

HP VEE 5.0 Evaluation Kit



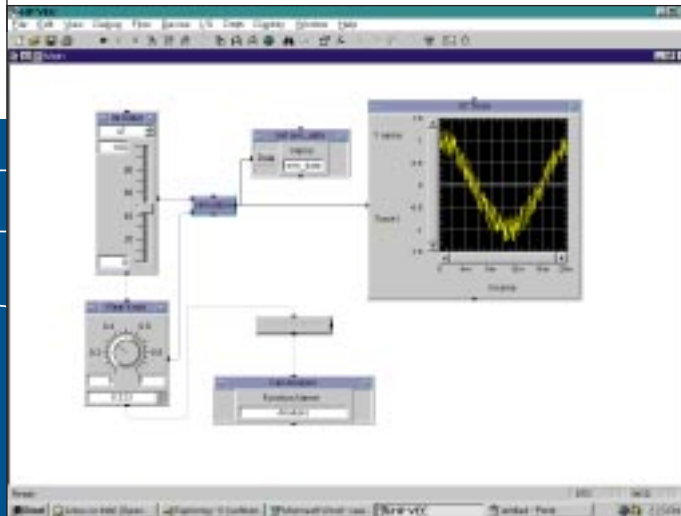
Learn the fundamentals of using HP VEE by following step-by-step examples.

The evaluation CD includes the following:

- HP VEE 5.0 evaluation copy
- I/O Libraries for RS-232 devices
- Starter set of instrument drivers
- 3-minute Introduction to HP VEE
- Tutorial on using HP VEE
- 3 HP VEE applications with step-by-step description

To run the HP VEE 5.0 evaluation software, you'll need:

- Microsoft Windows 95/NT (4.0 or higher) operating system
- An 80486 processor, 66 MHz or faster
- Minimum RAM of 16 MB (Windows 95), 32 MB (Window NT)
- Minimum display of 800x600 with 256 colors
- CD-ROM drive



5

Introduction

What is HP VEE?

HP VEE is a visual programming language for developing programs for instrument control and data acquisition. With HP VEE you create a visual program by linking together functional objects to form a block diagram. The range of functions within HP VEE makes it a universal tool for measurement and control programs.

Using HP VEE, you can...

- **Gather data** from instrumentation and PC plug-in modules.
- **Control interfaces and equipment** (serial, HP-IB or GPIB, VXI).
- **Display data** using many different plots, alphanumeric displays, and display objects.
- **Load and use** ActiveX Controls to add functionality to HP VEE.
- **Communicate** with other Windows programs using ActiveX Automation.
- **Save** programs using many formats such as binary, ASCII, table formats.
- **Process data** as strings, arrays, bytes, records, etc.
- **Compute, analyze and simulate** from simple addition to FFTs, fitting, integration, etc.
- **Work with loops** such as if/then/else, <, =, >, for, while, repeat until, etc.
- **Control and regulate** to simulate data, measure and compute output variables, etc.
- **Create** structured programs and user interfaces.
- **Access** any HP VEE panel over the World Wide Web.
- **But above all:**

Save time and money!

Installing HP VEE Evaluation Copy

Installation for Windows 95/NT:

- Insert the CD in your PC's CD drive, and the evaluation software will auto-run. Or you can double-click on **Win95_NT.exe** in the CD's root directory.
- If you're new to HP VEE, take the time to go through **Introduction to HP VEE** and **Applications** to learn basic HP VEE operation and concepts.
- Select **Install Evaluation VEE**

If you didn't review **Introduction to HP VEE** and **Applications**, rerun **Win95_NT.exe** when you have time to review these sections.

***Note:** To evaluate HP VEE using a serial port (RS-232), install the I/O libraries (**hpiolibs.exe**) from the CD. For other interfaces, the I/O software you need should be included with the I/O hardware you are using.*

This evaluation copy provides a subset of the instrument drivers shipped with HP VEE. You can download additional drivers from the HP VEE web site (www.hp.com/go/hpvee) under Support/Instrument Drivers.

Installation for Windows 3.1: Follow the instructions above-you will only be able to view **Introduction to HP VEE** and **Applications**. The evaluation software for HP VEE 5.0 only runs on Windows 95/NT.

Uninstalling the Evaluation Software

- From Windows, select **Start** → **Settings** → **Control Panel**, and run **Add/Remove Programs**.
- Select **Install/Uninstall**, and select the entry for the HP VEE evaluation kit.
- Click on **Add/Remove**, and select **Yes** when asked for confirmation.

Evaluation Copy Limitations

The demo version of HP VEE provides the same functionality as the full version. However, you cannot save HP VEE programs with more than 50 objects. The demo version becomes disabled after 60 days.

Discover HP VEE!

This booklet contains **three examples with step-by-step instructions** for you to create your first simple HP VEE programs. These examples will help you get acquainted with HP VEE and show you how it works.

HP VEE 5.0 New Features

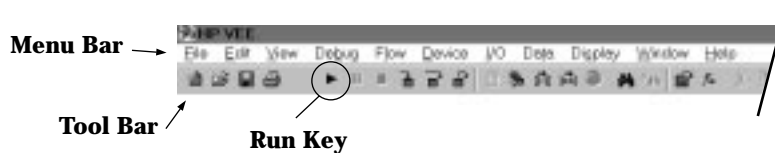
Version 5.0 of HP VEE provides new functionality in three key areas:

- ActiveX Controls — you can now add ActiveX Controls to HP VEE.
- ActiveX Automation — you can now easily send and receive data from other ActiveX applications, such as databases, spreadsheets, and word processors.
- Web Enabled Functions — HP VEE now has a built-in web server so that you can remotely monitor HP VEE programs over your intranet or the World Wide Web.

This booklet does not provide examples that use these new features. Please visit the HP VEE web site (www.hp.com/go/hpvee) for application notes on these features. Also, refer to **Help** → **Open Example** within the HP VEE evaluation software for examples that demonstrate use of these features.

Working with HP VEE: The Interface

Double-click the left mouse button on the HP VEE symbol to start HP VEE. The development environment is displayed.



The menu bar provides pull-down menus that contain the programming objects of HP VEE. The tool bar contains shortcut buttons for working with programs and functions (Run, Stop, Save, etc.). Refer to the later sections of this booklet for a guide to HP VEE menu shortcuts.

HP VEE is operated via the keyboard, a mouse, and buttons on the tool bar.

Here are the main ways you interact with HP VEE objects:

Getting objects from menus:

- Click on the menu item with the left mouse button.

Moving objects within the development environment:

- Move the mouse pointer onto the object or the blue title bar, hold the left button down and move.

Changing the size of objects:

- Move the mouse pointer to the lower right corner until the pointer turns into a right angle, then drag the object to its desired size.

Connecting (or wiring) objects:

- Click the left mouse button near one of the pins (i.e., black dots at the edge of the objects). Move the mouse (dragging the wire) to the pin to which you want to connect, and click there again.

Deleting existing connecting wires (i.e., lines):

- Select **Edit** → **Delete Line**, then click on the connecting line to be deleted. Note that there are two scissors symbols in the tool bar—one for deleting objects and the other (to the right) for deleting connecting lines.

Selecting objects:

- Click on an object (hold down the Ctrl key if several objects are being selected).

Changing the view of an object:

Every object has two kinds of views.

- Icon View: Click on the upper right corner of an open object.
- Open View: Double-click on the icon view of the object.

Opening an object's Properties dialog box:

- Position the mouse pointer over the object, and click the right mouse button. Or, double-click in the title bar to directly open the **Properties** dialog box.

Deleting objects:

- Open **Properties** and select **Cut**.

Moving the block diagram within the development environment:

- Hold down the left mouse button with the pointer in an empty area while moving the mouse.

Example 1: Generating Random Numbers

This exercise will familiarize you with the general operation of HP VEE.

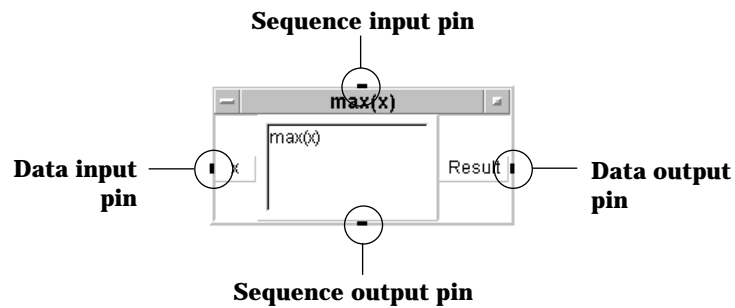
We will generate ten random numbers and display the values. You will work with the library of math functions, add a loop, and display the numbers.

Generate a Random Number

1. Start a new program by selecting **File** → **New**.
2. For maximum workspace, turn the Program Explorer off. Select **View**. If there is a checkmark next to **Program Explorer**, click on it to toggle it off.
3. Click on **Device** → **Function & Object Browser** (or click on the **fx** key in the tool bar). A window opens containing lists of mathematical objects as well as user functions. Select the following:
 - **Type** → **Built-in Functions**
 - **Category** → **Probability & Statistics**
 - **Member** → **random**
 - **Create Formula (located at the bottom of the window)**
4. The mouse pointer drags the outline of the object along with it. Position the object in the upper left section of the work area by moving the mouse and clicking the left mouse button again when the object is where you want it. This object generates random numbers between the values **high** and **low**.
5. To set the lower limit, select **Data** → **Constant** → **Real** and place the **Real** object to the left of the **Random** object. Click on the input window and type in the value **-10**. Connect the output pin of the **-10** object to the input pin labeled **low** on the **Random** object.

Example 1

Note: You must connect objects to transfer data. Data input pins are on the left, and data output pins are on the right. An object's sequence pins (top and bottom of the object) can be used to specify program execution, but are seldom required. HP VEE programs execute top to bottom, left to right.



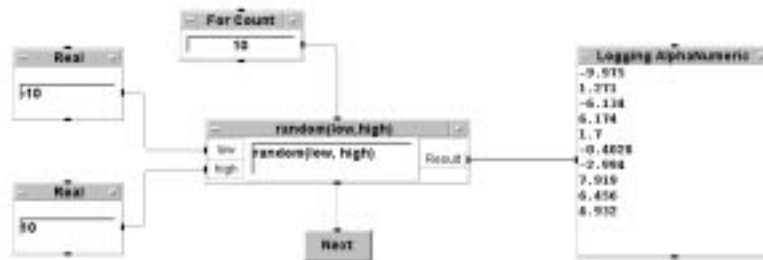
6. Repeat the instructions in step #5 to create an upper limit of 10- connecting the second object to the input terminal labeled **high**.
7. Get an object in which to display a random number. Select **Display** → **Alphanumeric** and position it to the right of the **Random** object. Connect the data output (i.e., labeled **Result**) from the **Random** object to the data input terminal on the **Alphanumeric** display. Your HP VEE program should look like this:



8. You are ready to run your program to ensure that it's working so far. Select **Debug** → **Run/Resume**, or click on the triangular icon on the tool bar. You will see that we have generated and displayed one random number.

Create a Loop to Generate Ten Numbers

1. Minimize the **Random** object by clicking on its upper right corner.
2. Delete the **AlphaNumeric** display by double-clicking on its upper left corner or by opening its **Properties** dialog box (mouse pointer over the display, click the right mouse button) and selecting **Cut**.
3. Add a new object that can display all ten numbers at once. Select **Display** → **Logging AlphaNumeric** and position the object to the right of the random number object. Connect the data output from the **Random Number** object to the data input pin on the **Logging AlphaNumeric** display.
4. To generate ten random numbers we'll add a loop. Get a For Loop by selecting **Flow** → **Repeat** → **For Count**. The default for the count is 10. Connect the data output pin from the **For Count** object to the top sequence pin of the **Random** object.
5. Now close the loop. Select **Flow** → **Repeat** → **Next** and position the object below the **Random** object. Connect the bottom sequence pin of the **Random** object to the **Next** object's top sequence pin.
6. Run your program again. If you don't have the results you expect, first check the connections between objects to ensure they match the program shown below.



Example 2: Simulating, Analyzing and Displaying Data

In this exercise you'll learn about simulating measurements and using formula boxes, signal analysis tools (e.g., FFT) and various displays. You'll also see how easily data can be saved to an external file.

Generate data

1. Start a new program by selecting **File** → **New**.
2. To simulate data, select the **Device** → **Virtual Source** → **Function Generator** and position the object in the upper left section of the display.
3. Set the following values in the Function Generator:
Function: "Square" (*in the pull down menu*)
Frequency: "100"
Amplitude: "1"
DcOffset: "0"
Phase: "Deg 0"
TimeSpan: "20m"
NumPoints: "100"
4. Get a second function generator and place it below the first one. An easy way to do this is to clone the first—simply click on the box in the upper left corner of the object and select **Clone**.
5. Modify the values of the second function generator as follows:
Function: "Sine"
Frequency: "100"
Amplitude: "1v"
DcOffset: "0"
Phase: "Deg 0"
TimeSpan: "20m"
NumPoints: "100"
6. Rename the two objects. Position the mouse arrow over the function generator that generates the square wave and click the right mouse button. Select **Properties**. Change the name in the **Title** field to **Square** and click on **OK**. Change the name of the second function generator object to **Sine**.
7. Minimize the two function generators. Click the upper right corner of the icon (with the left mouse button) to minimize the object.

Multiply the Two Signals

1. Select **Device** → **Function & Object Browser** → **Type: Operators**, **Category: Arithmetic**, **Member:*** (i.e., multiplication of numbers). Select **Create Formula**, and an input box for a formula appears. In this case, “a*b” is given as a formula. However, this formula can be edited (just like all other formulas in HP VEE).
2. Click in the formula window and add 1.5 to “a*b” (i.e., “a*b+1.5”).

Note: HP VEE provides several ways of working with formulas:

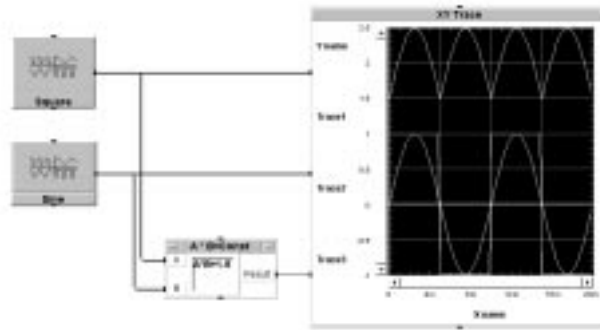
- You can type in any formula using **Device** → **Formula**.
 - You can incorporate pre-fabricated formulas for many math, engineering, and scientific functions from **Device** → **Function & Object Browser** (or press the **fx** key).
 - You can edit and nest formula objects, creating larger formulas.
3. Change the name of the formula object so that you can move through your program more easily. Position the mouse arrow over the formula object and click the right mouse button. Select **Properties**. Change the name in the **Title** field to “a*b+Const” and click on **OK**. Click the upper right corner of the open view (with the left mouse button) to minimize.
 4. Transfer the data from the **Square** object to the formula by connecting its data output pin to the upper data input pin on the formula box. Transfer the data from the object **Sine** to the formula by connecting the data outputs to the lower data input (**B**) on the formula box.

Note: HP VEE can handle different data types. In this example, the formula object recognizes the incoming data type (i.e., fields with 100 real values) and processes them correctly.

Display the Data

1. Use the **Display** → **XYTrace** to display the data. Note that the XY Display shows one data input pin. You will need three-one for each output from the virtual function generators and one for the output from the formula box.
2. To add a data input, click on the box in the upper left corner of the display and select **AddTerminal...** → **Data Input**. This generates a second input on the XY Trace display. Now, add a third input for data.
3. Transfer the values of the two function generators and the data from the **a*b+1.5** formula to the three data inputs on the **XYTrace** display object.

- Click on the Run icon (the triangular shape) in the tool bar to run the program.



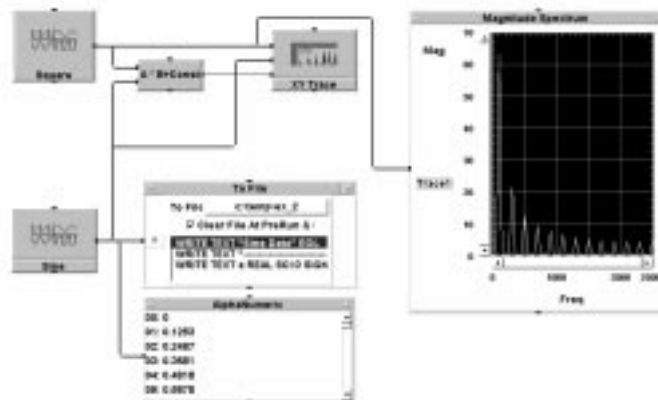
Perform an FFT on the Square Wave

- Get **Display** → **Spectrum(Freq)** → **MagnitudeSpectrum**.
- Transfer the data from the **Square** object to the **MagnitudeSpectrum** (i.e., FFT) object.
- Minimize the XY Trace.
- Run the program.

Save the Analyzed Data to a File

- Get the **I/O** → **To** → **File** object.
- Transfer the data from the **Sine** Function Generator to the **To File** object (input pin **A**).
- Click on the **To File: my File** button in the **To File** object. Enter a suitable directory and file name (e.g., c:\temp\ex_2). Click on **OK**.
- Click on the box next to **Clear File At PreRun & Open** to specify that an existing file with the same name will be overwritten.
- To specify what is sent to the file, double-click on the (first) line with a dark blue background with the text **“WRITE TEXT a EOL”**. Leave the settings for the first two input windows at their default settings: **WRITE** and **TEXT**. Replace a with the text **“Sine Data”** (in quotation marks) in the third window. Close the transaction window with **OK**.

6. Double-click immediately below the command line that was just defined. Replace **a** with the string “_____” (in quotation marks) in the transaction window. Close the transaction window with **OK**.
7. Double-click on the third command line in **To File**.
 - Leave the parameters for the first three windows as **WRITE, TEXT** and **a**. This writes the text passed through the variable **a** from the **Square** function generator.
 - Select **REAL FORMAT** instead of **DEFAULT FORMAT**.
 - Click on **DEFAULT FIELD WIDTH**. The key will change to **FIELD WIDTH**. Enter the number **4** instead of **20**.
 - Change the sign format from **/-** to **"/-**.
 - Change the number format from **STANDARD** to **SCIENTIFIC**.
 - Change the number of decimal places (**NUM FRACT DIGITS**) from **6** to **3**.
 - Conclude your inputs with **OK**.
8. Get a display object for numbers and strings (text) using **Display** → **AlphaNumeric**. Drag the object out lengthwise by positioning the mouse pointer over the lower right corner of the object and dragging the corner.
9. Transfer the data from the **Sine** function generator to the alphanumeric display.
10. Click on the **Run** button in the tool bar to start the program. Your HP VEE program should look something like the screen below.
11. Check the format of the saved file using an editor.



Example 3: Data Transfer, User Functions and Panels

This exercise demonstrates using input/output objects, customizing objects using the Properties dialog box, structured programming with user objects, creating and invoking user functions, and the use and structure of user panels. Here's the plan:

- Data will be simulated and displayed.
- The program will be structured (i.e., parts of the program will be “packaged” into a new object).
- The data will be analyzed and then packaged as a user function.
- Two front panels (main program, user function) with operating objects will be constructed.

Generate, Process and Display Data

1. Open a new window with **File** → **New**.
2. Get a **Device** → **Virtual Source** → **Function Generator** object to simulate measured data and a **Device** → **Virtual Source** → **Noise Generator** function to add noise to the system. Use the default values for each object.
3. To add the outputs from these two objects together use **Device** → **Function & Object Browser** → **Type: Operators, Category: Arithmetic, Member:+**. Select **Create Formula**.
4. Connect the output of the function generator to input pin **A** on the **A+B** object, and connect the output of the noise generator to input pin **B**.
5. Get the **Display** → **XY Trace** object, and connect the output pin **Result** from the **A+B** object to the input pin of the **XY Trace**.
6. Click on the triangular button in the tool bar to run the program.

Add a Slider and a Control Knob

1. Get the **Data** → **Continuous** → **Integer Slider** object and position it to the left of the function generator. If you need more room, simply click in a clear space in the work area to move the HP VEE program.

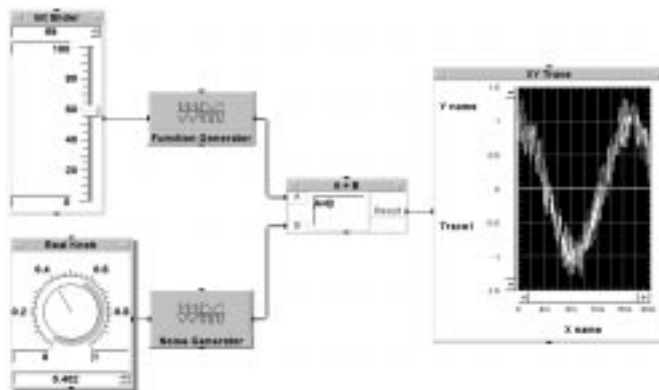
2. Add an input terminal to the function generator--click on the box in the top left corner of the function generator and select **Add Terminal** → **Data Input**. Click on **Frequency** and **OK**. Now, the frequency is controlled through the input terminal.
3. Connect the slider's output pin to the Frequency input pin of the function generator.

***Note:** Additional pins can be created for almost all objects so that data (Data Input/Output) or control parameters (Control Input/Output) can be transferred. For example, you can transfer variables to formulas, values to objects, data records to graphics, and much more.*

4. Get **Data** → **Continuous** → **Real Knob**.
5. Add an input terminal to the noise generator to control the amplitude.
6. Set up both controls so that the program runs when the operator adjusts either the frequency or noise amplitude. Click on the box in the upper left corner of the **Slider** object and select **Properties**; click on the box next to **Auto Execute**; click on **OK**. Repeat for the **Knob** object.

***Note:** You can change the upper and lower limits of the slider and the knob by typing in new values in the appropriate windows.*

7. Minimize the function generator and noise generator objects.
8. Run the program by adjusting either the frequency or noise amplitude by moving the slider bar and the knob dial. Your display screen should look something like this.



With HP VEE, groups of objects can be “packaged” into a new object (**UserObjects**). This increases clarity, saves space on the display screen, and allows functional units to be reused.

Create a UserObject

1. Highlight all the objects for inclusion in the UserObject by holding down the **Ctrl** key while clicking on the function generator, the noise generator and the **A+B** object. Notice that the selected objects have a shadowed background.
2. Click on the **Edit** menu and select **Create UserObject**.
3. Enter “**simulation**” as the name in the title field and click on **OK**. HP VEE draws a frame around the selected objects, including the input and output pins.
4. The user object **simulation** now occupies the whole of the display screen. Close the user object frame by clicking on the **x** in the upper right corner of the frame-be sure not close HP VEE by clicking on the **x** in the extreme upper right corner!
5. Run the program by adjusting the slider or knob values. The program should run exactly as it did before you created the user object.

***Note:** To see the structure of your program, go to the **View** menu. If there is not a checkmark next to **Program Explorer**, click on **Program Explorer** to toggle it on. Now the left side of your HP VEE display area lists the elements of your program-in this case **Main** and **simulation**. To free up space for the rest of this example, turn off the **Program Explorer** now.*

Create a User Panel

1. Select the slider, the knob, and the display by holding down the **Ctrl** key and clicking on each object using the left mouse button.
2. Go to the **Edit** menu and select **Add To Panel**. HP VEE creates a new window containing just the objects you selected.
3. Enlarge the new window by dragging the mouse from the lower right-hand corner. Rearrange the objects so that they are all visible. Change the size of each object if you wish.

4. Use the buttons in the upper left corner of the header bar to switch between the Panel View and the complete visual program (i.e., development mode or Detail View).
5. To run the program in Panel View, adjust the slider and knob. Again, the program should run exactly as it did when you ran it in Detail View (i.e., the development mode).

Control Program Execution Flow

Linking objects via their sequence pins specifies the order in which the program is executed. HP VEE programs execute top to bottom, left to right—unless the sequence pins are used to further control program execution.

1. Switch back to Detail View using the right-most button of the three in the header bar (next to “Main”).
2. Connect the sequence pin on the bottom of the slider with the sequence pin on the top of the knob.
3. Get the **Flow** → **Confirm (OK)** object. Connect the bottom sequence pin of the knob to the top sequence pin of the OK object.

***Note:** The **Confirm (OK)** button stops program execution at the point where the button is located.*

4. Change the label on the **OK** button to **Press for stats**. Click on the right mouse button while the mouse is over the button, select the **Properties** menu, and type in the new label in the **Title** field.
5. Enlarge the button so that the label is clearly displayed.
6. Click on the **OK** object to select it and then **Edit** → **Add to Panel** so that the **Press for Stats** button is accessible to the program operator (i.e., in the Panel View).
7. Run the program (adjust either slider or knob) and click on the button when it is activated.

Set a Global Variable

1. Switch back to the Detail View using the right-most button of the three in the header bar (next to “Main”).
2. Maximize the development window by clicking on the box in the right corner of the header bar.
3. Get the **Data** → **Variable** → **Set Variable** object and transfer the simulated data from the **Simulation** object (i.e., connect the output pin **Result** from the **simulation** UserObject to the input pin on the **Set Variable** object).
4. Rename the default **globala** to be **sim_data** by typing the new name in the field.

*Note: Global variables can be used anywhere in an HP VEE program using the **Set/Get Variable** object, and the variable data is passed without connecting the objects through input/output pins.*

Create a Subroutine (UserFunction) that Calls the Global Variable

1. Select **Device** → **UserFunction**. This provides a self-contained function in which you can create a stand-alone routine.
2. Get a **Data** → **Variable** → **Get Variable**. Change the name in the field to **sim_data** to match the name of the global variable set up earlier.
3. Select **Device** → **Function & Object Browser** (or the **fx** key in the tool bar) and **Type: Built-In Functions, Category: Probability & Statistics, Method:max**. Select **Create Formula**.

fx key → **Type: Built-In Functions, Category: Probability & Statistics, Method:min**. Select **Create Formula**.

fx key → **Type: Built-In Functions, Category: Probability & Statistics, Method:median**. Select **Create Formula**.

4. Connect the output pin from the global variable object **sim_data** to the input pins of the maximum, minimum, and median function boxes.
5. Get a **Display** → **Alphanumeric**.
6. Clone it twice so that you have three displays. To clone an object, click on the box in the upper left corner of the object and select **Clone**.

7. Change the name of each object to **maximum**, **minimum**, and **median** respectively. To change an object's name, click the right mouse button while on the object, select **Properties**, and type in the new name in the **Title** field.
 8. Connect the output pins of the max, min, and median functions to their respective alphanumeric displays.
 9. Get a **Flow** → **Confirm (OK)** button. Connect the bottom sequence pin of the **Get Variable (sim_data)** to the top sequence pin of the **OK** button.
 10. Change the label on the OK button (for clarity during program execution) to **Close stats panel**.
 11. Resize the button so that the label is clearly displayed.
 12. Create an operator panel for the user function that contains the three displays plus the **Close stats panel** button. Press the Ctrl key while clicking on each object and then select **Edit** → **Add to Panel**. Arrange the objects as desired and size the operator panel as appropriate.
 13. Move the objects on the Panel and resize the whole panel as desired.
 14. While in Panel View, open the user function's **Properties** menu (click the right mouse button above the blue header bar of the function). Select **Properties**, ensure that box next to **Show Panel On Execute** has a checkmark in it.
 15. While in the **Properties** dialog box, rename the user function **Analysis** by typing in the new name in the **Title** field. Click on **OK**.
- Note:** Show Panel On Execute displays the panel while the program is running. This program pauses at the Close stats panel button (i.e., the panel remains open until the button is clicked).*
16. Close the function (click on the **x** in the upper right of the frame).
 17. Use the Program Explorer to view your program so far-you can click on the + symbol next to **Local User Functions** to go to the **Analysis** user function. Toggle back and forth between the panel view and the complete visual code in the detail view.

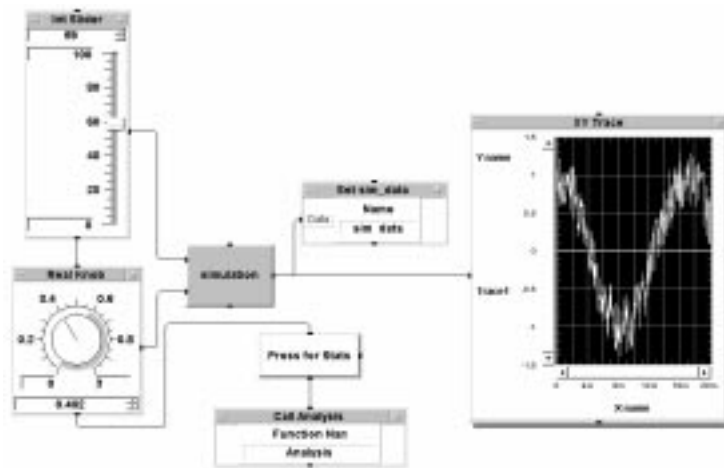
Call the User Function from the Main Program

1. Go to the Detail View for the Main program with Program Explorer off.
2. Select **Device** → **Call** and position the object in the lower part of the main program.
3. Replace the default name **myfunction** with **Analysis**, which is the name of the user function to be called.
4. Connect the bottom sequence pin of the **Press for stats** button to the top sequence pin of the **Call Analysis** object.
5. Run the completed program-go to panel view and adjust the slider or knob.

The program should run as follows:

- HP VEE displays the simulated data, but stops execution until you click Press for stats button.
- After you have clicked on the button, HP VEE displays the panel for the user function, showing the displays for the maximum, minimum, and median values.
- The panel stays open until you click on the Close stats panel button.

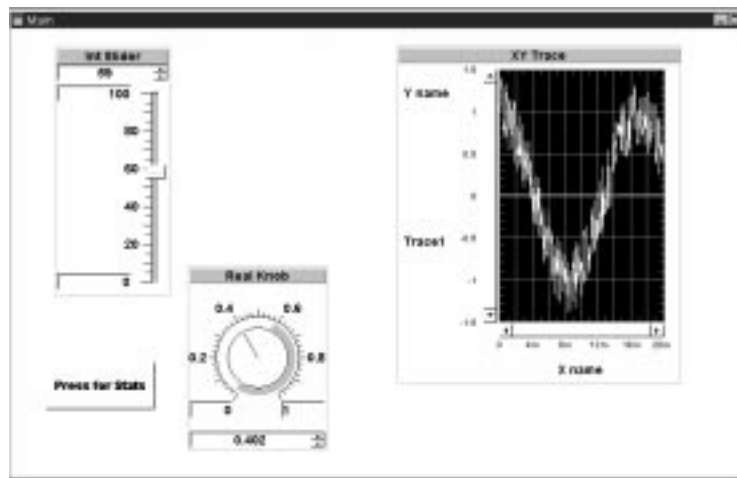
Here's the Main program.



Here's the Analysis user function.



Here's the Main user panel.



Here's the Analysis user function panel.

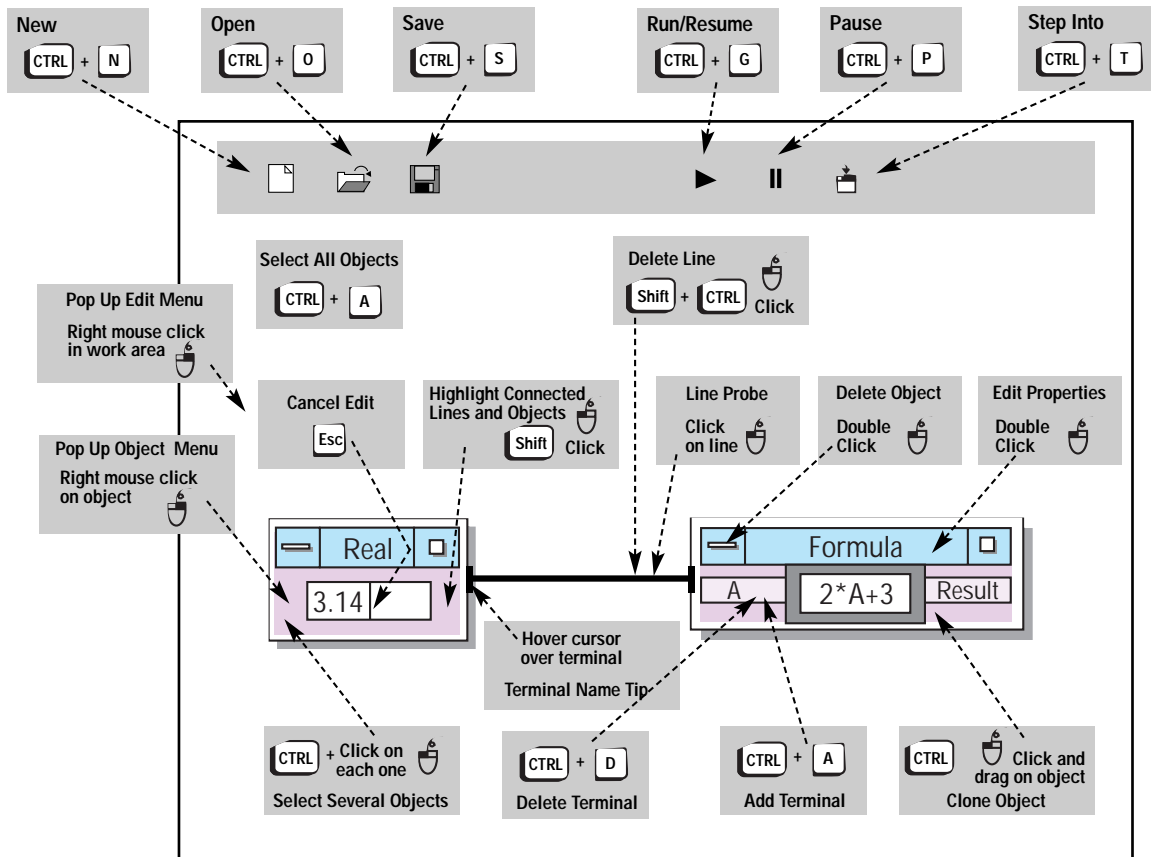


Troubleshooting Tips

If this program doesn't run as you expect or HP VEE gives you an error message, try the following steps:

- Stop the program if it is still running-to stop, press the box on the tool bar or select **Debug** → **Stop**.
- Ensure that the objects are connected as shown in the illustrations.
- Ensure that the global variable name **sim_data** is correct in the Set/Get Variable objects.
- Ensure that the user function name **Analysis** is correct in the Call object.
- Use **Debug** → **Show Data Flow** and **Debug** → **Show Execution Flow** to see whether data is flowing and the program is executing as expected- be sure to turn off the panels first so that you can actually see the data and execution flow. To turn off the panels (for both **Main** and **Analysis**), go to the panel view, right mouse click and select **Properties**, then turn off **Show on Execute**.

Shortcuts

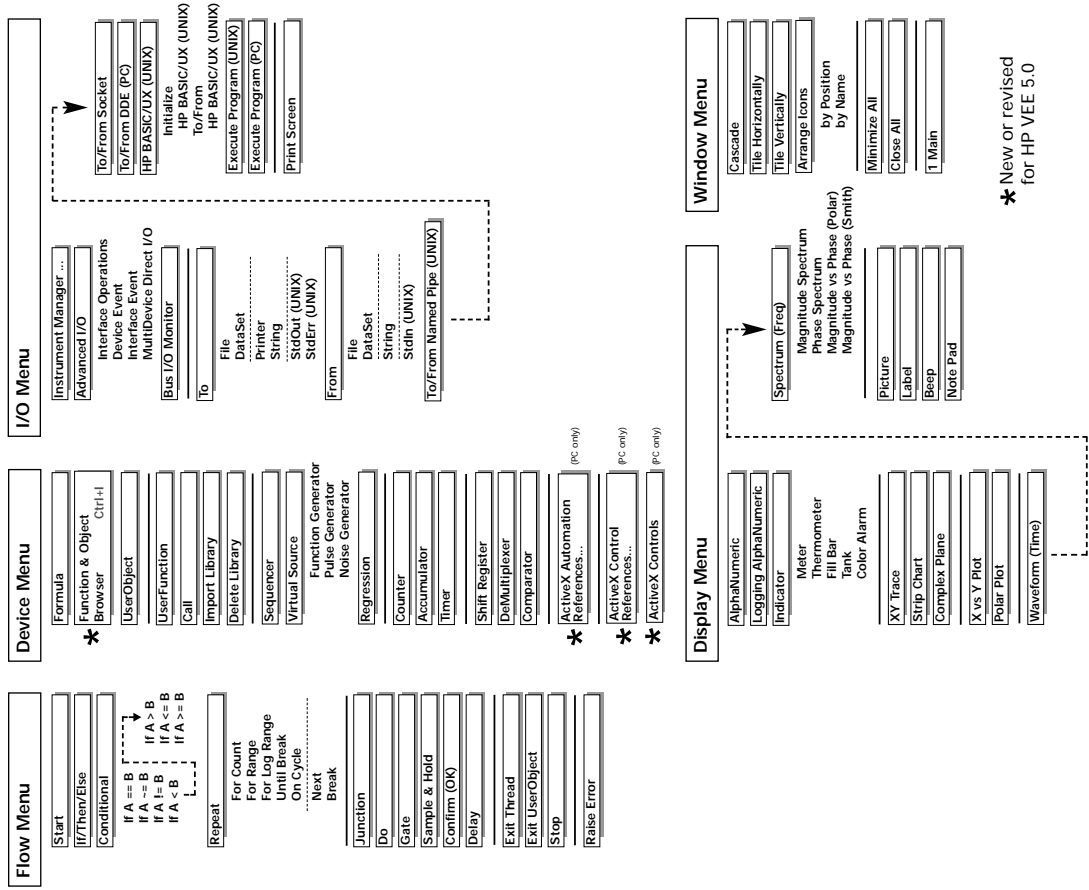


Shortcuts

Guide to HP VEE Menus

File Menu	Edit Menu	View Menu	Debug Menu
New <small>Ctrl+N</small>	Cut <small>Ctrl+X</small>	Variables ...	Run/Resume <small>Ctrl+G</small>
Open ... <small>Ctrl+O</small>	Copy <small>Ctrl+C</small>	Last Error	Pause <small>Ctrl+P</small>
Merge ...	Paste <small>Ctrl+V</small>	Main <small>Ctrl+M</small>	Stop
Merge Library ...	Select All <small>Ctrl+A</small>	Execution Window	Step Into <small>Ctrl+T</small>
Save <small>Ctrl+S</small>	Delete Line Shift+Ctrl+LB	Program Explorer	Step Over
Save As ... <small>Ctrl+W</small>	Clean Up Lines	Call Stack	Step Out
Save Objects ...	Find ... <small>Ctrl+F</small>	Profiler	Toggle Breakpoint <small>Ctrl+B</small>
Save Secured RunTime Version ...	Find Results <small>Ctrl+R</small>	Toolbar	Clear All Breakpoints
Save Documentation ...	Add to Panel	Status Bar	Activate Breakpoints
Default Preferences	Align		Show Data Flow
Print Screen ...	Middles		Show Execution Flow
Print Program ...	Bottoms		Line Probe <small>Shift+LB</small>
Print Objects ...	Contents		Object Probe <small>Shift+LB</small>
Print Setup ...	Lefts		
Exit <small>Ctrl+E</small>	Rights		
	Page Equally		
	Undo Last Arrangement		
	Create UserObject ...		
	Create UserFunction ...		
	Edit Userfunction ...		

Data Menu	Unbuild Data	Access Record
Selection Control	Coord	Merge Record
Radio Buttons	Complex	SubRecord
Cyclic Button	Real	Set Field
List	Complex	Get Field
Drop-Down List	Waveform	Concatenator
Pop-Up List	Spectrum	Sliding Collector
Slider List	Record	Collector
Toggle Control	Allocate Array	
Button	Text	
Check Box	Integer	
Vertical Paddle	Real	
Horizontal Paddle	Complex	
Vertical Rocker	Complex	
Horizontal Rocker	Date/Time	
Vertical Slide	Record	
Horizontal Slide	Variable	
Dialog Box	Set Variable	
Text Input	Get Variable	
Integer Input	Delete Variable	
Real Input	Declare Variable	
Message Box	Build Data	
List Box	Coord	
File Name Selection	Complex	
Continuous	PComplex	
Integer Slider	Waveform	
Real Slider	Spectrum	
Integer Knob	Record	
Real Knob	Variable	
	Set Variable	
	Get Variable	
	Delete Variable	
	Declare Variable	
	Coord	
	Complex	
	Waveform	
	Spectrum	
	Record	
	Allocate Array	
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Printed in the USA 5/98
5966-4450E