IDEAScript :   Benford First Two Digits.iss
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' Date :   March 22, 2012
' Purpose :   This test will create a file of first two digit analysis based on a field and amount
'   optioned through a menu.
'Modified: Aug 1, 2012 - Updated the equation for the Expected field using the Log10
'   function as outlined on page 87 of Forensic Analytics by Mark Nigrini, PhD
'***

This test is based on the Benford's Law First Two Digits test.   The test within IDEA performs the First
Two Digits test on the entire file.   This script allows you to perform the same test but based on a field
within the population.   As an example, if you have a vendor field, this test would perform the First Two
Digits test on all transactions for each vendor.   This should allow the auditor to look for vendors that
might have payments that do not fit the First Two Digits test.   It is recommended that you only look at
vendors that have a large number of transactions as small size populations may give inconsistent results.

How to use the script.

When you start the script you will have the following dialog.   In this dialog you will select the file you wish
to run the analysis on, the **Client Field** which is the field you want to test, so if you are running this tests
on vendor information you would select the field that contains the vendor, the **Amount Field** is the field in
which you want to run the first digit test on, this would be a numeric field and usually would be the
amount.   The optional fields allow you to select additional fields that you may want to have added to your
analysis, the **optional fields** works in the same was as when you select optional fields from within the
IDEA summary function.   You can also select the number of transactions per client, so if you are using
this on a vendor file and you select 1000 you would only perform this analysis on vendors that have more
than 1000 transactions in the file.   It is recommended that you don't perform this on clients with few
transactions as the results will not fit Benford's law.   Finally you can run this on either positive or negative
values.
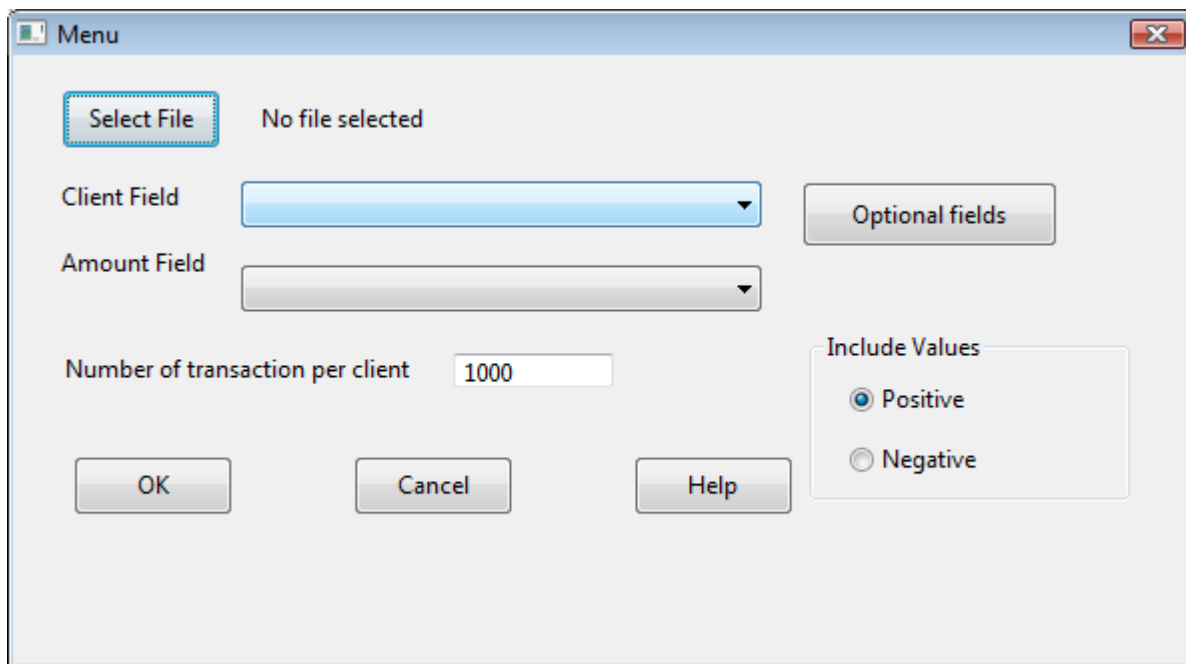
The following file will be created.

VENDORNUM	FIRST_TWO_DIGITS	TOTAL_RECORDS	ACTUAL	EXPECTED	DIFFERENCE	PERC_DIF
2001	10	4697	161	194.421442	33.42	17.19
2001	11	4697	154	177.492870	23.49	13.23
2001	12	4697	148	163.277613	15.28	9.36
2001	13	4697	122	151.171458	29.17	19.30
2001	14	4697	84	140.737260	56.74	40.32
2001	15	4697	95	131.650915	36.65	27.84
2001	16	4697	69	123.667025	54.67	44.21
2001	17	4697	73	116.596373	43.60	37.39
2001	18	4697	61	110.290707	49.29	44.69
2001	19	4697	47	104.632226	57.63	55.08

The first field is your client field that was selected from the dialog.   The second field is the first two digits from the amount field which you selected.   The third field is the total number of records for this vendor. The actual field is the actual number of digits for this vendor.   So in the first line there are 161 records where the amount starts with a 10 for vendor 2001.   The 5th field is the expected number of records based on Benford's law.   The six field is the difference between the actual and the expected and the final field is the percentage difference between the actual and the expected.

A history entry is also written for this analysis.

Benford First Two Digit Mult... 01/08/2012 - 12:31	brian.element
Control Field:	No Control Total
Number of Records:	1629
Date:	Wednesday, August 01, 2012
Time:	12:31 PM
Script:	Benford FirstTwo Digit.iss
Developed by:	The GEL Group - See commented area in the IDEAScript for contact in...
Source File:	C:\data\IDEA Scripts\Accumulated Field .IMD
Client Field:	VENDORNUM
Amount Field:	AMOUNT
Include Values:	Positive