Getting Started with the Program Development Link

for the HP 48
1 Menu bar
2 Menu command
3 Menu
4 HP 48 character bar
5 Message bar
6 Cursor
7 Mouse pointer
8 Variable window
9 HP 48 Immediate window
10 Scroll bar
11 Title bars
Comments on the Program Development Link Documentation

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Program Development Link Documentation

Please circle a response for each of the statements below. You can use the Comments space to provide additional opinions.

1 = Strongly Agree 3 = Neutral 4 = Disagree
2 = Agree

Printed | On-Line
---|---
I am satisfied with Getting Started. | 1 2 3 4 5
I am satisfied with the on-line Help. | 1 2 3 4 5
The information is well organized. | 1 2 3 4 5 1 2 3 4 5
I can find the information I want. | 1 2 3 4 5 1 2 3 4 5
The information is accurate. | 1 2 3 4 5 1 2 3 4 5
I can easily understand the instructions. | 1 2 3 4 5 1 2 3 4 5
There are enough examples. | 1 2 3 4 5 1 2 3 4 5
The examples are appropriate and helpful. | 1 2 3 4 5 1 2 3 4 5
The illustrations are clear and helpful. | 1 2 3 4 5 1 2 3 4 5
The amount of printed information is: too much appropriate too little
The amount of on-line information is: too much appropriate too little
The parts I refer to most frequently are:
Printed: Getting Started
On-Line: Environment Information Menu Descriptions Customizing HP 48 Command Dictionary Other HP 48 Reference Information

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Getting Started with the Program Development Link

for the HP 48

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Setting Up Your System

This section shows you how to set up the computer and HP 48 so you can use the Program Development Link.

To write applications with the Program Development Link, you’ll need an IBM PC or compatible computer containing:

- A 5.25-inch (360 KB or 1.2 MB) flexible disk drive, or a 3.5-inch (720 KB or 1.44 MB) flexible disk drive.
- A hard disk drive.
- MS-DOS® operating system, version 3.00 or later.
- A Microsoft-compatible mouse (optional).

You’ll need these additional items to connect an HP 48 to the computer:

- Serial port on the computer.
- HP 48 serial cable and adapter (included with the Program Development Link).
Installing the Software

Follow these steps to install the Program Development Link software onto your hard disk. If you have problems, see “Fixing Problems” at the end of this chapter.

1. Make sure the computer is turned on, and the MS-DOS operating system is active.

2. Find Disk 1 for the Program Development Link and insert it into flexible disk drive A (usually the upper drive). Choose the disk size that fits your drive.

3. Type

   ![a:] install

   This makes drive A the active drive and starts the installation process. Follow the instructions on the screen. The predefined answers are usually the ones you want.

4. When the installation is finished, remove the last disk from drive A.

5. Hold `Ctrl` and `Alt` and press `Del` to restart the computer (or turn it off and on). This activates the changes that were made.

Connecting the HP 48 and Computer

Follow these steps to connect your HP 48 to your computer’s serial port:

1. Find the serial port on your computer—it’s either a 9-pin or 25-pin connector. If your computer has more than one serial port, it’s simplest to use the primary one, called COM1—or you can use COM2.

2. If you’re using a 25-pin serial port, attach the 25-pin adapter to the HP 48 serial cable. (If you’re using a 9-pin port, don’t use the adapter.)

3. Plug the cable into the computer’s serial port.

4. Plug the cable into the HP 48 serial port—the 4-pin connector at the top of the case.
The HP 48 doesn’t need to be connected unless you’re transferring data. You can unplug it whenever you want. Leave the cable attached to the computer for convenient hookup.

What the Program Development Link Does

The Program Development Link enables you to develop applications for the HP 48 using your computer. An HP 48 application is a collection of one or more HP 48 objects that work together to perform a task. The simplest application is a program—one program object. A more complicated application might include subprograms, list objects that contain custom menus or other data, or other types of HP 48 objects. When you start using your system, you can look at the LOOKUP.APP sample application that’s installed on your computer.

The Program Development Link gives you an on-screen work environment for developing applications, complete with a specialized editor. As you develop an application, you can send part or all of it to the HP 48. There each object in the application is stored in an HP 48 variable. You can then run the application on the HP 48—or you can operate the HP 48 from your computer.

The following sections help you try out some Program Development Link features. For more information, start the system as described next, then read the on-line Help information about the Program Development Link. (See “To Get On-Line Information” later in this manual.)
Using the System

This section helps you get started using your system.

To Use the Keyboard or the Mouse

Before you start the Program Development Link, you’ll want to understand how to do tasks. Instead of typing commands, you use menus to specify the tasks you want to do. Each menu contains a group of commands. If a command needs input from you, it displays a dialog box for your input. Follow the simplified directions below.

Using the keyboard:

1. To get a menu, press \( Alt \), then use \( \leftarrow \) and \( \rightarrow \) to highlight the menu you want, and press \( \rightarrow \). (To get out of the menu bar, press \( Esc \).)

2. To pick a command in a menu, use \( \uparrow \) and \( \downarrow \) to highlight the command you want, and press \( \rightarrow \). (To get out of a menu, press \( Esc \).)

3. To enter information in a dialog box, press \( Tab \) or \( Shift-Tab \) to move from one field to another. Type the information needed. For some tasks, you can choose options from a list—just move to the list and use \( \uparrow \) and \( \downarrow \) to highlight the item you want. After you’ve entered all the information, press \( \leftarrow \) to do the task. (To not do the task, press \( Esc \) instead.)

Using a mouse:

1. To get a menu, click the mouse on the menu label—that is, move the mouse until the pointer is on the label, then press and release the left mouse button.

2. To pick a command in a menu, click the mouse on the command you want. (To get out of a menu, click the mouse outside the menu.)

3. To enter information in a dialog box, click the mouse on the field and type the information needed. For some tasks, you can choose options from a list—just click on the item you want. After you’ve entered all the information, click the mouse on “OK.” (To not do the task, click the mouse on “Cancel” instead.)
To Try Out the System

You can try this sample session on your system. It gives you a chance to see how you can create HP 48 applications on your computer.

The GEOM application in this example finds the volume and surface area of a sphere for a specified radius. It uses a typical HP 48 application structure—the HOME directory contains a variable that sets up the application, and the application subdirectory contains two variables:

**HOME directory:**
- GEOM Program that sets up the GEOM application.

**DGEOM directory:**
- SPHERE Main program of the GEOM application.
- CST Custom menu for GEOM application.

Each of the numbered headings below shows a main step in the process of creating the application.

1. **Start the Program Development Link.**

   *On your computer*, run the PDL program to start the Program Development Link environment:

   \[ \text{pd1} \]  

2. **Open a new application (if necessary).**

   In this example, there's no current application open, so you don't have to open a new one. (If you had an application open, you could open a new one by getting the “File” menu and picking the “New Application” command.)

3. **Set the installation directory.**

   You can specify where most variables go on the HP 48.

   1. Get the “Options” menu and pick the “Transfer” command. (See “To Use the Keyboard or the Mouse” earlier.)

   2. Next to “HP 48 Installation Directory,” type \{HOME DGEOM\}, then press \[ \rightarrow \] or pick “OK.”
4. Create the first variable.

1. Get the “Variable” menu and pick the “New Variable” command.

2. Next to “Variable Name,” type SPHERE. Then press or pick “Edit in Active.”

5. Enter the HP 48 program.

1. Type the following program lines on the computer. Type the characters shown. Certain combinations that represent HP 48 characters or commands change automatically when you move to the next line—for example, << changes to «, \pi changes to π, and \texttt{dup} changes to \texttt{DUP}.

   - $<< \text{Tab} \texttt{dup} \rightarrow r '4/3\pi r^3' \rightarrow \text{num} "\text{VOL}" \rightarrow \text{tag} \rightarrow \text{swap} \rightarrow r '4\pi r^2' \rightarrow \text{num} "\text{SURF}" \rightarrow \text{tag} \rightarrow \text{Home} \rightarrow >>$

   When you finish, your program should look like the one below. If it doesn’t, use the cursor keys, (Delete), and (-) to fix any mistakes.

   $<< \text{DUP} \rightarrow r '4/3\pi r^3' \rightarrow \text{NUM} "\text{VOL}" \rightarrow \text{TAG} \rightarrow \text{SWAP} \rightarrow r '4\pi r^2' \rightarrow \text{NUM} "\text{SURF}" \rightarrow \text{TAG} \rightarrow$ 

6. Create other variables as needed.

Use similar steps to create the other variables for the application:

1. Create the variable \texttt{CST}. (Use the “Variable” menu, “New Variable” command.) Then enter the following list:

   $\{ \text{SPHERE} \{ "\text{EXIT}" \text{ home} \} \}$
7. Create the variable GEOM—but because it needs to go in the HOME directory, enter its name as \{HOME GEOM\}—with curly braces. (Use the "Variable" menu, "New Variable" command.) Then enter the following program:

$$\langle\langle \text{DGEOM 1 menu} \rangle\rangle$$

8. Save the application in a file.

All variables in the application are saved in the same file—GEOM.APP for this example.

1. Get the “File” menu and pick the “Save As” command.

2. Next to “File Name,” type GEOM, then press or pick “OK.”

9. Send the application to the HP 48.

1. If you're using the computer's COM2 serial port (instead of the default COM1 port), get the “Options” menu and pick the “Communications” command—then under “Serial Port” choose COM2. (You can also check other communications parameters.)

2. Make sure the HP 48 and computer are connected. (See "Connecting the HP 48 and Computer" earlier.)

3. On the HP 48, press \(\rightarrow\) I/O to put the calculator in Kermit Server mode. This means it can be controlled by the computer.

4. On the computer, get the “Transfer” menu and pick the “Send All” command. Wait for the “Send All” message to disappear—the transfer may take half a minute or more. If you get an error message, the application may have a syntax error, or the communication parameters may not be set properly. To reset the HP 48 I/O parameters, purge variable IOPAR.

9. Run the program from the computer.

1. Make the HP 48 Immediate window active—you can press \(\text{F6}\) (a shortcut for the “View” menu, “Next Window” command)—or you can click the mouse anywhere in the “HP 48 Immediate” title bar.
2. *On the computer,* type commands to run the program. Each time you press $\leftarrow$, the calculator responds as though you entered the commands there—and the HP 48 Immediate window shows the contents of the stack.

- **GEOM** $\leftarrow$ *Runs the GEOM setup program and shows its menu on the calculator.*
- **14 SPHERE** $\leftarrow$ *Enters a radius and runs the SPHERE program.*
- **home** $\leftarrow$ *Returns to the HOME directory.*

10. **Run the program from the HP 48.**

*On the HP 48,* press $\text{ATTN}$ to end Kermit Server mode. Then press the following keys:

- **VAR GEOM** *Runs the GEOM setup program and shows its menu.*
- **8.5 SPHERE** *Enters a radius and runs the SPHERE program.*
- **EXIT** *Returns to the HOME directory.*

11. **Exit the Program Development Link.**

*On the computer,* get the “File” menu and pick the “Exit” command.

**To Back Up and Restore HP 48 Memory**

You can back up and restore HP 48 memory using the “Transfer” menu. But you can also do this at the MS-DOS prompt—without using the programming environment:

1. Make sure the HP 48 and computer are connected. (See “Connecting the HP 48 and Computer” earlier.)

2. If you’re *not* using the computer’s COM1 serial port, you *must* run the Program Development Link software and change the specified serial port. (See “To Try Out the System” earlier.)

3. *On the HP 48,* press $\text{I/O}$ to put the calculator in Kermit Server mode. This means it can be controlled by the computer.

4. *On the computer,* run the PDL program in one of the following ways, then follow the instructions on the screen:
To back up memory (into a computer file named BAK2.MEM)
\[ pdl \ /b \ bak2 \]

To restore memory (from a computer file named BAK2.MEM)
\[ pdl \ /r \ bak2 \]

To Get On-Line Information
The main documentation about the Program Development Link is contained in the on-line Help system, which is available in the programming environment. To get Help information:

1. Select a topic:
   - **Program Development Link and HP 48 information.** Get the “Help” menu and choose one of the commands, such as “Contents” or “HP 48 Command Dictionary.”
   - **HP 48 command information.** Move the cursor to a command that’s in the window, such as one you’ve just typed, and press \( F1 \). Or click the *right* mouse button on a command. (The “Help” menu, “Context-Sensitive Help” command, also does this.)
   - **Menu and dialog box information.** If the menu label or menu command is highlighted, press \( F1 \). If a dialog box is displayed, press \( F1 \) or pick “Help.” (Steps 2 and 3 below don’t apply to information about a menu operation that’s in progress.)

2. Review the information. You can also copy and paste from the Help window.
   - To make the Help window active, press \( F6 \) until its title bar is highlighted, or click the mouse on the “Help” title bar.
   - To move through the current topic, press \( \text{Page Down} \) and \( \text{Page Up} \) or use \( \downarrow \) and \( \uparrow \) to move the cursor. Or you can click the mouse pointer on the scroll bar at the right edge of the display.
   - To move ahead to a new topic, move the cursor to any word (such as a command) or tab to a phrase marked by \( \langle \bullet \rangle \) (called a link), then press \( F1 \). Or click the *right* mouse button on a word or marked phrase. (\( \langle \text{Contents} \rangle \) goes to the main Help screen.)
To trace your steps back to previous topics, press $\text{Ctrl} - \text{F1}$. Or click the right mouse button on $\text{Back}$ at the top of the topic.

3. To close the Help window, press $\text{Esc}$ or get the “View” menu and pick “Help Window.”

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**Getting More Information**

You can get information from these sources:

- The on-line Help system, which provides the main Program Development Link information. See “To Get On-Line Information” above.

- The README.TXT file, which is included and installed on your hard disk with the Program Development Link. To read this file, change to your installation directory (such as C:\PDL), then view it with a text editor or with the MS-DOS command `TYPE README.TXT | MORE`.

- The *HP 48 Owner’s Manual*, which comes with the HP 48.


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**Fixing Problems**

If you have problems installing or starting the Program Development Link, look for the description below that matches your problem. (For problems that occur while you’re using the Program Development Link, you’ll get a message—plus an option for getting more information.)

**Installation program doesn’t work properly**

- Make sure you’re using Disk 1 for the Program Development Link.
- Make sure you’ve set the current drive to the drive containing Disk 1. For example, if Disk 1 is in drive A, type $A: \rightarrow$ to make it the current drive.
- Don’t use / in the directory name. Use \ instead.
Program Development Link won't start up

- Make sure you installed the Program Development Link on a hard disk.
- Make sure you allowed the installation process to finish—and you restarted the computer afterward.
- Type `path` and check that your MS-DOS PATH variable includes the directory where you installed the Program Development Link, such as C:\PDL. You can edit AUTOEXEC.BAT to add the directory to PATH. Otherwise, you must change to that drive and directory to start up the Program Development Link.
- Make sure you’re using MS-DOS version 3.00 or later.

Mouse doesn’t work right

- Make sure the mouse-driver software that came with the mouse or computer is installed.
- Make sure the mouse driver is activated. For example, your CONFIG.SYS file might contain DEVICE=C:\MOUSE.SYS—your AUTOEXEC.BAT file might contain C:\MOUSE.COM.

Cursor doesn’t work right

- If you’re using movement keys on the numeric keypad, make sure “Num Lock” is off.
- Check your keyboard. Certain shifted-key combinations aren’t supported on the early HP Vectra PC with only [1] ... [8] across the top of the keyboard.

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## Program Development Link

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Contacting Hewlett-Packard

For Information about Using the Product. If you have questions about how to use the Program Development Link, first check the built-in on-line Help system and “Fixing Problems” in this manual. (Also check the HP 48 Owner’s Manual, appendix A.) If you can’t find an answer in those places, you can contact the Calculator Support department:

Hewlett-Packard
Calculator Support
1000 N.E. Circle Blvd.
Corvallis, OR 97330, U.S.A.

(503) 757-2004
8:00 a.m. to 3:00 p.m. Pacific time
Monday through Friday

For Service. If your product doesn’t seem to work properly, refer to the built-in on-line Help system for diagnostic instructions. If you are in the United States and your product requires service, mail it to the Corvallis Service Center:

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(503) 757-2002

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