# TradeSim®

Advanced Trading Simulator and Back Tester

For position traders using BullCharts®.

*Advancing the Art of Trading with Science.*

## TradeSim Quick Start Tutorial for BullCharts Users
Standard, Professional and Enterprise Editions

✓ TradeSim Version 6
✓ TradeSim(DLL) BullCharts Plugin Version 8

Last Update 4 March 2009

# Contents

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# Quick Start Tutorial

This document has been written to ease new comers into using TradeSim for the very first time. If you have successfully installed TradeSim according to the directions outlined in the chapter on "Software Installation " from the TradeSim User Manual then you should have no trouble completing the following tutorial. Also by completing the steps in this chapter will also allow you to check whether or not TradeSim has been correctly installed on your computer.

It is not the intent of this chapter to describe the procedures in detail but rather let the user go through the motions of creating and analysing a trade database using both BullCharts and TradeSim. A trade database is a special file, which contains a collection of trading information relating to a specific trading system and set of securities. It is required by TradeSim in order to analyse a trading system.

BullCharts is used as a vehicle for generating a trade database and TradeSim is used to subsequently analyse the trade database. The rich formula scripting language available in the BullCharts environment coupled with the power of the BullScan allows one to easily adapt its use to generating a trade database file. The whole process of using BullCharts in conjunction with TradeSim is akin to paper trading except that the results can be obtained in minutes instead of observing and analysing the markets over a number of years.

> **Note**. Some of the screen shots shown in this tutorial may not match up exactly with what you see on your own computer screen.

# Creating a Trade Database

## Creating a new Trade Database BullScan

In this exercise we take a relatively familiar trading system called the MACD (Moving Average Convergence/Divergence) and produce a trade database from it using the BullCharts BullScan along with TradeSim/BullCharts plugin that should have been installed when TradeSim was installed. MACD is short for Moving Average Convergence/Divergence and is a trend following momentum indicator that shows the relationship between two moving averages of prices.

Run BullCharts and then select 'BullScan Manager' from the 'Tools' menu.
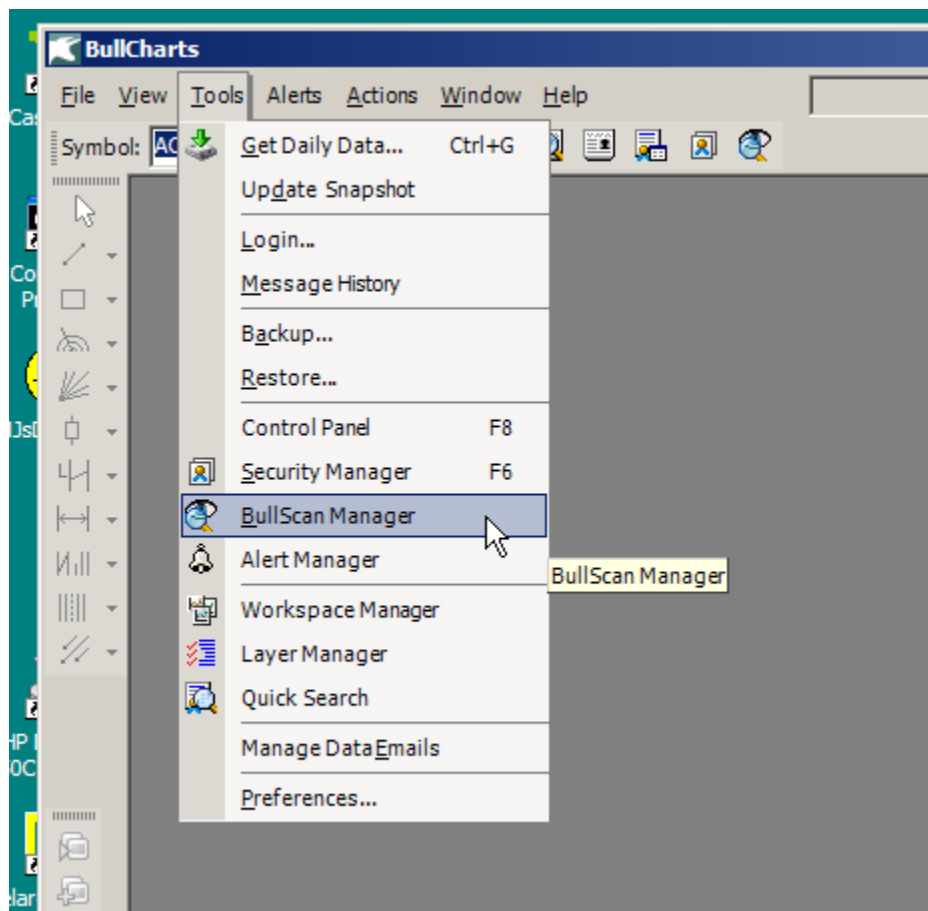


Click on the 'Scans' from the bottom tabs.
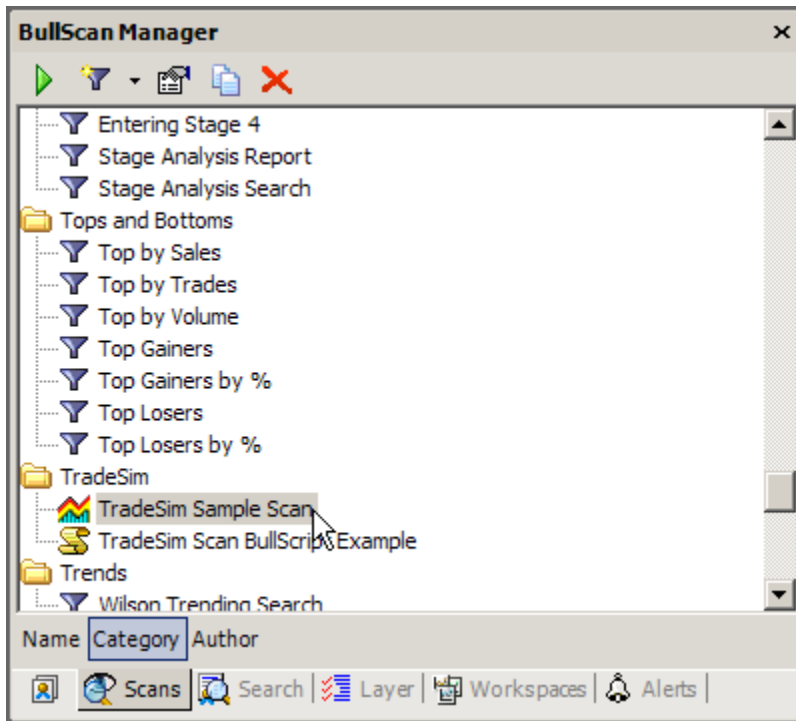
Select the "TradeSim Sample Scan" and double click on it. Select the 'Trade Systems' tab and double click on the 'Sample MACD System'.
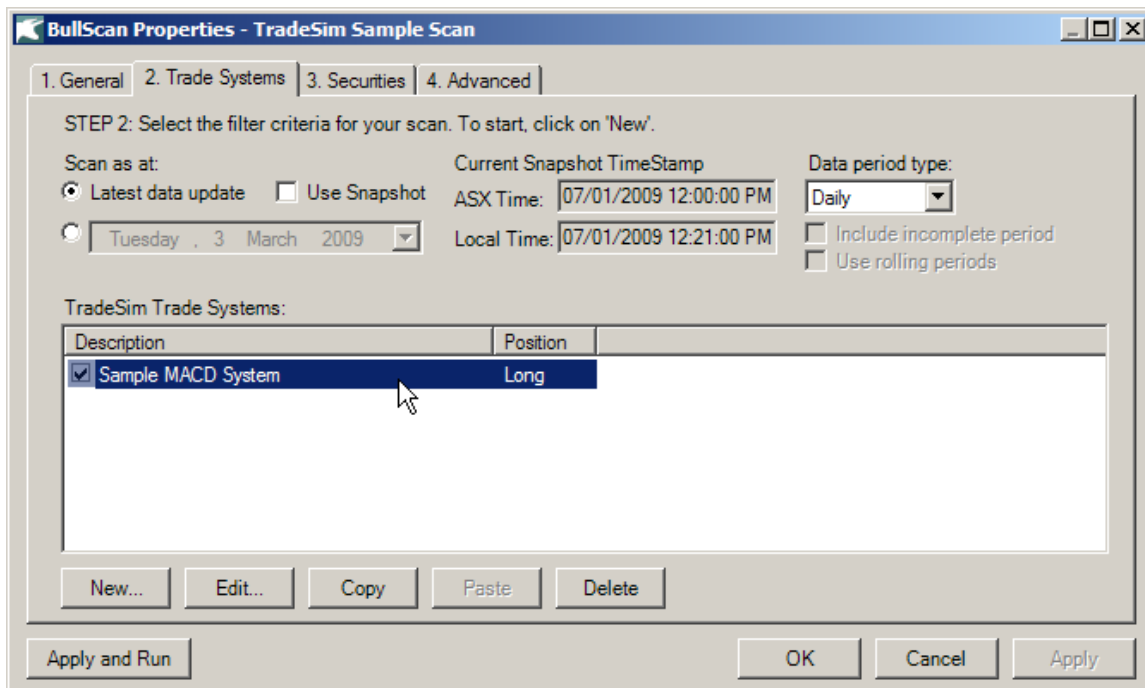


Select the 'Stops' tab and uncheck the 'Calculate Initial Stop' because we don't want to use stops at the moment.
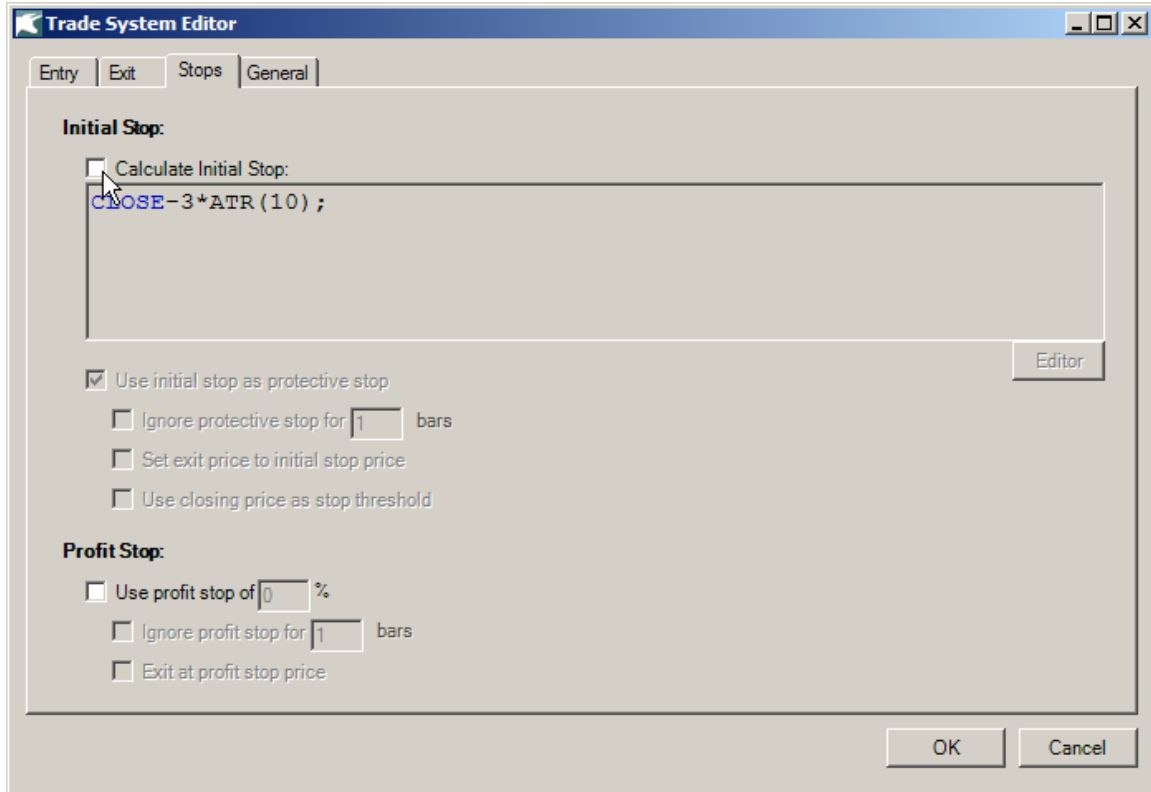
Click on 'OK'

# Selecting the securities

Double click on the "TradeSim Sample Scan" from the BullScan Manager and select the 'Securities' tab. Make sure 'S&P/ASX 20' is specified as the securities to scan. At this stage it is a good idea to limit the total number of securities scanned.
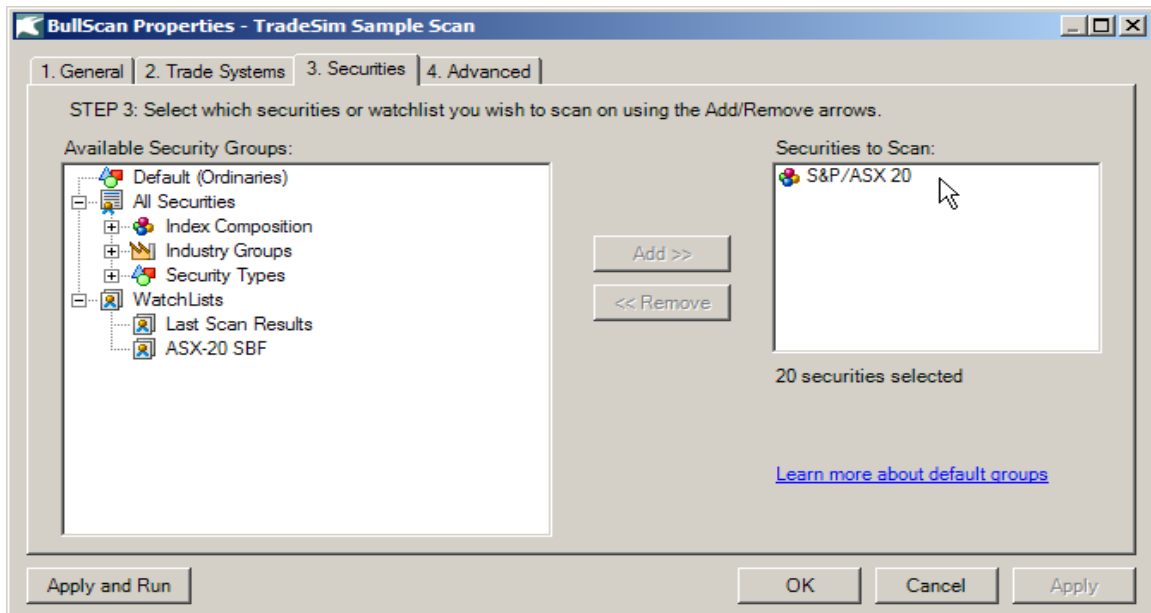
Now click on the 'Advanced' tab. Make sure you have select enough bars of data to load which in this case is 500 bars. You can always change this depending on how far back you want to back test.
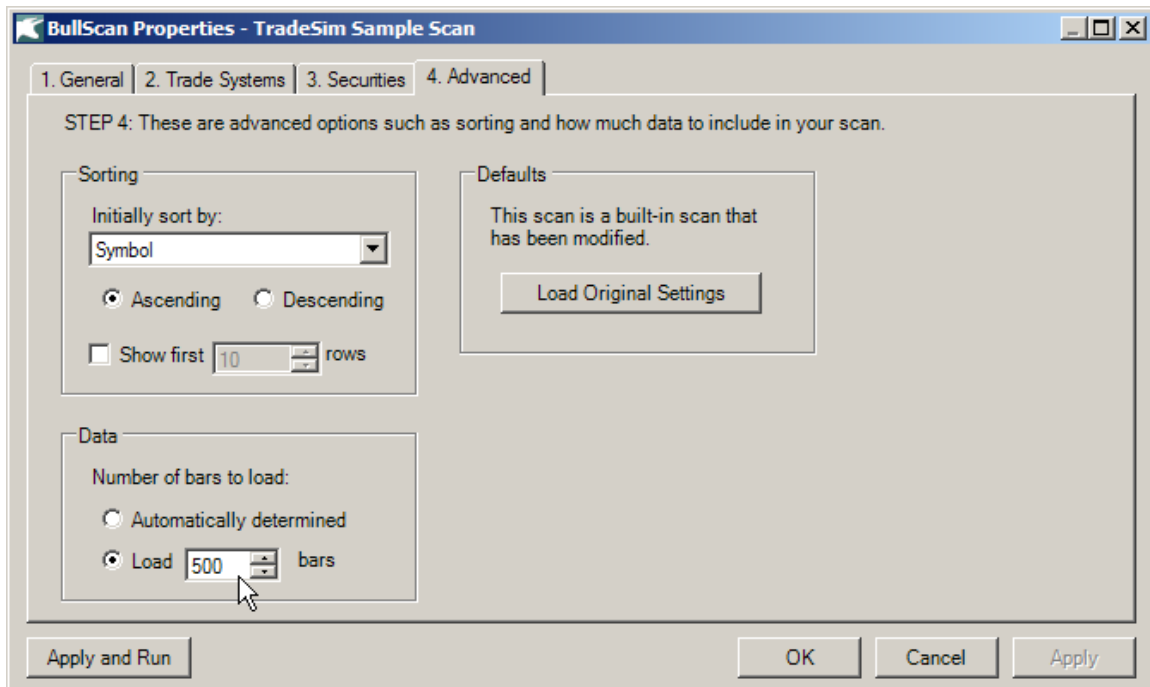


> **Note:** Although it is possible it is not recommended to generate trade data from thinly traded securities such as warrants, options and some stock options. Including trade data from thinly traded or illiquid securities will only produce erratic results in the simulation. You can deselect any of these securities by clicking on the Securities tab and deselecting the relevant securities.

## Running the Trade Database BullScan

Click 'Apply and Run' from the bottom of the dialog box. After the TradeSim Trade database scan has run BullCharts will produce a report which outlines the number of trades for each security that is written to the trade database. TradeSim will also produce a detailed report as well. This report should be checked for any possible errors or problems as the quality of the simulation is only as good as the data you feed to it.

As the BullScan runs BullCharts communicates with TradeSim and a Report Log window will be displayed outlining the current status of the trade database exploration. If there are no errors a trade database file will be created with the file name that matches the name you specified in the 'General' tab of the BullScan properties except that it will have a trb file extension appended to it to signify that it is a binary trade database file ie **"TradeSim Sample Scan.trb".** This trade database will later be used by TradeSim for detailed analyse and simulation of the trading system.

## Inspecting the TradeSim Report Log

The Report Log is a comprehensive detailed report that is produced by TradeSim plug-in in order to report any errors, warnings or provide information to the user. You should always inspect this report for any warnings or errors.

## Inspecting the Exploration Report

The BullScan Report is produced by BullCharts and contains a summary of the results from each security as well as the number of trades generated for each security.

With the BullScan Report dialogue box open you can see the list of securities that were scanned during the exploration. The third column called indicates the number of complete trades (Entry/Exit) found for each security respectively. These are the trades that will have been written out to the trade database file during the trade database exploration. Clicking on the Rejects tab will also list the securities where problems occurred. For the purpose of this exercise we shall ignore the errors for the moment assuming that most of the securities explored did not cause any problems.

> **Note:** You can check to see whether or not we have actually generated the trade database file. All trade database files are stored in a directory called *c:\tradesimdata.* You can easily check this by running the Windows File Explorer and inspecting the files in the *c:\tradesimdata* directory where you should the file called *"TradeSim Sample Scan.trb".*

# Analysing the Trade Database File with TradeSim

Now that you have generated a trade database, which contains all of your trading data, you can now analyse it using TradeSim. The new ToolBox interface provided in the latest release of TradeSim provides a quick shortcut to loading the current trade database into TradeSim. To do this click on the 'Open in TradeSim' button on the bottom of the Report Log window, which should only be enabled after the Trade Database BullScan has been completed.
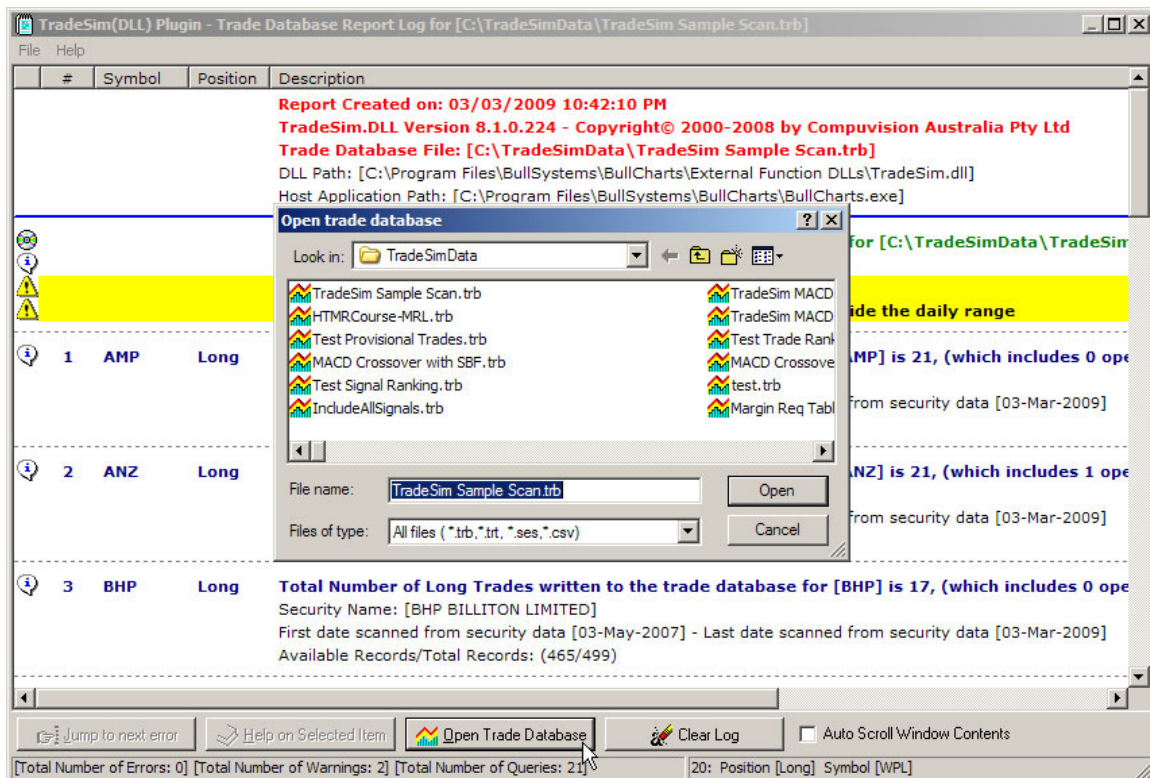


Now click on the Open' button. This will load the trade database into TradeSim ready for a simulation.
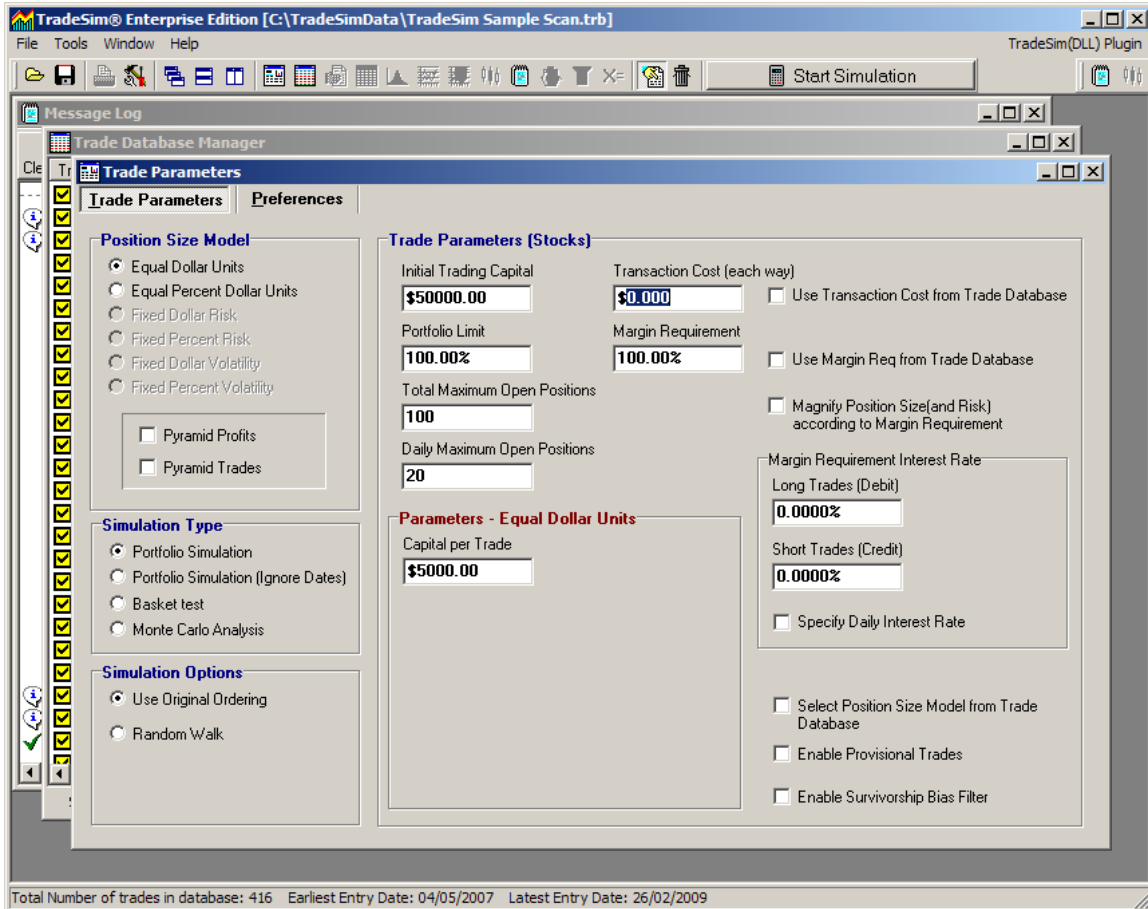
Note that if the trade database file loads up correctly in TradeSim three new windows should open up. These are the Trade Parameters Window, Trade Database Window and the Message Log Window. We will talk at length about these windows in the TradeSim User Manual but for now the Trade Parameters Window allows you to set up the foundations for your trading strategy such as Money Management and Position Size etc. The Trade Database Window displays all of the trades that were created when you ran the Trade Database BullScan in BullCharts. The Message Log Window displays status information as you executed commands in TradeSim.

# Running a Trade Simulation

To run a trade simulation just click on the Start Simulation button on the main toolbar. When a Trade Simulation is running a Simulation Status Dialogue Box will popup-giving feedback to the current status of the simulation. Once the simulation is complete a number of additional windows will open up. These are the Trade Simulation Report Window, the Trade Log Window and the Charts Window. The TradeSim Simulation Report contains a number of statistics and parameters, which are useful in evaluating a trading system. More information can be found in the section on "The Trade Simulation Report Window" from the TradeSim User Manual. The Trade Log Window contains detailed information from a trade simulation on a trade-by-trade basis and displays this information in the correct chronological ordering for later inspection and analysis. More information can be found in the section "The Trade Log Window" from the TradeSim User Manual. The Charts Window contains a number of charts, which are plotted after the completion of a single trade simulation. More information can be found in the section "The Charts Window" from the TradeSim User Manual.
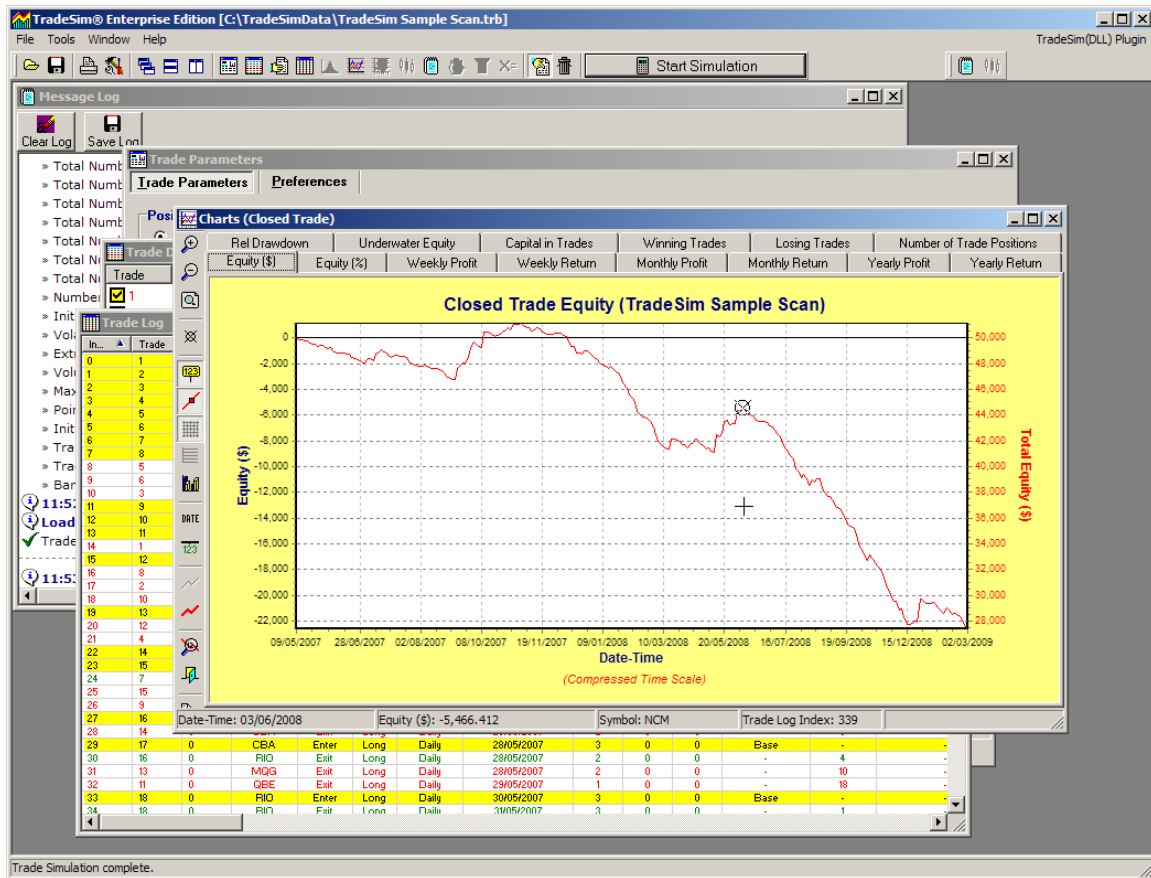
You have now completed the steps necessary to create a trade database and analyse it using TradeSim. The TradeSim User Manual will give you a clearer and deeper understanding of how to use Tradesim to evaluate your own Trading Systems. However we recommend that you do the following exercises to familiarize yourself with using TradeSim.

# Exercises

The following exercises will help you understand the way that TradeSim integrates within the BullCharts environment.
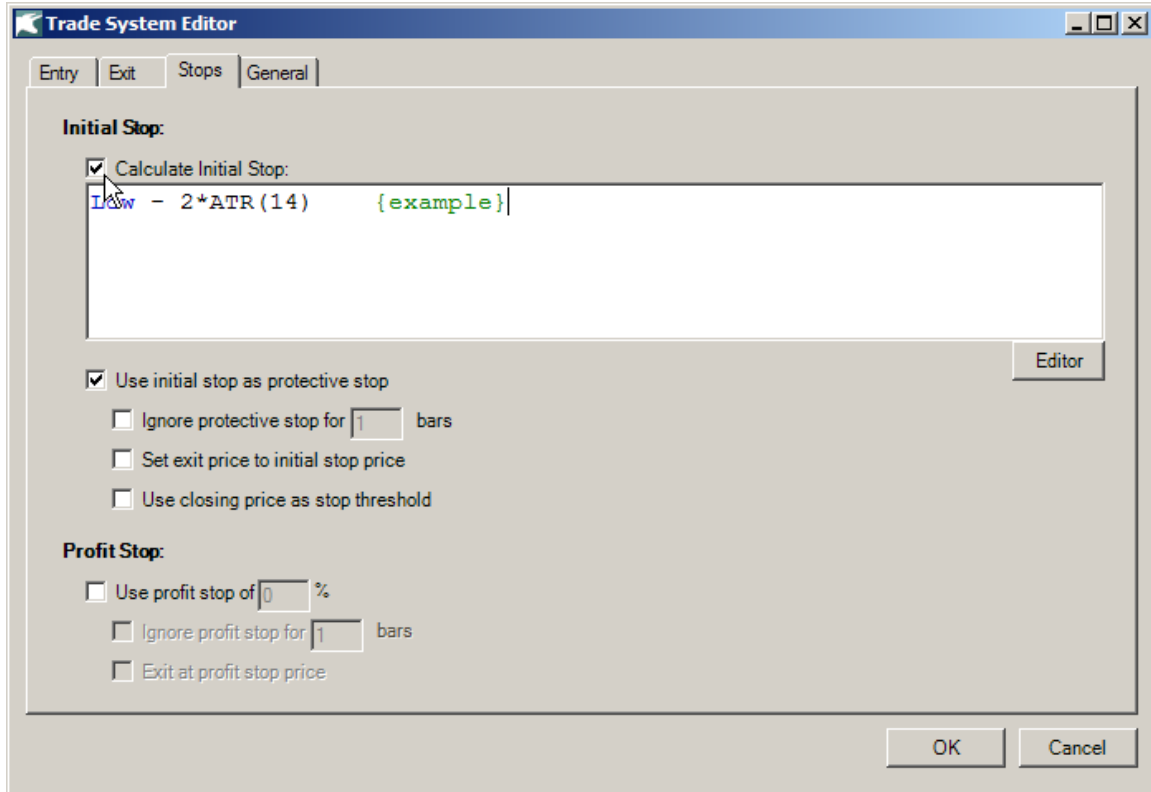
## Exercise 1.

❑ **Creating a Trade Database.**
As an exercise make a copy of your newly created trade database exploration and reverse the entry and exit conditions.

## Exercise 2.

❑ **Adding a Protective Stop.**
Enable the protective stop from the 'Stops' tab.

Rerun the scan and run a simulation in TradeSim.

> **Note:** Once you add a positive InitialStop value other than zero you should now be able to use to risk based position size models from within TradeSim.

## Exercise 3.

❑ **Displaying your trading signals.**

Sometimes it is convenient to display your trading signals superimposed on a chart for inspection or debugging purposes. You can do this in BullCharts but an easier way is made available from within the TradeSim plugin itself. For example when you create a Trade Database and you wish to view all trading signals on the long side for symbol "ANZ" you just need to add the following code after the call to the Initialize function.

```
ExtFml( "TradeSim.ShowTrades",LONG,"ANZ");
```

To do this select the 'Advanced' tab from the BullScan properties and then click on 'Generate Scan BullScript'. The script viewer should popup with all of the BullScript code for the scan.
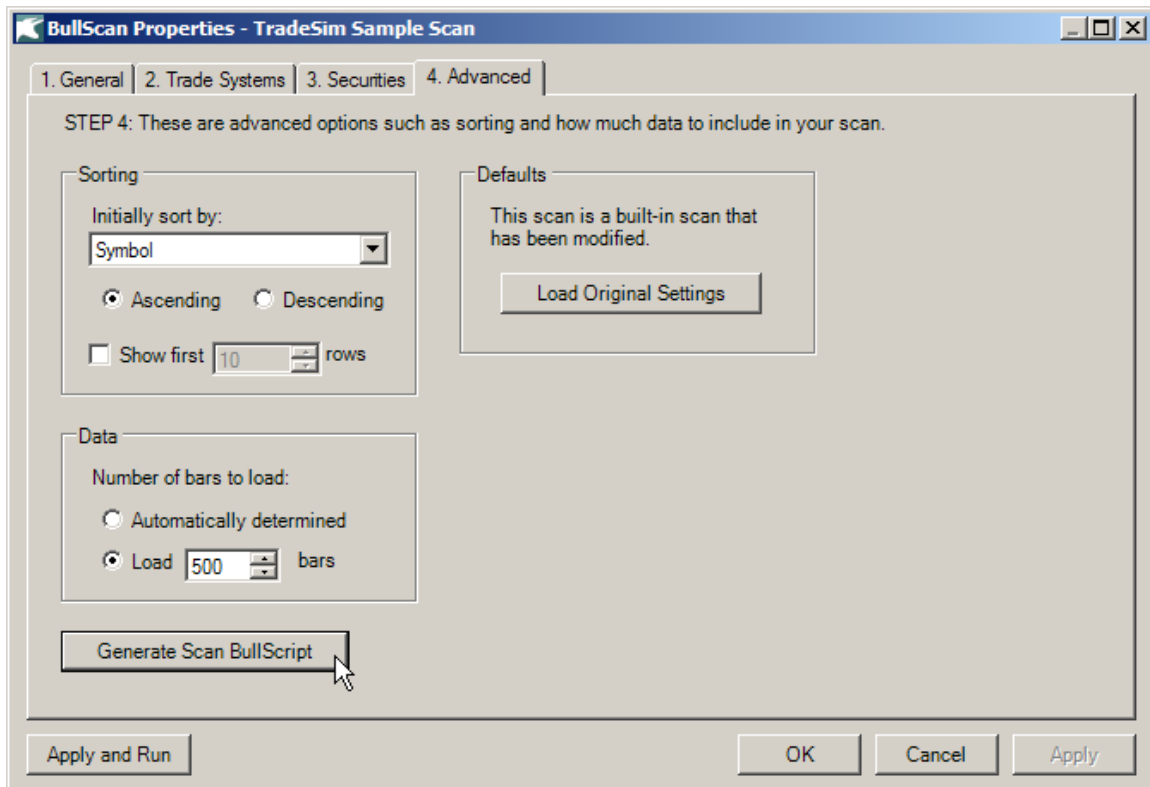
Click on 'Copy'. This will copy the script into the internal clipboard.
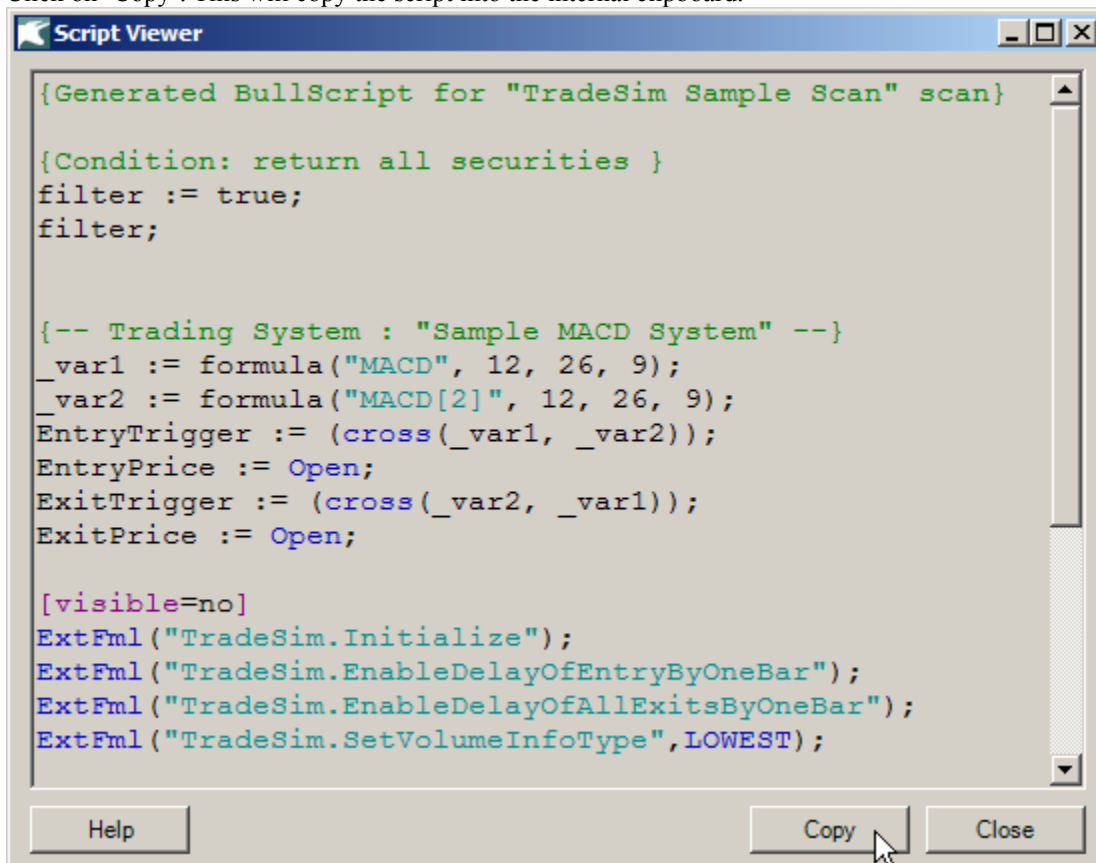
Now we need to create a new scan using Bull Script. Close the Trade System Editor window and select 'New BullScript Scan' from the drop down menu.
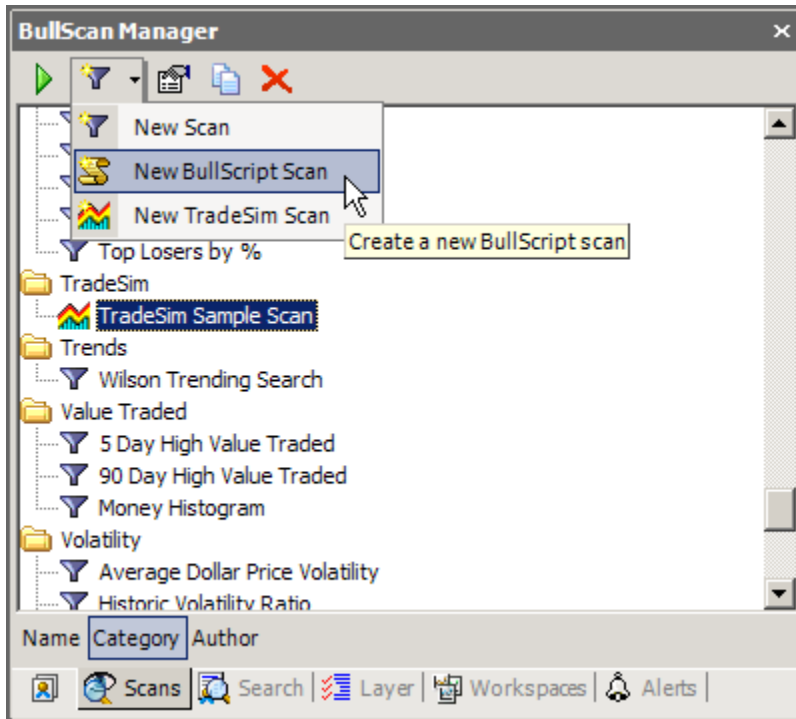


Change the Scan Name to "TradeSim Scan ShowTrades".
Change the Category to "TradeSim"
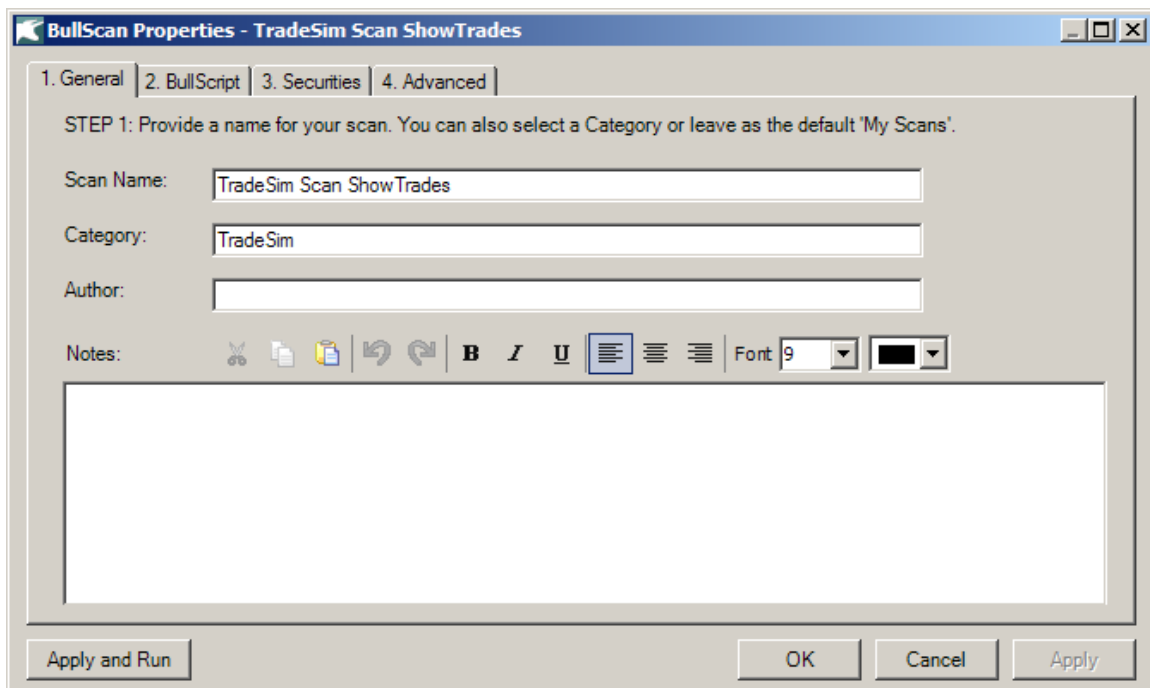


Click on the 'Bull Script' tab. Click within the BullScript dialog. Hold down the Ctrl Key along with the 'P' key. The contents of the clipboard will be pasted in the script dialog box.
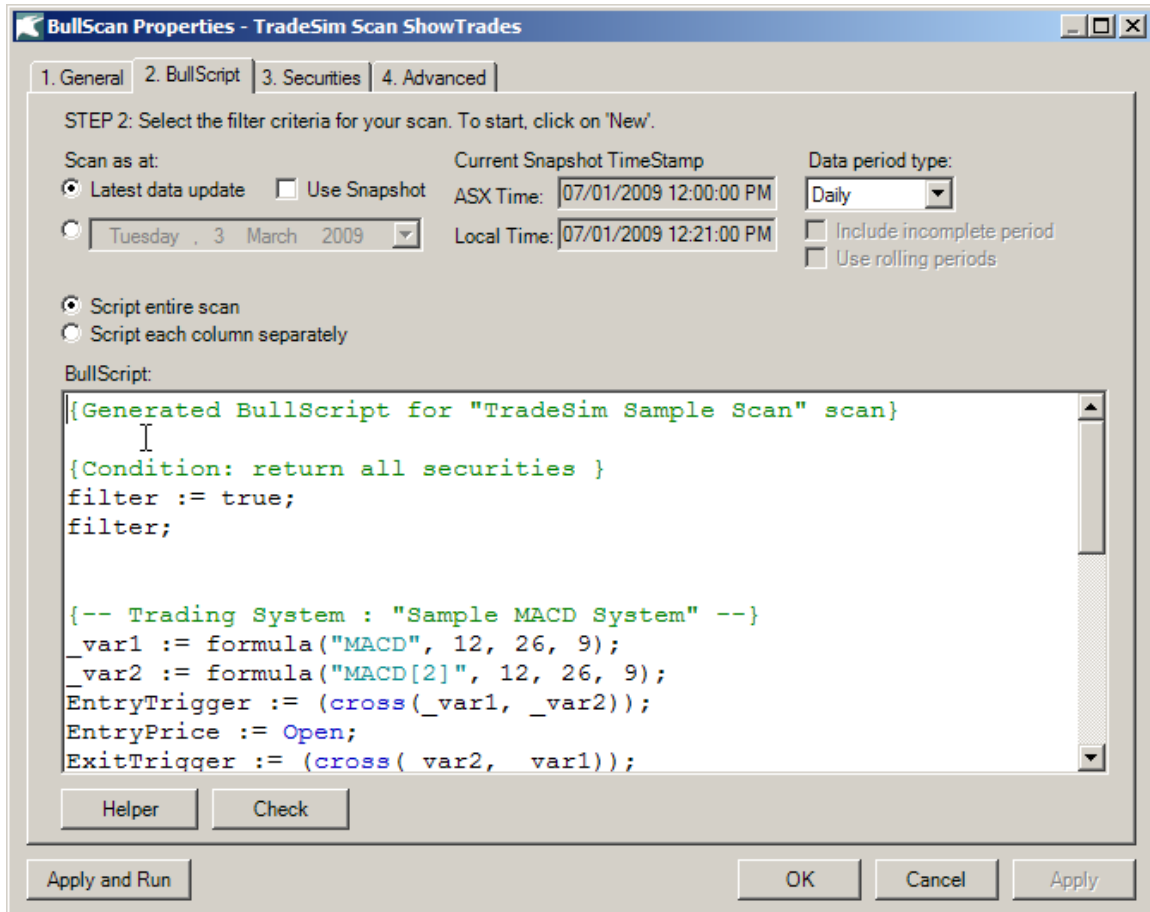
Scroll down the script until you find the following line

```
ExtFml("TradeSim.Initialize");
```

Insert the following line of code after it:-

```
ExtFml( "TradeSim.ShowTrades",LONG,"ANZ");
```
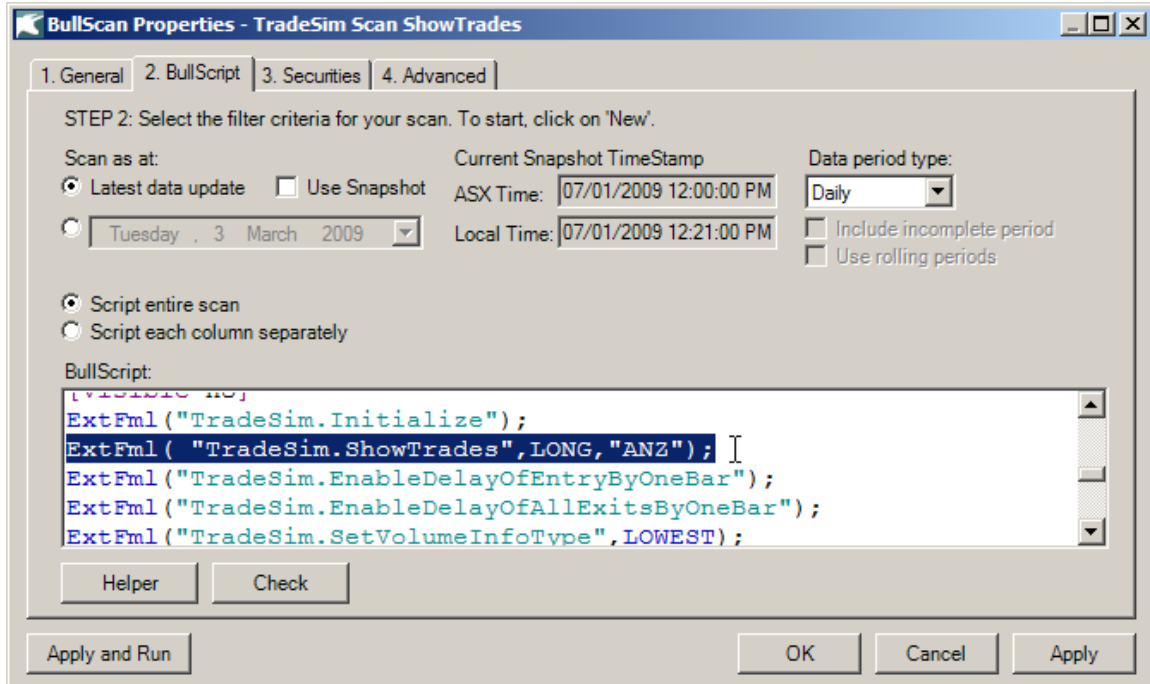
Click on the 'Securities' tab and use the "S&P/ASX 20" securities (just for this example).
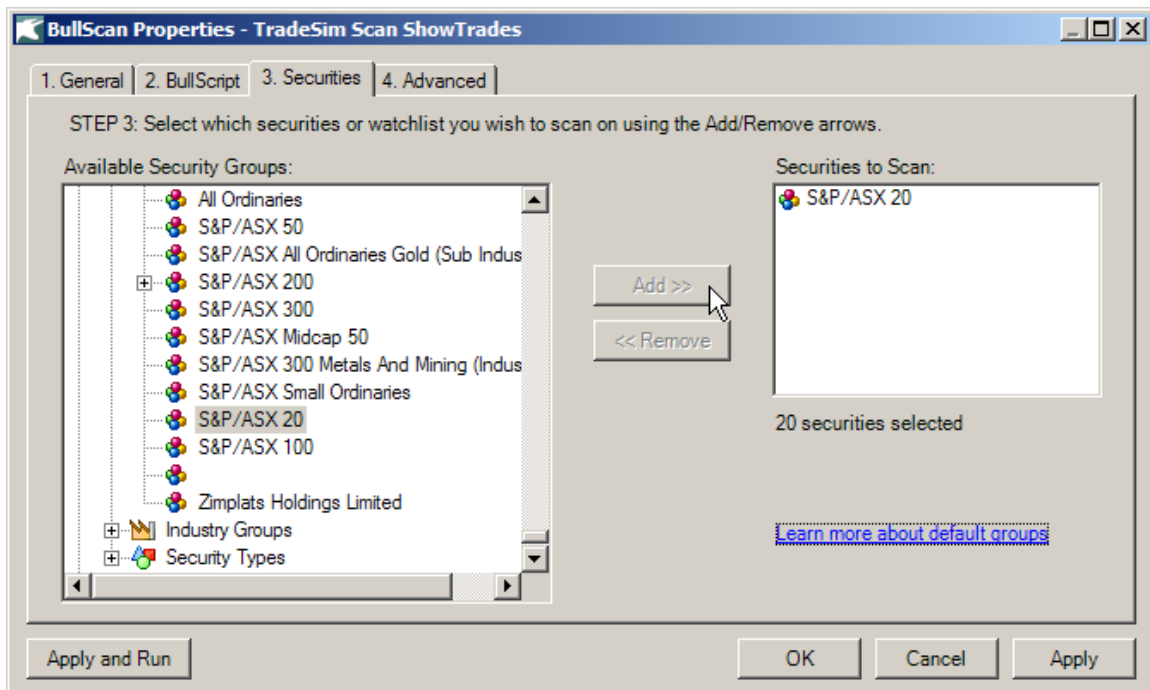


Click on the 'Advanced' tab and increase the data loading options from 100 to 500.

Page 19
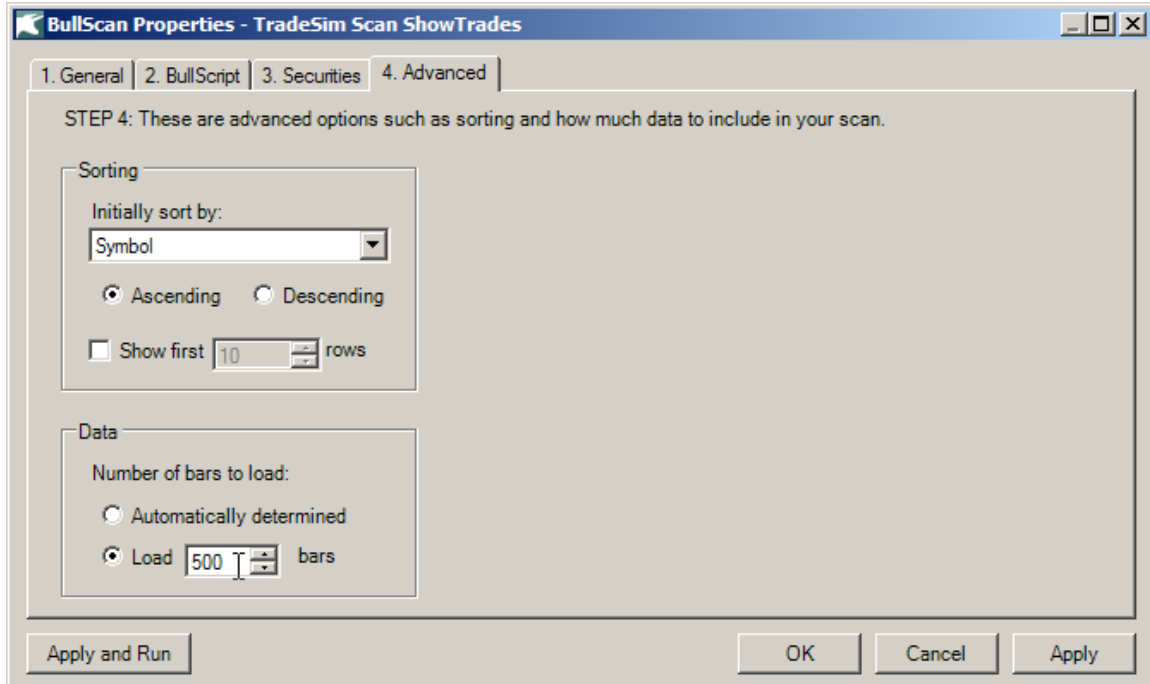
Click on 'Apply and Run' to run the scan.

After running the exploration a new window should popup with a number of tabbed windows on it. A detailed description of the information provided in this window is described in the TradeSim User Manual.

## Exercise 4

❑ **Trading Both Sides of the market.**

You may trade both sides of the market and need to include trades from both sides within your trade database file. This can be done quite easily. The following example illustrates this by adding extra code to handle the short trades. Try creating a new TradeSim BullScan using the following code. The resulting trade database should now include short trades as well as long trades.

Add the following code to the end of the BullScript used in the previous example.

```
EntryTriggerShort := (cross(_var2, _var1));

EntryPriceShort := Open;

ExitTriggerShort := (cross(_var1, _var2));

ExitPriceShort := Open;


ExtFml("TradeSim.RecordTrades",

        "TradeSim Sample Scan",

        SHORT,

        EntryTriggerShort,

        EntryPriceShort,

        0,

        ExitTriggerShort,

        ExitPriceShort,

        CONTINUE);
```

The complete BullScript code should look like the following with the added code highlighted in red.

```
{Generated BullScript for "TradeSim Sample Scan" scan}


{Condition: return all securities }
filter := true;
filter;


{-- Trading System : "Sample MACD System" --}
_var1 := formula("MACD", 12, 26, 9);
_var2 := formula("MACD[2]", 12, 26, 9);
EntryTrigger := (cross(_var1, _var2));
EntryPrice := Open;
ExitTrigger := (cross(_var2, _var1));
ExitPrice := Open;


[visible=no]
```

Page 21

```
ExtFml("TradeSim.Initialize");

ExtFml( "TradeSim.ShowTrades",LONG,"ANZ");

ExtFml("TradeSim.EnableDelayOfEntryByOneBar");

ExtFml("TradeSim.EnableDelayOfAllExitsByOneBar");

ExtFml("TradeSim.SetVolumeInfoType",LOWEST);


[name="Sample MACD System Trades"; dp=0; visible=yes]
ExtFml("TradeSim.RecordTrades",

      "TradeSim Sample Scan",

      LONG,

      EntryTrigger,

      EntryPrice,

      0,

      ExitTrigger,

      ExitPrice,

      START);


EntryTriggerShort := (cross(_var2, _var1));
EntryPriceShort := Open;
ExitTriggerShort := (cross(_var1, _var2));
ExitPriceShort := Open;


ExtFml("TradeSim.RecordTrades",

      "TradeSim Sample Scan",

      SHORT,                        { note the change from LONG to SHORT }
      EntryTriggerShort,

      EntryPriceShort,

      0,

      ExitTriggerShort,

      ExitPriceShort,

      CONTINUE);                    { note the change from START to CONTINUE }
```

## Exercise 5

❑ **Trading Both Sides of the market with protective stops.**
Repeat Exercise 4 but add stops for both sides of the market. Use the following code.

```
{Generated BullScript for "TradeSim Sample Scan" scan}


{Condition: return all securities }
filter := true;
```

```
filter;


{-- Trading System : "Sample MACD System" --}

_var1 := formula("MACD", 12, 26, 9);

_var2 := formula("MACD[2]", 12, 26, 9);

EntryTrigger := (cross(_var1, _var2));

EntryPrice := Open;

ExitTrigger := (cross(_var2, _var1));

ExitPrice := Open;

InitialStop := EntryPrice - 3*ATR(14);


[visible=no]

ExtFml("TradeSim.Initialize");

ExtFml("TradeSim.EnableProtectiveStop",0);

ExtFml( "TradeSim.ShowTrades",LONG,"ANZ");

ExtFml("TradeSim.EnableDelayOfEntryByOneBar");

ExtFml("TradeSim.EnableDelayOfAllExitsByOneBar");

ExtFml("TradeSim.SetVolumeInfoType",LOWEST);


[name="Sample MACD System Trades"; dp=0; visible=yes]

ExtFml("TradeSim.RecordTrades",

      "TradeSim Sample Scan",

      LONG,

      EntryTrigger,

      EntryPrice,

      InitialStop,

      ExitTrigger,

      ExitPrice,

      START);


EntryTriggerShort := (cross(_var2, _var1));

EntryPriceShort := Open;

ExitTriggerShort := (cross(_var1, _var2));

ExitPriceShort := Open;

InitialStopShort := EntryPrice + 3*ATR(14);



ExtFml("TradeSim.RecordTrades",

      "TradeSim Sample Scan",

      SHORT,
```

```
        EntryTriggerShort,

        EntryPriceShort,

        InitialStopShort,

        ExitTriggerShort,

        ExitPriceShort,

        CONTINUE);
```

# Reference Literature

The following references are ones that provide relevant background material for using TradeSim.

1) Compuvision Australia. *TradeSim User Manual*.

2) BullCharts  online help