Help Contents Vinny Graphics v1.77

Overview

VINNY GRAPHICS is designed as a tool for engineers and engineering students.   It is both a   graphing and a data analysis package.   The intuitive Windows interface helps produce multi-parameter design or test data graphs and perform simple math operations on groups of cells.

INPUT is by:
      1-<u>Cut, copy and paste</u> from external spread sheets.
      2-Loading ascii <u>data files</u> in decimal or exponential format.
      3-Key board entry into a series of internal mini spread sheets.
      4-Loading complete graph files.

MATH and REGRESSION analysis work on up to 21 independent data sets in Windows 95 and up to 12 independent data sets in Windows 3.1x.   Each set can contain up to 10,000 X,Y pairs.   Results are seen graphically as changes are made.   <u>Curve fits</u> are 1st to 5th order polynomial,   power,   exponential or log.

GRAPHS allow total freedom in setting up <u>scales</u> and <u>grids</u>.   <u>Log scales</u> with up to 20 cycles for each axis are available.

OUTPUT is by:
      1-<u>Cut, copy and paste</u> to external spread sheets.
      2-Saving complete <u>graph files</u> or individual <u>data set files</u>.
      3-Saving sizable <u>graph bitmap files</u>.
      4-High resolution color graph <u>printing</u>.
      5-Complete data set and regression coefficient <u>printing</u>.

Getting Started

You can use the following steps to create your first graph:

1-Choose **FILE | NEW DATA** to open a new mini-spread sheet (Series#1).

2-Enter numerical data for the first X value.

3-Left click on the cell,   index 1 column Y1, and enter the first Y value.

4-Continue until all desired X,Y points are entered.   Tab or cursor keys can also be used to move between cells.

5-Choose **GRAPH | VIEW** to display a line and point graph of the entered data.

6-Choose **WINDOW | TILE VERT** to arrange windows.

7-Choose **GRAPH | SCALE** to open the <u>scale dialog</u>.

8-Click on the **Find All** button to setup temporary scale values.

9-Input preferred scale **Max Min** values.   Click **OK** to close the scale dialog.

10-Choose **GRAPH | GRID** to open the <u>grid dialog</u>.

11-Set values for **Major** and **Minor Grids**, **Scale Ticks** and **Decimals**.   Click **OK.**

12-Right click on series#1 mini-spread sheet to display the local pop up menu.

13-Choose **SELECT Y FIT** from the local pop up menu.   This item is also found under **REGRESSION** on the top main menu.

14-Use radio buttons to select an equation for regression.   Click **OK** to close the dialog.

15-Choose **GRAPH | LEGEND | MAIN,   X,   Y,   and SERIES**, and enter desired <u>titles</u>.   Click **OK** to close each dialog.

16-Select **TYPE**   from the top main menu.   Pick the desired <u>graph type</u>.   **TYPE** is also on the mini-spread sheet local pop up menu.

17-Hint: If several data sets are open it is better to right click the desired data set and use the local pop up menu.   This assures that the action is applied to the correct data set.

Editing

DATA ENTRY MODE (Small blinking cursor)
Use the cursor keys to move within the cells.   Enter numeric data in decimal or exponential format.

CELL SELECTION MODE (Cells highlighted)
Use left mouse DRAG   or   SHIFT + CURSOR keys to select cells.

TO SWITCH BETWEEN ABOVE MODES
Use left mouse DOUBLE CLICK   or   CTRL + SHIFT key to switch alternately from data entry to cell selection mode.

Y ESTIMATE MODE
This is a special data entry mode which occurs after selecting a Y fit.

CUT,   COPY and PASTE
Selected cells or highlighted data can be copied or cut to the Windows clip board.   Use the EDIT menu items or short cut keys: cut=CTRL+X   copy=CTRL+C.   Copied or cut data can be pasted into any cells or into other applications.   To paste data into a data set,   select (i.e., left click on) the cell in the destination data set that will represent the upper left hand corner of the block to be pasted.   Then use EDIT | PASTE or CTRL+V to paste the data block.

Files

DATA FILES (Extension=.prn)

    SAVE DATA saves the   X,Y points of the <u>active data set</u> in a file with a (.prn) extension.   The extension is added automatically.   Data files provide a means to save and read individual data sets.   This allows different data sets to be viewed using   the same graph settings.   Data files can also be used to import externally generated data in multiple ascii columns.   Vinny Graphics reads the first column as   X values and any additional columns as Y values.   It will read up to 22 columns for Windows 95 and 13 columns for Windows 3.1x.   Each column can have up to 10,000 entries in decimal or exponential format.

GRAPH FILES (Extension=.gra)

    This file type saves all data sets and graph settings in an ascii format arranged uniquely for this program.   Use **SAVE GRAPH**   to save in this format.   The extension (.gra) is added automatically.

BITMAP FILES (Extension=.bmp)

    This file type saves a Windows format bitmap of the current graph.   Its size and shape are the same as that of the current graph display.   Use **SAVE BITMAP** to save in this format.   The extension (.bmp) is added automatically.

TEXT FILES (Extension=.txt or any)

    A local text editor is provided as a convenience.   Its files are saved and read in ascii format.

NEW DATA

    This menu item creates and opens a new data file.   The <u>Preferences</u> dialog is used to set its size.

NEW TEXT

    This menu item creates and opens a new ascii file in the local text editor.

OPEN

    This menu item allows Vinny Graphics loading of existing Data, Graph and Text files.   For Windows 95 it also allows reading any file into the local text editor.

OPEN TEXT ONLY (Windows 3.1x)

    This menu item allows reading any file into the local text editor for   Windows   3.1x.

Type

Caution: Before making any of the selections below, you should designate the <u>active data set</u>.

LINE

Draws a straight line between the data points of the <u>active data set</u>.

BAR

Draws a bar to each data point of the <u>active data set</u>. The bar width can be set using the <u>preferences</u> dialog.

FIT

Draws the selected <u>curve fit</u> Y = f(X) for the <u>active data set</u>.

POINTS

Allows showing or hiding of data symbols for the <u>active data set</u>.

SELECT Y AXIS

Select the left or the right Y axis scale for the <u>active data set</u>.

Grid

MAJOR GRIDS

These are the dark lines which divide the selected axis into 1 to 20 equal sections.

MINOR GRIDS

These are the light lines which divide the major grid sections into 1 to 10 equal subsections.

LOG GRIDS

These grids are drawn automatically and divide the selected axis into factor of 10 cycles and logarithmic subsections. Use Log Scale to designate axis for log grids.

TICKS

These are small marks on the selected axis which designate where scale values are to be drawn.

DECIMALS

These are the number of digits in the scale values to the right of the decimal point.

Window Hints

ACTIVE DATA SET

To designate a series as the active data set, left or right mouse click on it. The keys CTRL+TAB can also be used to move the window focus. Note, when a series is the active data set (i.e., has windows focus) its title is highlighted. If possible, when several data sets are open it is better to right click the desired data set and use the local pop up menu. This assures that your desired action is applied to the correct data set.

WINDOWS

Use TILE | VERT or TILE | HORZ to see all windows on the display at one time. Use Cascade to see all of the titles as the windows overlap across the display. CLOSE ALL closes all windows but does NOT clear the graph settings. CLEAR ALL closes all windows and also clears the graph settings.

CHANGING DATA WHILE RETAINING GRAPH SETTINGS.

1-Choose graph settings using an initial group of data sets.
2-Use SAVE GRAPH or several SAVE DATA commands to save the initial group.
3-Use WINDOWS | CLOSE ALL which leaves the graph settings unchanged.
4-Use OPEN or NEW Data to add data sets to the current graph settings.
5-Repeat the above as desired with different data sets.
Note: Individual data files can be opened or closed without affecting the current graph settings. However, opening a graph file replaces the current graph settings with those of the graph file being opened.

Legend

MAIN

The top 3 title lines for the graph are entered in this dialog.   As lines are added the grid shrinks to accommodate them.

X

The 3 title lines for the X axis are entered in this dialog.

Y

The title lines for the Y left axis and Y right axis are entered in this dialog.

SERIES   (Each series data set can have its own title.)

To enter a data set title left click the desired data set and then use the main menu item **GRAPH | LEGEND | SERIES**.   An alternate and faster way is to right click the desired data set and select **SERIES TITLE** from the local pop up menu.

AUTO LABEL

This button fills ALL series legends with their own series number.

Log Scale

LOG SCALE

Log scales can   be selected for the X or Y axis or for both. Selecting both produces a log-log graph. Selecting X or Y produces a semi-log graph and selecting none produces a linear scale for both axis.

FORMAT LOG SCALE

The numerical format (exponential or decimal) of the log scale values,   written along side the X and Y axis,   can be selected using the format radio buttons.

AUTOMATIC LOG GRID

When a log scale is selected for an axis, the <u>grid</u> and the initial scale are set automatically to multiples of 10.   The user can modify the scale and thus the number of cycles by using the <u>scale dialog</u>.   Only one of the two Y axis scales controls the number of Y cycles.   By default it is the Y left axis,   unless it is not used by any series,   in which case control switches to Y right axis.   The log scale values of the Y left and Y right axis do not have to be the same,   however the number of cycles must be.

Math

OPERATE ON CELLS

Use this to activate the <u>Operate on Cells</u> dialog box.   This dialog box allows simple math operations on the selected <u>highlighted cells</u> or on either all the X or all the Y cells of the <u>active data set</u>.   The pop up <u>Operate on Cells</u> dialog box also calculates and displays the [Total, Average, and Sigma] values for the cells in the chosen group.

FILL CELLS

Use this to activate the <u>Fill Cells</u> dialog box. This dialog box allows automatic filling of portions of the <u>active data set</u> cells with a user defined sequence of numbers.

X & Y OPERATIONS

Use this to activate the <u>X & Y Operations</u> dialog box. This dialog box allows math operations which combine the X and Y columns of the <u>active data set</u>. It also allows interchanging,   switching,   the X and Y columns of data.

SORT X

Use this to sort the <u>active data set</u> pairs on X, in ascending or descending order.   This operation also packs data, eliminating entries which are not paired.

Math Operations on Cells

This dialog box allows simple math operations on the selected <u>highlighted cells</u> or on either all the X or all the Y cells of the <u>active data set</u>.   It also calculates and displays the [Total, Average, and Sigma] values for the cells in the chosen group.

Operate on Radio Buttons

Use these radio buttons to choose the group of cells for subsequent math operations.   The three choices are:

1-The selected <u>highlighted cells</u> of the <u>active data set</u>.

2-The cells in the X column of the <u>active data set</u>.

3-The cells in the Y column of the <u>active data set</u>.

The [Total, Average, and Sigma] of the chosen group of cells is calculated, displayed and automatically updated as changes are made by any operation or selection.

Operation Radio Buttons

Use these radio buttons to choose the operation to be performed.   The prescribed operation works individually on each of the cells in the chosen group.   For some of the operations a numeric constant is required.   Use the [Enter Constant K] edit box to input the desired value.   For the [Round(Cell)] operation the constant K sets the number of digits after the decimal point.

Operate Button

Use this button to execute the chosen operation on the chosen group of cells with the input value of K. This button is the only button which actually changes the data values in the data set.

Caution: There is no protection from overwriting existing data except that most operations have a logical inverse.   Do NOT use this button until the desired group of cells, the math operation and the constant value have all been chosen and entered.

OK Button

Use this button to close the dialog box.

Note: This button does not perform any operation other than closing the dialog box.   Use the Operate button to change the data set values.

Copy Button

This button also closes the dialog box and sends the current values of [Total, Average, and Sigma] to the Windows clipboard for later pasting.

Math Fill Cells

This dialog box allows automatic filling of a portion of the <u>active data set</u> cells with a user defined sequence of numbers.

Operate on Radio Buttons

Use these radio buttons to choose the group of cells for subsequent fill operations.   The two choices are:
1-The cells in the X column of the <u>active data set</u>.
2-The cells in the Y column of the <u>active data set</u>.

Selected Fill Limits

Use these four edit boxes to enter values for:
1-Start Index: The cell index number for the first sequence value.
2-Stop Index: The cell index number for the last sequence value.
3-Start Value: The value of the first number in the sequence.
4-Step Value: The increase in value from one cell to the next.

Operate Button

Use this button to fill the chosen group of cells with a user defined sequence of numbers.   This button is the only button which actually changes the data values in the data set.
Caution: There is no protection from overwriting existing data.   Do NOT use this button until the desired group of cells is chosen and the sequence start index, stop index, start value and step value have all been entered.

OK Button

Use this button to close the dialog box.
Note: This button does not perform any operation other than closing the dialog box.   Use the Operate button to fill a portion of the data set with the user defined sequence of numbers.

Math X & Y Operations

X & Y Operations Radio Buttons
Use these buttons to choose the desired operation.

Operate Button
Use this button to execute the chosen operation.   This button is the only button which actually changes the data values in the data set.   For the [Switch X & Y] operation each pair of X & Y cells values are interchanged.   For the other operations the results from each pair of X & Y cells overwrites the Y cell value.
Caution: There is no protection from overwriting existing data except that most operations have a logical inverse.   Do NOT use this button until the desired operation is chosen.

OK Button
Use this button to close the dialog box.
Note: This button does not perform any operation other than closing the dialog box.   Use the Operate button to change the data set values.

Preferences

MAX DATA INDEX

This setting changes the size of the next <u>new data</u> set opened.   Its range is form 1 to 10,000 points.   Use the smallest value which accommodates your data.

BAR WIDTH

If   **bar** is selected as a <u>graph type</u> for a data set,   this parameter sets the width of the bar.   The range is from 1 to 10.

SAVING PREFERENCES

Preferences are saved automatically in a small configuration file and in the user saved <u>graph files</u> (.gra).

Printing

PRINT DATA

All data sets are output to the printer.   If the user has selected a curve fit, then   the <u>Y fit</u> values, coefficients,   and equation are also output.   If available the main top graph titles are printed as a header.

PRINT GRAPH

A high resolution redraw of the graph display is output to the printer in portrait or landscape mode.   If the printer is capable, the graph will print in color.

PRINT COLOR

Printer output colors for each data set are selected automatically.   These values can be overridden by right mouse clicking on any data set and selecting   PRINT COLOR from the local pop up menu.

PRINT TEXT

The local text editor contents are output to the printer.

Regression

SELECT Y FIT

This menu item opens the regression dialog.   Choose a regression equation for the <u>active data set</u> using the radio buttons.   Once an equation is selected, the third column in the mini-spread sheet displays the Y fit values.   Additionally, data entry into the mini-spread sheet is modified as follows.   Any additional X values that the user inputs produce a <u>Y Estimate</u>.   Any additional Y values that the user enters reset the fit equation to none and clear the Y fit column values, returning data entry to the normal mode.

CLEAR Y FIT

This menu item sets the <u>active data set</u> regression equation to none and clears the Y fit column values.

FIT ERROR %

This menu item displays the percent error between each Y point and the corresponding Y fit value in the Y fit column of the <u>active data set</u>.

COEFFICIENTS

The regression equation along with the value of its coefficients as well as its coefficient of determination are displayed in the regression dialog.

Scale

MULTI-SCALE MODE

This is the default mode.   Each data set is automatically scaled to its own max min values.   Scale values are different for each data set,   thus the scale values are not shown on the graph.   You can force return to this mode with the MULTI-SCALE radio buttons.

USER SET SCALE MODE

User can enter max and min scale values for each axis.   Opening the scale dialog activates this mode.

LOG SET SCALE MODE

The designated Log Scale axis are setup and numbered automatically.   The user can modify them in multiples of 10 using the scale dialog.   This mode is activated when a log scale is selected.

FIND

Finds the max and min for all data sets for the selected axis.

FIND ALL

Finds the max and min for all data sets and all axis.

LOST DATA

Find lost data by using the FIND ALL button or by forcing return to MULTI-SCALE MODE.

Y Estimate

ESTIMATE VALUE OF Y GIVEN X

To estimate a value of Y for a given value of X,   first choose a <u>regression</u>   equation.   Then, return to the data set.   Enter an X value in any empty X cell.   The corresponding Y cell will display an estimate of Y for the entered X value (based on the regression equation).   This can be done for as many points as desired.   If a Y value is entered, the regression equation is set to none, the Y fit values are cleared, and new X, Y data pairs can be added to the data set.

ESTIMATE VALUE OF X GIVEN Y

This can NOT be done directly,   however in most cases the following will work.   Use <u>Math | X & Y Operations | Switch X&Y</u> columns and then follow the instructions above.

Graph

VIEW

Displays a graph of all data sets.

SCALE

Opens the scale dialog.   This allows the user to set <u>Scale</u> values for the X, Y left, and Y right axis.

GRID

Opens the grid dialog.   This allows the user to set up the number of   <u>Grids</u>   for the X and Y axis.

LOG SCALE

Opens the log scale dialog.   This allows the user to select a <u>Log Scale</u>   for the X and/or Y axis.

LEGEND

Allows the user to enter text for <u>Main,   X,   Y   and Series   Titles</u>.   Note, the user must first designate an <u>active data set</u> before entering a Series Title.