DaDisp 2002 - Introduction

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Vendor: DSP Development Corp.
Website: http://www.dadisp.com

DaDisp 2002 - Introduction

What is DADiSP?

- DADiSP is a graphical, data analysis and visualization software package designed for scientists and engineers
- Because DADiSP contains features for graphics, mathematics, statistics, matrix analysis, signal processing and more, it can be used in a broad range of applications
- With DADiSP's easy-to-use, menu-driven, interactive user interface, there is no need to learn another programming language
- Once you acquire your data into a file, DADiSP helps you analyze and visualize your data both graphically and numerically with the power and flexibility of a spreadsheet

DaDisp 2002 - Application

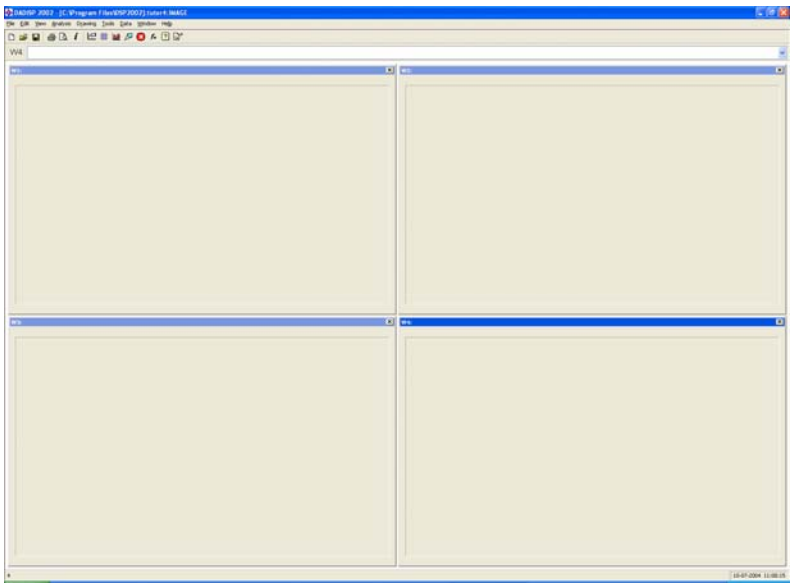
Is DADiSP a spreadsheet?

- DADiSP may best be thought of as a spreadsheet for data series, multi-column tables or graphs.
- Instead of cells that contain single numbers, a DADiSP Worksheet consists of windows, each containing an entire data series. Example:
- If W1 (window 1) contains data previously imported into DADiSP and W2 contains the formula integ(W1), then DADiSP would perform an integration operation on the data series in W1 and display the result in W2.
- If you change the data in window 1, DADiSP automatically recalculates the new INTEGRAL in window 2 and the new HISTOGRAM in window 3.
- In DADiSP each multi-window workspace is called a Worksheet and a collection of Worksheets and Datasets is called a Labbook

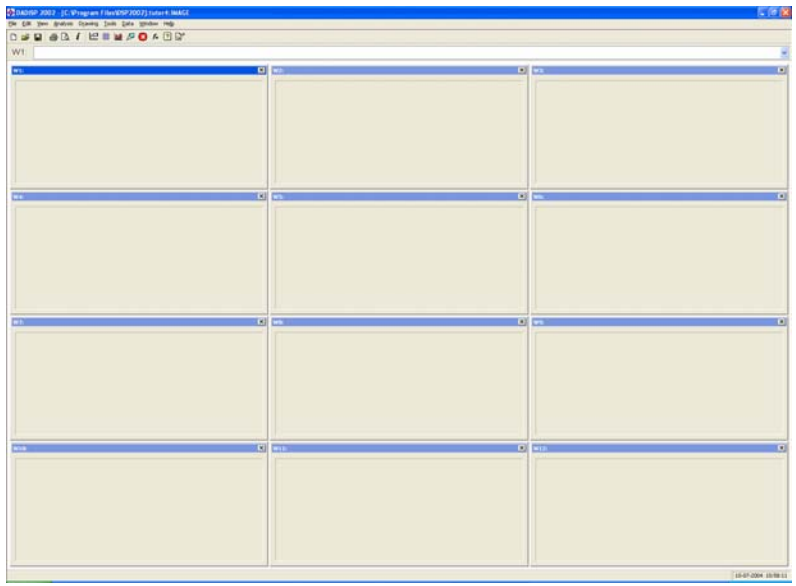
DaDisp 2002 – Sample Windows

How many windows can a DADiSP Worksheet contain?

- DADiSP allows up to 100 windows per Worksheet and an unlimited number of Worksheets. Number of visible windows can be changed to improve display quality
- Each window provides extensive graphical manipulation operations such as scroll, zoom, expand, compress and cursoring.

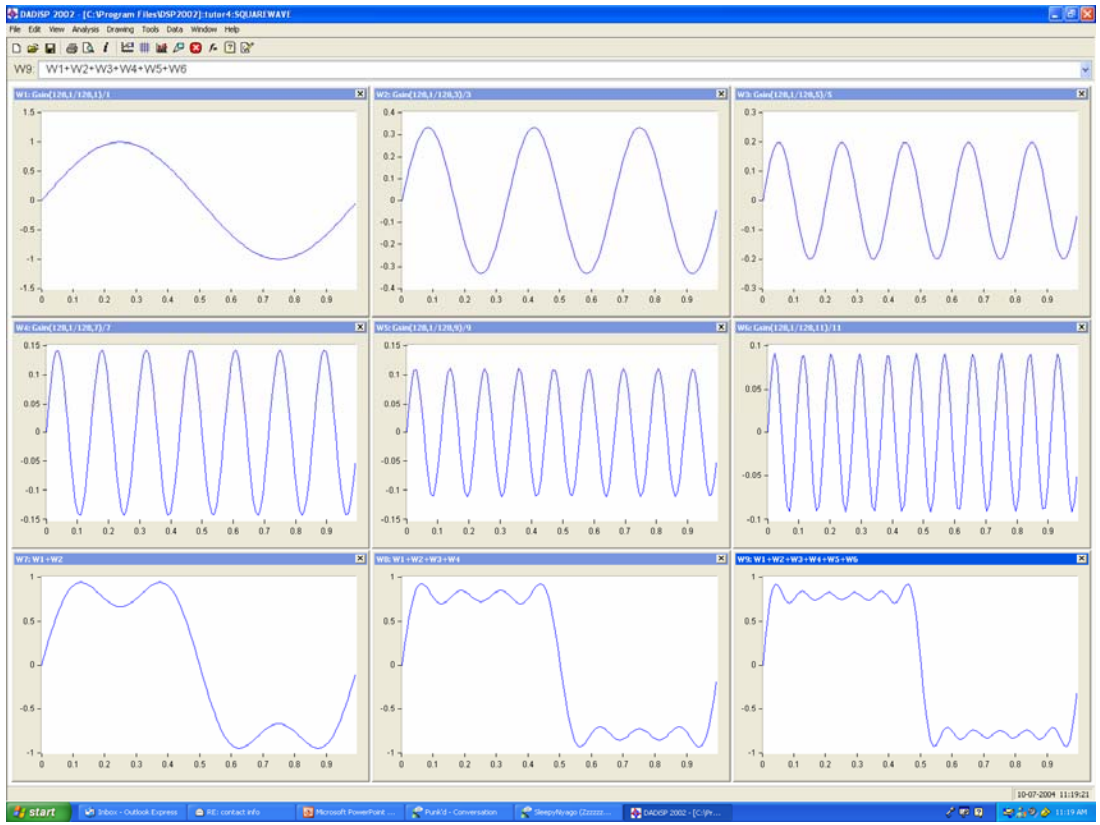


4 window worksheet



12 window worksheet

DaDisp 2002 – Sample Window



A 9 window worksheet – 8 sine waves summed to square wave

DaDisp 2002 – Data Series

How long can my data series be?

- Because DADiSP uses a technique called virtual series management, there is no limit on the size of your data. If a data series is too large for system memory, DADiSP automatically pages the data to and from your disk during most calculations.
- Large data sets take longer to process because DADiSP will intermittently access the disk. You can set the size of the series kept in memory by clicking the Tools-Options-System Preferences pulldown and selecting the Series tab. Set Data Size to the desired length in terms of data points.
- You can also set the buffer size with the setbufsize function (setbufsize returns the previous buffer size).
- DADiSP also provides data editing routines that allow you to create new data series by extracting and appending regions from other data sets.

DaDisp 2002 - Features

Features of DaDiSP

- DADiSP is written in C/C++ for speed and portability.
- DADiSP is highly object oriented. DADiSP works with "objects", i.e., scalars, series, surfaces and tables. DADiSP returns the proper object based upon the input. For example, you can have a window that contains a time series, surface or image. If you take the derivative of that window, DADiSP returns the proper derivative: the time series derivative, the rate of change of the surface, or the derivative of the image (which is one method of edge detection).
- DaDiSP is compact and fast. The entire installation package takes less than 15 mb of disk space.
- DaDiSP is expandable and can be customized by the user.

DaDisp 2002 - Functions

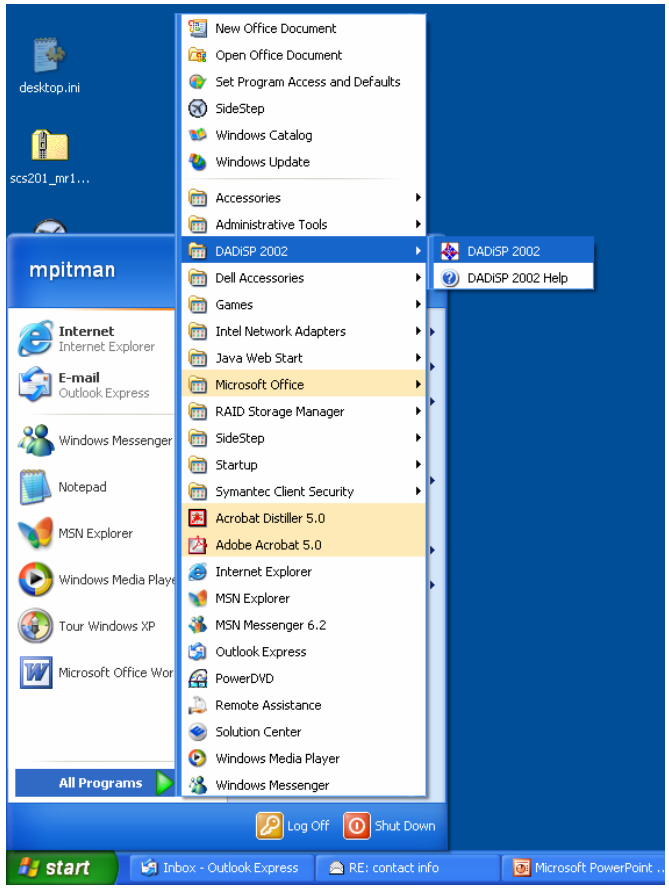
How many functions does DADiSP have?

- DADiSP offers over 1000 analysis and display functions including scalar and series arithmetic, series calculus, data generation, Fourier analysis, frequency domain analysis, correlations, trigonometric and statistical functions, digital filtering, imaging, 2-D, 3-D, and 4-D graphics, matrix math, and much much more.
- Complex numbers and engineering unit conversions are also supported.

Can I create my own functions?

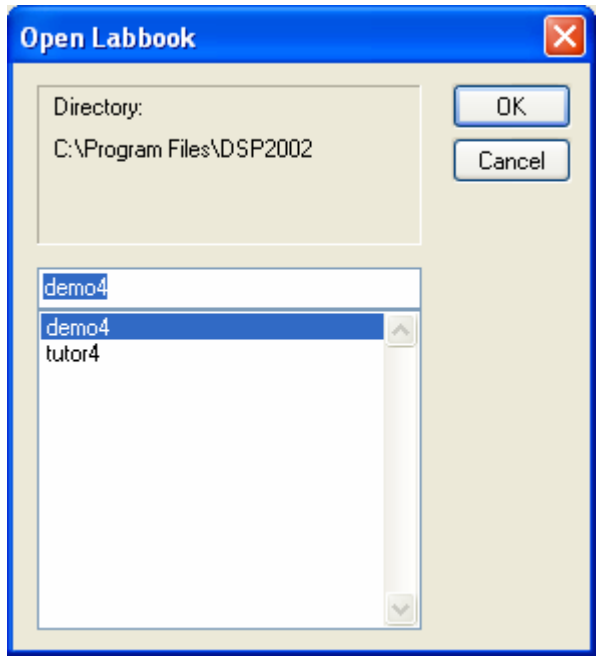
- DADiSP includes a Series Processing Language, SPL, as well as a macro definition facility that allow you to create entirely new functions from previously defined routines. SPL uses familiar C/C++ like syntax for statement processing, control flow, variable manipulation, and user defined functions.
- Functions can also be created by combining 2 or more predefined functions in a macro
- Functions may be incorporated into command files which can execute several functions sequentially.

DaDiSP 2002 – Basic Operations



Launch the application

DaDiSP 2002 – Basic Operations



Prompt to open labbook

Options:

- Open an existing labbook
- Cancel and change directory
- Windows Standard Dialog will prompt you for a new directory

DaDiSP 2002 – Application Demo

- Importing Data
  - Single column ASCII read into window
  - Single channel with header import
  - Multiple channel with header import

```
DATASET TB1T4
VERSION 0001
COMMENT                                 Raw Data
DATE 07/19/2004
TIME 13:04:0050
FILE_TYPE ASCII
STORAGE_MODE INTERLACED
INTERVAL 0.00390625
NUM_SIGS 20
NUM_SAMPS all
CHAN_NAME      ATLO,ATLA,ATVC,ATVNW,ATVNE,ATVSW,ATVSE,ARLTNE,ARLGNE,ARLTSW,ARLGSW,AFHLTS,AFHLGS,AFHVS,AFHLTN,AFHLGN,AFHVN,AFVVNW,AWH,AWV
VERT_UNITS g,g,g,g,g,g,g,g,g,g,g,g,g,g,g,g,g,g,g,g
HORZ_UNITS secs
DATA
0.0006  -0.0021 0.0010  0.0000  -0.0008 0.0000  0.0000  -0.0143 -0.0241 -0.0112 -0.0029 0.0000  0.0004  0.0003  -0.0112 0.0005  0.0036  0.8477  0.6048  0.0003
0.0003  -0.0025 0.0010  0.0000  -0.0012 -0.0005 0.0000  -0.0143 -0.0233 -0.0128 -0.0025 0.0000  0.0008  0.0008  -0.0107 0.0011  0.0040  0.8460  0.6048  0.0000
0.0000  -0.0021 0.0010  0.0000  -0.0004 0.0000  0.0000  -0.0143 -0.0233 -0.0123 -0.0029 -0.0004 0.0004  0.0005  -0.0112 0.0000  0.0040  0.8477  0.6058  0.0000
0.0000  -0.0021 0.0013  0.0004  -0.0008 -0.0005 0.0000  -0.0143 -0.0233 -0.0117 -0.0025 -0.0004 0.0008  0.0000  -0.0107 0.0005  0.0040  0.8477  0.6063  0.0000
0.0006  -0.0021 0.0006  0.0004  -0.0004 -0.0005 -0.0005 -0.0149 -0.0237 -0.0123 -0.0025 0.0004  0.0000  0.0003  -0.0112 0.0011  0.0036  0.8477  0.6063  0.0000
0.0009  -0.0025 0.0010  0.0000  -0.0012 -0.0009 0.0000  -0.0143 -0.0237 -0.0112 -0.0029 -0.0004 -0.0004 0.0000  -0.0107 0.0011  0.0036  0.8477  0.6058  -0.0006
0.0000  -0.0014 0.0010  0.0000  -0.0012 0.0000  0.0009  -0.0143 -0.0230 -0.0117 -0.0029 -0.0004 0.0004  0.0003  -0.0107 0.0011  0.0040  0.8501  0.6053  0.0000
0.0000  -0.0025 0.0006  0.0004  -0.0012 -0.0005 0.0005  -0.0143 -0.0237 -0.0123 -0.0025 0.0000  0.0000  0.0003  -0.0103 0.0011  0.0040  0.8501  0.6048  0.0003
0.0006  -0.0018 0.0010  0.0000  -0.0008 -0.0005 0.0005  -0.0143 -0.0237 -0.0117 -0.0033 0.0000  -0.0004 0.0003  -0.0107 0.0011  0.0032  0.8501  0.6053  0.0000
0.0003  -0.0025 0.0010  0.0004  -0.0004 0.0000  0.0005  -0.0149 -0.0233 -0.0123 -0.0029 0.0000  0.0012  0.0003  -0.0107 0.0000  0.0036  0.8477  0.6058  0.0003
```

DaDiSP 2002 – Application Demo

Open session with the lab workstations.
Log in using your CSEE user account, launch DaDisp,
Import the sample data and ask questions!