size for both flavours. The installation package is pre configured to Normal size.

The configuration program accepts command line parameters to automate kml selection. For example, the following console command chooses S/SX portrait standard, small size, fist icon:

```
NR58___Config.exe S2 S 1
```

To run the emulator after selecting the kml script just pipe the commands:

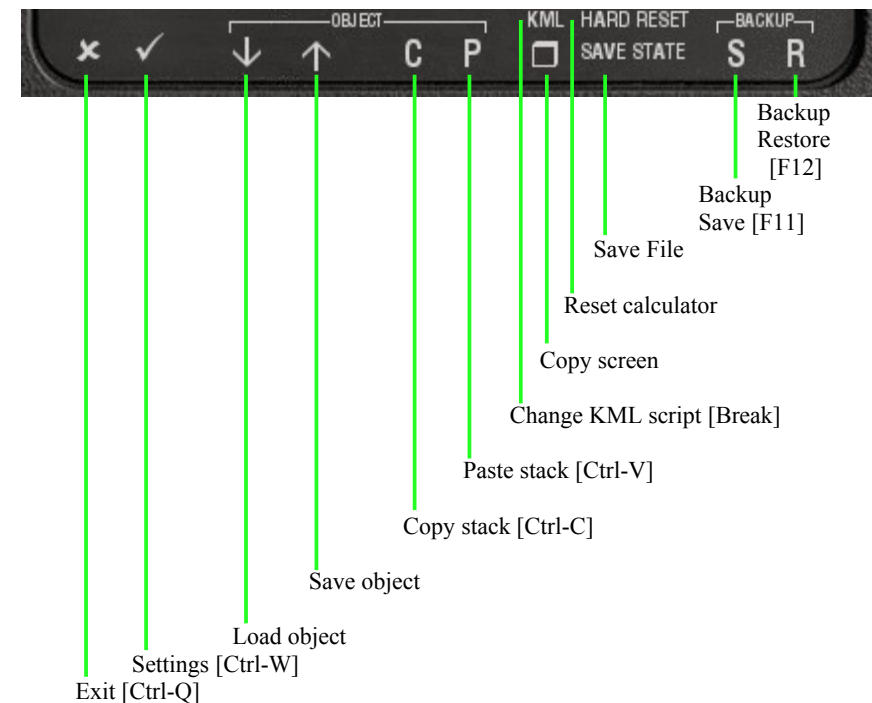
```
NR58___Config.exe S2 S 1 | Emu48.exe <calc state file>.e49
```

For complete command line reference run:

```
NR58___Config.exe -?
```

Help screen for command line usage is included in Appendix III.

Emulator commands quick access in view edge variants:



Note: Host shortcut keys listed in brackets next to each command work in all script variants.



Standard version, portrait, view edge variant. S/SX colors.



Standard version, portrait, view edge variant. G/GX colors.



Standard version, landscape, view edge variant. S/SX colors.



Standard version, landscape, view edge variant. G/GX colors.

V.3. Keyboard emulation

A complete list of host key assignments is included in APPENDIX I. English-US and Spanish Traditional keyboard layouts have additional direct access keys like '?' or 'N'.

Non obvious keys are listed in the second page of the quick reference. See V.4.

Most special character host keys automatically perform the necessary calculator key strokes to produce the expected results in spite of the entry mode or alpha state. In most cases, also the alpha and shift states are preserved.

All host letters act as the corresponding calculator button primary function, same as pressing the calculator key. When using host shift and control together with the letter, the result is the letter itself. Host shift + letter modifies caps of produced letter.

Pressing host control + letter produces the associated Greek letter or symbol, in the letters that have one. It does nothing when there is no symbol. It executes BEGIN, END, COPY, CUT and PASTE when pressing Ctrl-G, Ctrl-H, Ctrl-J, Ctrl-K and Ctrl-L respectively.

Example:

Ctrl-Shift-A 'A' (or 'a' if small caps is locked in the calculator)
 Shift-A 'a' (or 'A' if small caps is locked in the calculator)
 Ctrl-A 'α'

There are exceptions to this general rule:

Ctrl-Q	close emulator
Ctrl-W	emulator settings dialogue
Ctrl-R	move emulator window
Ctrl-X	minimize emulator window
Ctrl-C	executes emulator stack level 1 copy command instead of 'Δ'
Ctrl-V	executes emulator paste in stack level 1 command instead of 'ω'
Ctrl-Y	LAST ARGS
Ctrl-Z	LAST STK

V.4. Quick reference

Press the LCD in the middle to see hidden HP50g keyboard functions.

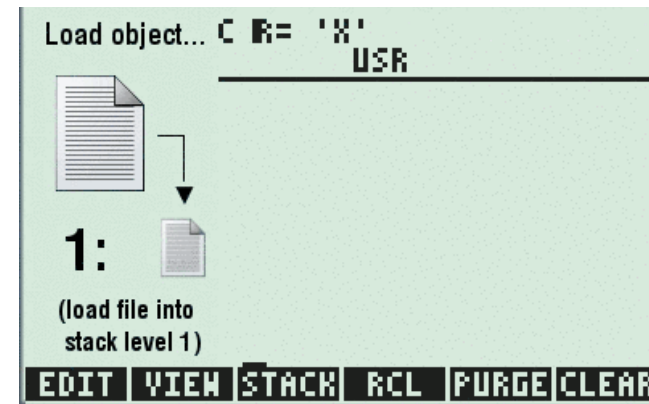
HP50g hidden keyboard functions quick help. G/GX colors.

Press the LCD header in the middle to see some of the not so easy to figure out host key assignments.

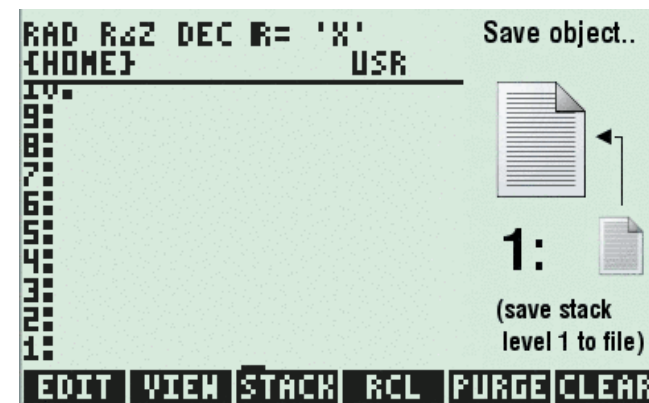
Host key assignments quick help. S/SX colors.

V.5. Load and save object shortcuts

Press the LCD left side to load an object to stack level 1. Press the LCD right side to save the stack level 1 object to a file.



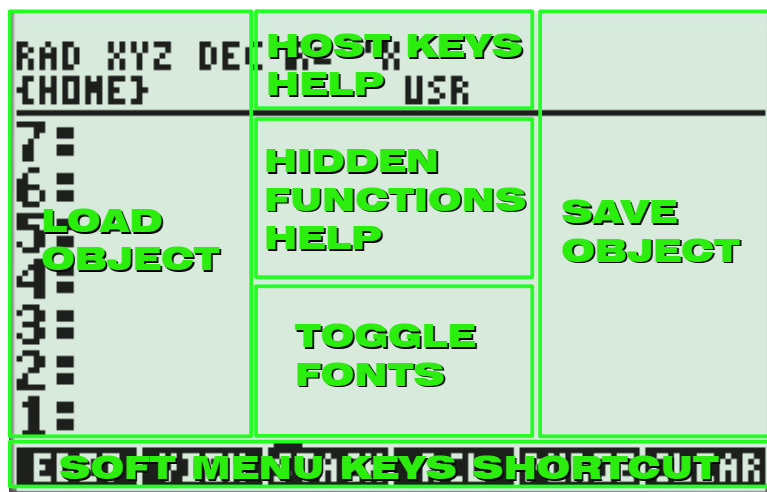
Load object LCD shortcut.



Save object LCD shortcut.

V.6. Calculator font toggle

Press the LCD in the middle bottom to toggle system font between mini font and regular font in all environments.



Font toggle zone and other screen touch command zones.

V.7. Algebraic mode

These scripts are not designed to operate in algebraic mode, the focus is placed in making RPN operation more straightforward. The scripts were not tested in algebraic mode.

VI. CHANGES

I.1 Version 1.01

- Removed expanded UPDIR version. This is not required by the scripts to work. Besides, it is included in the AmbPro library since version 2.04.
- Added detection of expanded PURGE command presence: "PG".
- Added detection of expanded OBJ→ command presence "OB→".
- Fix error in the host keys help screen.
- Changed rom file name in the scripts to fit current names used by emulator developers.
- Removed beep patch in the scripts since it's no longer necessary.
- Fixed bug: after pressing Ctrl-W, Ctrl key remained locked.
- Fixed bug: after pressing Ctrl-R, Ctrl key remained locked.
- Fixed bug: after pressing Ctrl-X, Ctrl key remained locked.

VI.1. Version 1.0

- First version.

VII. ABOUT

VII.1. Usage conditions

- I offer no guaranty or warranty of any kind for any damage this program may produce, so if you are doubtful backup your memory, your whole devices, or don't try it.
- This program is freeware and it cannot be sold.
- You may modify it for your personal use. To distribute a modified version you have to notify me first.
- This documentation and all provided files should always be included in the package.

VII.2. Final word



These scripts were written for my personal use, and are published in the hope someone else finds them useful. I can't give support, sorry.

Comments and bugs: niko DOT uy AT vera DOT com DOT uy

Enjoy!

APPENDIX I. HOST KEYBOARD AND POINTER MAPPINGS

Pointing device



Mouse click or touch	Action
LCD middle bottom	toggle font size in all environments
LCD middle	show 1st quick help page
LCD header middle	show 2nd quick help page
LCD left	load object
LCD right	save object
Touchscreen F1..F6 over LCD	 .. 
Shifted calculator key labels ⁶	direct access to shifted functions
Letter labels ⁷	direct access to first alpha plane ⁸
Regular calculator buttons	perform corresponding function

Note: Pressing USER, ENTRY labels directly does not preserve alpha or shift state if alpha and/or any shift is active. Also CONT and OFF always work but don't preserve alpha or shift states. CONT preserves alpha and shift states when used after a HALT.

Host keyboard

Calculator function indicated as key drawing means plain pressing the calculator button. Other functions perform several keystrokes to produce the desired result preserving the calculator alpha and shift state.







Mappings for all languages













































Host key	Action
	





⁶ Only in Standard versions of the scripts.











































⁷ Only in Standard versions of the scripts.



⁸ If host shift key is held caps is changed (eg. producing “a” instead of “A”). If host control key is held corresponding Greek letter or symbol is generated if present for the pressed letter.











































	
	
	

Host key	Action
 ...  or  ... 	 .. 
  	'A' or 'a'
 	'a' or 'A'
 	'α'
  	'B' or 'b'
 	'b' or 'B'
 	'β'
  	'C' or 'c'
 	'c' or 'C'
 	copy stack level 1 to clipboard
  	'D' or 'd'
 	'd' or 'D'
 	'δ'
  	'E' or 'e'
 	'e' or 'E'
 	'ε'
  	'F' or 'f'

 	'f' or 'F'
 	'p'

Host key	Action
	
  	'G' or 'g'
 	'g' or 'G'
 	BEGIN
	
  	'H' or 'h'
 	'h' or 'H'
 	END
	
  	'I' or 'i'
 	'i' or 'I'
 	'l'
 	LMENU
	
	
 	 
	 
	

	RAD
	POLAR

Host key	Action
	
  	'J' or 'j'
 	'j' or 'J'
 	COPY
 	UPDIR
	
  	'K' or 'k'
 	'k' or 'K'
 	CUT
	
  	'L' or 'l'
 	'l' or 'L'
 	PASTE
	
	
 	 
	 
	

Host key	Action
M	▲STK
CTRL Z	LAST STK
CTRL SHIFT M	'M' or 'm'
SHIFT M	'm' or 'M'
CTRL M	μ
N	EVAL
CTRL SHIFT N	'N' or 'n'
SHIFT N	'n' or 'N'
CTRL N	λ
O	'
CTRL SHIFT O	'O' or 'o'
SHIFT O	'o' or 'O'
CTRL O	Ω
P	SYMB
CTRL SHIFT P	'P' or 'p'
SHIFT P	'p' or 'P'
CTRL P	Π
Q	γ^x
CTRL SHIFT Q	'Q' or 'q'
SHIFT Q	'q' or 'Q'

CTRL Q	exit emulator
R	\sqrt{x}
CTRL SHIFT R	'R' or 'r'
SHIFT R	'r' or 'R'
CTRL R	move emulator window

Host key	Action
S	SIN
CTRL SHIFT S	'S' or 's'
SHIFT S	's' or 'S'
CTRL S	σ
T	COS
CTRL SHIFT T	'T' or 't'
SHIFT T	't' or 'T'
CTRL T	θ
U	TAN
CTRL SHIFT U	'U' or 'u'
SHIFT U	'u' or 'U'
CTRL U	τ
V	EEX
CTRL SHIFT V	'V' or 'v'
SHIFT V	'v' or 'V'

	paste clipboard to stack level 1
	'W' or 'w'
	'w' or 'W'
	open emulator settings dialogue
	'X' or 'x'
	'x' or 'X'
	minimize emulator window

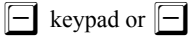




Host key	Action
or	
or	
	LAST ARGS
	'Y' or 'y'
	'y' or 'Y'
	'Z' or 'z'
	'z' or 'Z'










	'Ñ' or 'ñ'
	'ñ' or 'Ñ'
	γ









Host key	Action
keypad	
keypad	
keypad	
keypad	




Host key	Action
keypad	
keypad	
keypad	
keypad	

Host key	Action
keypad	
keypad	
keypad	



 keypad or 	
 	-












































Host key	Action
 keypad	
 	'→'
 keypad	
	SPC
 keypad	

Host key	Action
	
 	'\$'
	
 	'%'

Host key	Action
	kml selection dialogue
	backup save
	backup restore

EN-US specific keys

Host key	Action
	

 	'~'
	
 	'?'
	
 	'!'
	
 	'@'
	
 	'#'
	
 	'Y ^x '
	
 	'&'
	
 	
	
 	'('
	
 	'('
	'='
 	

	>
	,
	<
	;
	:: (in α mode: ':')
	"" (in α mode: '"')
	\
	[]
	{ }
	[]
	{ }

ES-Spanish Traditional specific keys

Host key	Action
	¹⁰¹
	¹⁰¹

	'!
	" " (in α mode: ' '')
	'@'
	'#'
	'&'
	÷
	()
	()
	=
	'?'
	'i'
	'ú'

	OBJ→
	right accents preceding letter (example: converts 'A' to 'Á')
	diaeresis preceding letter (example: converts 'o' to 'ö')
	{ }
	:: (in <i>Ø</i> mode: ':')
	,
	;
	left accents preceding letter (example: 'u' to 'ù')
	circumflex accents preceding letter (example: 'E' to 'Ê')
	[]
	[]
	'Ç' or 'ç'
	{ }
	<
	>

APPENDIX II. CALCULATOR RESERVED KEYS

These keys should not be reassigned to preserve the functionality of the additional keys present in the script. It is possible to assign an expanded version of the same command though.

All reassigned keys are shift-hold unused keys.

<i>Calculator key</i>	<i>USER assignment in use by script</i>
64.21	LCD middle bottom switch font
33.51	LMENU
64.31 and 64.61	→QPI
102.21 and 102.51	RAD
102.31 and 102.61	POLAR
62.21	PURGE <i>Note:</i> If a library command named “PG” exists, it is executed instead of PURGE when not in PRG entry mode. (PG command is included in the AmbPro library)
62.31	OBJ→ <i>Note:</i> If a library command named “OB→” exists, it is executed instead of OBJ→ when not in PRG entry mode. (OB→ command is included in the AmbPro library)
63.21	OVER
63.31	DUP2
42.61	γ
65.21 and 65.51	→HMS
65.31 and 65.61	HMS→

The rest of the HP50g keys are not used and operate in the same way they do in a normal kml script.

There are some additional limitations:

- Keys that do not have a default keyboard access do not work as expected inside calculator applications. Keys cannot be redefined inside applications, like the file manager, the equation writer, the matrix writer, or the interactive stack. This does not happen in the editor, where all keys work fine.
- Some keys make the annunciators go crazy or sound more than one beep. This is normal.

APPENDIX III. CONFIGURATION PROGRAM – COMMAND LINE USAGE

