GET 11

Grifo® Editor Terminal - 11 family
Rel. 3.3 and above

GENERAL FEATURES

GET11 (**grifo® E**ditor **T**erminal **11** family) is degined for use with software and firmware tools like **BASIC 11** or **Monitor 11**, which are executed on the following cards: **GPC® 11**, **GPC® 114**, etc. With **GET 11** the Users can edit a program, transfer program from P.C. to target card, transfer program from target card to P.C. and test program directly on board. It has two main possibilities: to edit application programs developed by User and to manage an intelligent terminal emulation mode. Deeping last feature, **GET 11** manages all console function, as a simple terminal, and moreover it uses P.C. mass memory device (hard disk, floppy disk, etc.) for saving operation of target card application programs.

Using **GET 11** with **Monitor 11** software tool, it is possible to develop the assembly source with inside editor and then execute the right cross compiler, without returning to operating system.

In this documentation the **grifo®** boards are called **target card**, while the program developed by User that run on this card, is called **application program**.

SYSTEM REQUIREMENTS

In this chapter are described the minimum hardware and software resources, necessary to execute correctly **GET11.EXE** program:

Personal Computer: IBM or compatible.

RAM memory: 640 KBytes at least.

MS-DOS: Version 3.3 or higher.

Monitor: Colour or Black and White

Mass storage devices: One floppy disk drive (hard disk drive is recommend) managed by MS DOS.

Serial line: One RS 232 line (COM 1÷4) following V24 specifications.

Mouse: Microsoft compatible with its software driver installed.

DELIVERED DISK

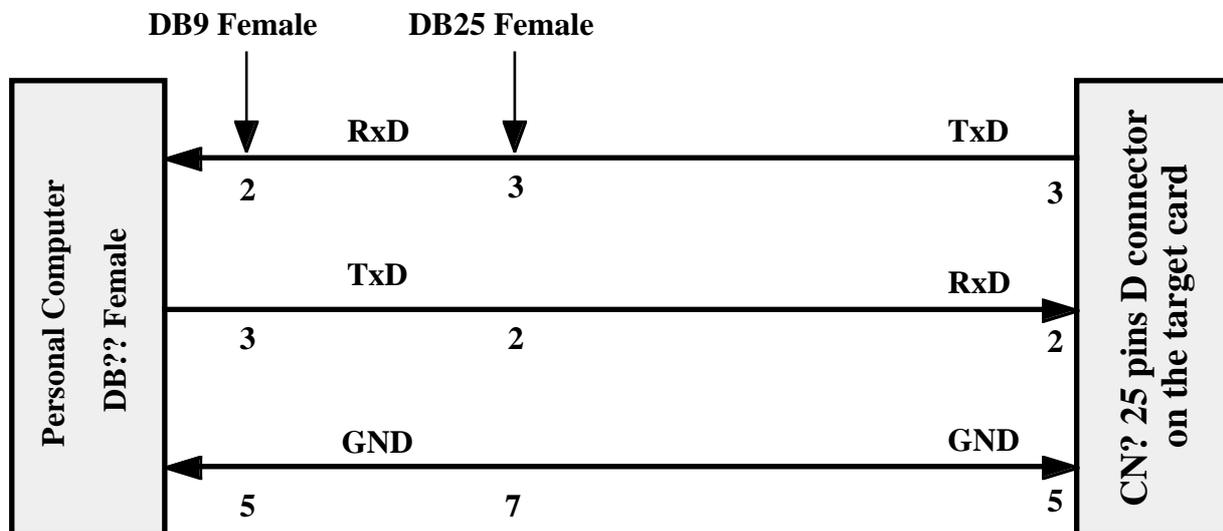In this chapter there is a brief description of the **GET11** disk contents:

GET11.EXE   -> It is an editor and intelligent terminal emulation program that must be executed on P.C.

G11HELP.HLP -> On line help resource file, used by **GET11.EXE**.

RENUM.EXE   -> It is an utility program that allows line renumering for a BASIC program developed for the target card. It must be executed on P.C.

It is also available a set of demonstration programs that show how to use the on board resources, or how to realize general purpose applications.
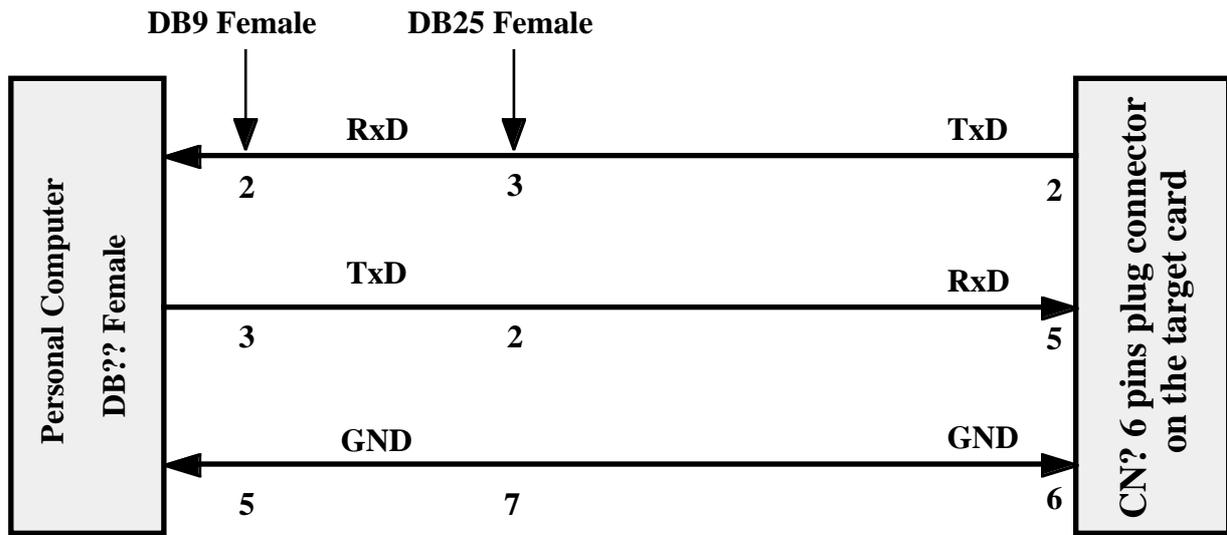
SERIAL COMMUNICATION CABLE

If the User is going to use the board's console serial line to develop and debug the application software, then the console device must be connected properly.

Remarking that the board's console serial line is always called "line A", the connection between the Personal Computer and the board must be "reversed" (DTE<->DCE) like the ones described here below:

SERIAL CONNECTION BETWEEN P.C. AND BOARD THROUGH 25 PINS D CONNECTOR

DB9 Female   **DB25 Female**

Personal Computer
DB?? Female

| | RxD | | TxD |
| 2 | | 3 | 2 |

| | TxD | | RxD |
| 3 | | 2 | 5 |

| | GND | | GND |
| 5 | | 7 | 6 |

CN? 6 pins plug connector on the target card

SERIAL CONNECTION BETWEEN P.C. AND BOARD THROUGH 6 PINS PLUG CONNECTOR

With the indications **CN? 25 pins D connector on target card**, **CN? 6 pins plug connector on target card**, it is intended to mean the 25 pins D and 6 pins plug **grifo®** standard connectors for serial communication. The User will be able to complete the name of the connector referring to the manual of the board being used. To make the connection phase faster and to eliminate the need to build a communication cable, **grifo®** can supply serial communication cables tested and ready for use, for any kind of target card and P.C.

HOW TO START

In this chapter are described the necessary operations that the User must performs to manage correctly the **GET11** program. In detail here is reported the correct sequence of operations if the Personal Computer is used as development system. In this chapter the informations reported in the previous chapter "SYSTEM REQUIREMENTS" are referred.

1) Read carefully all received documentation, on paper and on disk.

2) Configure the target card to work correctly (power supply connection, memory configuration, jumpers setting, etc.).

3) Connect P.C. and target card through the serial cable described in the chapter "SERIAL COMMUNICATION CABLE".

4) Turn on Personal Computer.

5) Make a new work directory on P.C. hard disk, with Your favourite name. If Your P.C. is not provided with hard disk, please make a copy of delivered disk, place original disk in a safe place and use the obtained copy, jumping to step **8**.

6) Copy all the necessary files (programs and examples) from delivered disk to the new created directory, following the information of chapter "DELIVERED DISK".

7) Change actual directory into the work directory created at step 5.

8) Install **GET11.EXE** program (using the installation program **GET11.EXE /I**) by filling the requested data in the dialog box that appear. In **GET11.EXE /I** window some dialog boxes require and show the default COM port, the default baud rate, the default video mode, the default terminal mode(for **BASIC 11** or **Monitor 11**) and the Company and User name. For further information, please refer to chapter "INSTALLATION".

9) Run **GET11** program and wait the rappresentation of an information window.

If needed read steps **10**, **11** and **12** specific for **BASIC 11**, otherwise please read steps **13**, **14** and **15**.

Terminal emulation for BASIC 11:

10) Close the information window by pressing "ENTER" key and after select the option "Terminal" from "Options" (pres ALT+T) menu. A clean window appears with cursor positioned on the top left corner and the following status line on the lower monitor row:

F10 Menu | TERMINAL EMUL. for BAS.11 - GRIFO° Tel. +39-051-892052

11) Connect power supply to target card; press one or more times the "SPACE BAR" key until the
BASIC 11 power on message appears on monitor:

READY>

  #

12) Work with **BASIC 11** as described on its manual; to return to GET11 environment press
"ALT+T" keys, while to return to MS-DOS operating system, press "Alt+X" keys.
Some valid commands and/or instructions that the User can immediately execute, are:

#FREE<cr>
to show the size of available free memory on target card

#PRINT "prova" <cr>
to send the string "*prova*" to the serial line and display it.

Terminal emulation for Monitor 11:

13) Close the information window pressing "ENTER" key and after select the option "Terminal"
from "Options" menu (keys ALT+T). A clean window appears with cursor positioned on the top
left corner and the following status line on the lowest row on the monitor:

F10 Menu | TERMINAL for MON. 11 - GRIFO° Tel. +39-051-892052

14) Supply the target card; type one or more times the "ENTER" key until the **Monitor 11** power
on message appears on the monitor. At this point **Monitor 11** is running and waiting for
commands from serial line, as denoted by the prompt string:

>

15) Work with **Monitor 11** as described on its manual; to return to GET51 environment press
"ALT+T" keys, while to return to MS-DOS operating system, press "Alt+X" keys. Some valid
commands and/or instructions that the User can immediately execute, are:

>MD 2000 20FF <cr>
to showmemory area content, in the specified addresses range.

>BF 2000 20FF FF<cr>
 to fill the memory area content, in the specified addresses range, with the value FF Hex.

GET11: EDITOR AND TERMINAL EMULATION PROGRAM

GET 11 is an easy to use program provided with high level User interface including on line help, menus, colour identification, dialog boxes, function keys, mouse management, etc.

The User must always remember that the P.C. executing GET 11 program is an indispensable system only during application program debug phase, in fact target card can work alone with its serial line connected to any other device.

To execute program, the User must type:

GET11<cr>

directly from MS-DOS prompt.

When the program starts, it sets the P.C. hardware and shows an information window. This window contains: program version number, **grifo®** information (address, phone, etc.) and the User information defined during installation. Pressing "ENTER" key or clicking with mouse on "OK" button, the presentation window disappears and the main window is shown on the P.C. monitor; the main window has six menus with many options described in the following chapter.

INSTALLATION

Before using **GET11.EXE**, the User must correctly install it. For this reason a configuration program utility has been developed. This program must be executed on P.C. under MS-DOS operating system, in the same directory where **GET11.EXE** is saved, typing:

GET11 /I <cr>

When it starts a window appears on the screen, asking for six configuration parameter:

- the default serial line (COM) used on P.C. selectable from 1 to 4;
- the default baud rate used for target card communication selectable from 1.2 to 115.2 KBaud;
- the type of P.C. monitor selectable between color and black & white;
- the type of terminal emulation selectable between **BASIC 11** or **Monitor 11**;
- the User name;
- the Company name;

All these six parameter are requested only during first installation, in fact if **GET11.EXE** is already installed only the first four parameters can be changed; so User and Company name can be set only during the first installation. The other four parameters are used by default for **GET11.EXE** setting and can be changed at any time in a permanent (**G11INST**) or temporary (**GET11**) way and they must be setted according to P.C. and target card features.

During G11INST.EXE execution, at any time the User can stop the installation with the button "Abort" , or confirm installation with "Install" button; if "Install" is selected without User and Company name definition, the installation isn't executed.

If **GET11.EXE** is executed without a previous installation, it doesn't start and an error message appears, vice versa it starts showing User and Company name in the information windows.

EDITOR

GET11.EXE program includes a powerfull and versatile editor capable of ASCII files management; these ASCII files can be directly used by **BASIC 11** or compiled in executable code for **Monitor 11**. It is provided of all standard editor functions and many other functions that facilitate its use in any condition. Moreover **GET 11** editor is a multi window editor where all the function can be used contemporaneously on many ASCII files.

The editor has only one restriction: it can't manage windows or files bigger than 64 KByte; this dimension is rarely necessary in the standard work conditions and in any case it can be overcomed by opening and by editing more files and windows.

Here follows a brief description of the commands available through the menu bar (activateable by pressing key **F10**) when **GET 11** is in editor mode:

Option	*Key*	*Function*
Menu	F10	Activates the menu bar to let the User select the desired command.

File menu

Option	*Key*	*Function*
New	-	Opens a new editor window with the name "Untitled".
Open...	F3	Opens a selected disk file, loads it in memory and shows it in the current editor window.
Save	F2	Saves current editor window content to a disk file. The disk file name is the same of editor window name.
S**a**ve as...	-	Saves current editor window content to a disk file. The disk file name must be input by the User.
Change dir...	Alt+F5	Changes current MS-DOS directory.
Dos shell	-	Exits temporarily from **GET 11** and return to MS-DOS operating system. The program remains in memory and can be resumed typing the "EXIT" command.
E**x**it to DOS	Alt+X	Stops execution of **GET 11** and returns definitely the control to MS DOS.

Edit menu

Option	*Key*	*Function*
Undo	-	Restores, if possibile, the last executed function.
C**u**t	Shift+Del	Deletes from current editor window the previous selected text and saves it into the clipboard.
Copy	Ctrl+Ins	Copies from current editor window the previous selected text and saves it into the clipboard.
Paste	Shift+Ins	Copies the clipboard content into the current editor window, starting from current cursor position.
C**l**ear	Ctrl+Del	Deletes from current editor window the previously selected text, without saving it into clipboard.
Show clipboard	-	Shows an editor window with the clipboard content.

Search menu

Option	Key	Function
Find...	-	Searchs for a string inside the text of current editor window.
Replace...	-	Searchs for a string inside the text of current editor window and if found replaces it with the text input by the User.
Search **A**gain	Ctrl+L	Repeats the last executed "Find" or "Replace" action.

Windows menu

Option	Key	Function
Tile	-	Shows all open editor windows disposing them on monitor rappresentation area. The window size are selected to allow rappresentation of all windows.
Cascade	-	Shows all open editor windows disposing them on monitor rappresentation area. The windows are overlapped and only their frame and name are visible.
Size/Move	Ctrl+F5	Resizes and/or moves the current editor window.
Zoom	F5	Sets current editor window size to its maximum value.
Next	F6	The next open window becomes the current editor window.
Previous	Shift+F6	The previous open window becomes the current editor window.
Close	Alt+F3	Closes the current editor window.

Options menu

Option	Key	Function
Terminal	Alt+T	Activates the intelligent terminal emulation mode. For further information, please refer to chapter "TERMINAL EMULATION".
Serial Port...	-	Changes P.C. serial line and baud rate, not permanently.
Set Termina**l**...	-	Changes terminal emulation (**BASIC 11** or **Monitor 11**), not permanently.
Video	-	Selects P.C. monitor colour between colour and black & white, not permanently.
Help	F1	Activates the on line Help window of **GET 11**.
Help **L**anguage..	-	Selects the language for the on line Help window.
Information...	-	Shows the information window about **GET 11** program.

Compiler menu

Option	Key	Function
Compiler...	-	Allows to execute an external program (typically a compiler) and to specify its parameters without having to exit to MS DOS.
Compile **a**gain	Alt+F9	Allows to execute again the last invocation of compiler action.

In the previous options description, the letters that activate the options in a fast way are written with a bold style; this fast selection is performed simply by opening menu and pressing the letter, without using the arrow keys. The indication "*Key*" is referred to the key, or keys combination, that select the option immediately, even without opening the menu.
The indications "..." following the name of some options, means that the option needs other data requested by a specific dialog box (files name, string to find, directory t select, etc.). When a mouse is available, the options selection is really faster and more confortable, in fact the User has nothing to press on P.C. keyboard.

A further description of **GET 11** options and menus functionalities is not reported in this manual because such subject is explained by the on line Help, that can be recalled in any moment pressing the **F1** key.

TERMINAL EMULATION

The intelligent terminal emulation mode is compliant to the standard **ADDS Viewpoint** and manages all the console functions like a simple terminal, in addition to this it is possible to use the mass storage devices of the P.C. to download programs to the target card or to save on hard disk a program resident in the memory of the target card itself.
Communication with the target card is managed through on of the serial ports on the P.C. (COM) as explained in the paragraph "SERIAL COMMUNICATION CABLE".
When the option "Terminal" in menu "Options" of is selected, the current serial line and the current baud rate are used by the emulator that shows the terminal emulation window.
Current serial port and current baud rate are the values set by the option "Serial port" in menu "Options", which at the beginning of the execution are the same input by the User during the installation of **GET11.EXE**.

All the characters sent by the target card are interpreted by the **ADDS Viewpoint** protocol, the characters considered printable are displayed in the terminal emulation window, while the keys pressed on the P.C. keyboard are sent to the target card through a specific logic protocol that manages also the file transmission.

The intelligent terminal emulation program works in a completely asynchronous way as regards to the target card running **BASIC 11** or **Monitor 11**; so there is no turn-on or turn-off sequence to be executed.

NOTE
From the MS DOS prompt, it is possible to run **GET 11** and enter directly in intelligent terminal emulation mode; the syntax to use is:

<div align="center">

GET11 /T <cr>

</div>

Terminal Emulation Commands:

During the terminal emulation is available a set of commands, through the menu bar (that can be activated pressing **F10**), that help the User to use firmware running on the target card; here follows its list with a brief description:

Option	Key	Function
Menu	F10	Activates the menu bar to select a command.

File menu

Option	Key	Function
Change dir...	Alt+F5	Changes current MS-DOS directory.
Dos shell	-	Exits temporarily from **GET 11** and return to MS-DOS operating system. The program remains in memory and can be resumed typing the "EXIT" command.
E**x**it to DOS	Alt+X	Stops execution of **GET 11** and returns definitely the control to MS DOS.

Options menu

Option	Key	Function
Edi**t**or	Alt+T	Activates the internal editor.
Reset Terminal	Ctrl+Home	Clears the intellingent terminal emulation window and resets the serial communication to the target card.
Serial Port...	-	Changes P.C. serial line and baud rate, not permanently.
Set Termina**l**...	-	Changes terminal emulation (**BASIC 11** or **Monitor 11**), not permanently.
Video	-	Selects P.C. monitor colour between colour and black & white, not permanently.
Help	F1	Activates the on line Help window of **GET11**.
Help **L**anguage..	-	Selects the language for the on line Help window.
Information...	-	Shows the information window about **GET11** program.

Utility menu

Option	Key	Function
Compiler...	-	Allows to execute an external program (typically a compiler) and to specify its parameters without having to exit to MS DOS.
Compile **a**gain	Alt+F9	Allows to execute again the last invocation of compiler action.
Receive file..	F7	Allows to receive and store to disk a program from the target card memory (this command is available only when terminal emulation mode is configured for **BASIC 11**).
Transmit file..	F8	Allows to send to the target card a program stored in the P.C. mass storage devices. If the intelligent, terminal emulation mode is configured for **BASIC 11**, the file to send must be a BASIC source, in **ASCII** format; if the terminal emulation mode is configure as **Monitor 11**, then the file to send must respect the **S Motorola** standard.

continues **Utility menu**

Option	*Key*	*Function*
Verify file..	Shift+F8	Allows to verify a program in the mass storage devices of the P.C., with the content of the corresponding memory locations on the target card; the verify is interrupted at the first difference found. This command is available only when terminal emulaton is **Monitor 11** and the file verified follws the standard **S Motorola**.

In the previous options description, the letters that activate the options in a fast way are written with a bold style; this fast selection is performed simply by opening menu and pressing the letter, without using the arrow keys. The indication "*Key*" is referred to the key, or keys combination, that select the option immediately, even without opening the menu. The indications "..." following the name of some options, means that the option needs other data requested by a specific dialog box (files name, string to find, directory t select, etc.).

A further description of **GET 11** options and menus functionalities is not reported in this manual because such subject is explained by the on line Help, that can be recalled in any moment pressing the **F1** key.

Terminal emulation control sequences:

GET 11 terminal emulation mode, recognizes some of the standard **ADDS Viewpoint** command sequences, when received from selected serial line. These sequences are listed in the following table:

COMMAND	BYTE(S)	ASCII CODE
HOME	01	SOH
CURSOR LEFT	08	BS
CURSOR RIGHT	06	ACK
CURSOR DOWN	10	LF
CURSOR UP	26	SUB
CARRIAGE RETURN	13	CR
CARRIAGE RETURN + LINE FEED	29	GS
Cursor absolute position with OFFSET 32	27 89 row column	ESC Y ASCII(row) ASCII(column)
CLEAR PAGE	12	FF
CLEAR LINE	25	EM
CLEAR END of LINE	27 75	ESC K
CLEAR END of PAGE	27 107	ESC k

GET 11 CONTROL SEQUENCES TABLE **1**

COMMAND	BYTE(S)	ASCII CODE
Turn off Cursor	27 80	ESC P
Steady "Underline" cursor	27 77	ESC M
Blinking "Block" cursor	27 81	ESC Q
Attribute selection	27 48 attribute	ESC 0 ASCII(attribute)
Attribute set	14	SO
Attribute reset	15	SI
BELL	07	BEL

GET 11 CONTROL SEQUENCES TABLE **2**

The values of row and column may vary resectively in the ranges 0÷23 and 0÷79 and must be given plus an offset of 32. So, for example, if the User wants to position the cursor at row 10, column 20, then he/she must send the sequence:

27,89,42,52

The display attributes managed by the **GET 11** intelligent terminal emulation is only a subset of the **ADDS Viewpoint** standard attributes, in detail:

ATTRIBUTE	BYTE	ASCII CODE
Normal	64	@
Half intensity	65	A
Reverse	80	P

DISPLAY ATTRIBUTES MANAGED BY **GET 11**

All the User application programs can use the above described commands, obtaining remarkable results with minimun effort in building the user interface.

COMPILER EXECUTION

Through this option, the User can compile an ASCII source file created from **GET 11** editor, without returning to operating system.

This modality is particularly useful with, for example, **Monitor 11** software tool, where application source programs are written in assembly with the editor, compiled with the specific program and downloaded to the target card, always remaining inside the **GET 11** IDE.

To correctly execute an external application, some steps must be taken:

1) Be sure that compiler, source file(s) and eventual linker or conversion program, are present in the P.C. drives.

2) Select the "Compiler.." option of menu "Utility", the compilation window opens.

3) Select the external program (typically a compiler) to execute.

4) Select the source file to compile.

5) Type, if needed, the compiler command line options.

6) Specify whether the eventual parameters must be placed before or after the name of the file. This depends on the type of compiler used, some require the parameters before the file name, some require the parameters after the file name.

7) Type, if needed, the command line to execute after the compilaton. This function can be useful if, for example, after the compiler a linker or another conversion program must be executed.

8) Confirm all the parameters and run the compilation.

These operation can be performed through the compilation window parameters:

Compile**r**	Allows to select the name of the compiler to execute. Complete file name and path is displayed beside the command; if no file has been selected yet then will be displayed the indication "**Not Selected**".
Source File	Allows to select the name of the source file to be compiled. Complete file name and path is displayed beside the command; if no file has been selected yet then will be displayed the indication "**Not Selected**".
Parameters:	It is the option list used by compiler. It is 80 characters long and if no parameters are required it must be left empty.
Parameters position:	it defines where the parameters list previously described must be positioned; there are two available possibilities: before or after source file name and must be selected according to syntax required by the selected compiler.

Second command line: it is an optional MS DOS command line that must be executed at the end of compilation. It is 70 characters long and it is usefull when after compilation, a linker program or any other conversion program must be executed to obtain an executable Intel HEX file. If this input box contains a non empty string, it will be executed by the operating system without any change at the end of the compilation; otherwise the **GET 11** will be resumed.

After all the several option have been set, the compilation can be executed through the "**R**un" option. During this phase the MS DOS screen of the program execution will be displayed. Such operation may be executed again, with the same parameters, through the "Compile **a**gain" option (keys Alt+F9) of "Utility" menu.

NOTE
Whenever a compilation is executed, the source program, if modified with the **GET 11** editor, must be saved before the execution. This is needed because the compiler fetches the source file from disk, so the latest changes, if apported, must be saved before using the file.

Example

The compiler menu can be also used to execute the utility program **RENUM.EXE**, contained in the delivered disk.
Following the **RENUM** utility documentation (at the end of this manual), if the User wants to renum **PROGRAM.BAS** source file, starting from row number 1000, with a line increment of 10, the following operation must be executed:

1) Select, through the option "Compile**r**", the program **RENUM.EXE**.

2) Select, through the option "**S**ourceFile", the program **PROGRAM.BAS**.

3) Insert the following data in the textbox "**P**arameters": **1000 10**.

4) Set the parameters position after the source file.

5) Execute the program confirming through "**R**un" the data input.

6) Now the file PROGRAM.BAS, stored on disk, should be renumbered.

LINE RENUMBERING UTILITY

A line renumbering utility is provided on Your **GET 11** disk, when the **BASIC 11** software tool had been selected, to help You maintain Your BASIC application program and make it easier for You to share sections of code between Your BASIC programs by only renumbering certain ranges of lines.

In its simplest use, RENUM.EXE will renumber all the lines of Your BASIC 11 program. You may specify the desidered starting line number and the increment between lines. For example, if You want the first line of BASIC code to be line 1000 and all successive lines to be incremented by 10, and Your source file is PROGRAM.BAS, type

RENUM PROGRAM.BAS 1000 10

at the MS-DOS prompt. Your file will be completely renumbered. Any references to the old line numbers will be appropriately changed. If You do not specify a starting line or increment, they default to 10.

In a more advance use, You can choose to renumber just a portion of Your program. If You have a range of lines between 1000 and 1100 and You want them to be renumbered starting at 2000 and incremented by 5, type:

RENUM PROGRAM.BAS 1000-1100 2000 5

RENUM doesn't let You move line of BASIC around to different parts of the file. It keeps Your file in order and only renumbers some lines. If You attempt to renumber the range of lines to an existing line number, RENUM reports an error and stops.