April 2, 2000

From the Edge:	Calculating Financial MEAN in R:BASE!
Section:	Functions
Chapter:	Running R:BASE Your Way!
Platform:	R:BASE 2000 (ver 6.5) for Windows
Build:	1.839xRT03 and Higher ...

Wall Street and many financial institutions calculate the MEAN value with four decimal places.

For example:

NUMBER of Stocks:	152
HIGH Value:	66 7/8
LOW Value:	64 9/16
MEAN:	65.7188
Current VALUE:	US $9,989.26

So, the question is, how can we find a way to have the user input the HIGH value as 66 7/8 and LOW value as 64 9/16, and then calculate the accurate MEAN as 65.7188 with four decimal places to get the current U.S. $ VALUE as $9,989.26 in R:BASE?

Well, I had the pleasure of spending this weekend with a Wall Street Financial guru to come up with a method to do it all in R:BASE 2000 for Windows (ver 6.5) for them. (A potential automated system for one of the major players in today's financial market!)

My customers have always been my best teachers!

Of course, you can do it in any other version of R:BASE, as long as it supports the Banker's Rounding Function, i.e., (BRND(xxxx.xxxxxxx,x,.x1))

So, here is how the "On-Screen Financial Calculator" OSFC, was designed!

(I'm sure there are other ways too.)

Twelve (12) Simple Steps:

01. Create a Dummy FORM based on a Dummy TABLE with only one Dummy COLUMN and one Dummy ROW.

    Example:

```
CREATE TABLE `DummyTable` (`Dummy` TEXT (1))
LOAD `DummyTable`
'R'
END
COMMENT ON TABLE `DummyTable` IS 'Dummy Table'
COMMENT ON `Dummy` IN `DummyTable` IS 'Dummy Column'
```

02. Create the following Variables at the R> prompt.
(You can also create variables on the fly in a form designer.)

```
SET VAR vHowMany REAL = NULL
SET VAR vHighWhole REAL = NULL
SET VAR vHighTop REAL = NULL
SET VAR vHighBottom REAL = NULL
SET VAR vHigh REAL = NULL
SET VAR vLowWhole REAL = NULL
SET VAR vLowTop REAL = NULL
SET VAR vLowBottom REAL = NULL
SET VAR vLow REAL = NULL
SET VAR vMean REAL = NULL
SET VAR v$Value CURRENCY = NULL
```

03. Create a new form, OSFCForm, based on the DummyTable.

04. Change the Resolution Guidelines to 800 x 600.

Layout > Resolution Guidelines... > Click on 800 x 600 >
Click on [OK] button.

05. Change Form Settings.

Layout > Form Settings...

. Un-Check [Runtime Toolbar]
. Click on [Form Background Color] to choose appropriate color to please your eyes!
. Un-Check [Use Form for Entering data]
. Keep [Use Form for Editing data]
. Click on [Change Edit Menu...] push button
. ONLY highlight 'No Menu' option
. Click on [OK]
. Click on [OK] to get back in form designer screen

06. Create the following Variable/Expressions in Form. (Note: The dotted variables are pre-defined earlier)

```
vHigh = (.vHighWhole+(.vHighTop/.vHighBottom))
vLow = (.vLowWhole+(.vLowTop/.vLowBottom))
vMean = (BRND(((.vHigh+.vLow)/2),8,.0001))
v$Value = (.vHowMany*.vMean)
```

Variables > List Expressions...

RBView window should look like below:

```
1. REAL     vHigh   = (.vHighWhole+(.vHighTop/.vHighBottom))
2. REAL     vLow    = (.vLowWhole+(.vLowTop/.vLowBottom))
3. REAL     vMean   = (BRND(((.vHigh+.vLow)/2),8,.0001))
4. CURRENCY v$Value = (.vHowMany*.vMean)
```

You can Print the list of expressions at this point! (R:BASE 6.5 only!)

File > Print...

Notes:

Explanation about: vMean = (BRND(((.vHigh+.vLow)/2),8,.0001))

The BRND function does what is called Banker's Rounding.

Syntax: (BRND(arg1,arg2,arg3))

The first argument of the function is the number to be rounded, the second argument is the total number of digits to return in the result. The third argument of the function indicates where to round. The best way to understand this is to think of this argument as the number of zeros or places to keep and then round the next place. For example, .001, is two places or zeros to keep and then the next number to the right is rounded.

.0001 (as shown above), is three places or zeros to keep and then number to the left is rounded.

07. Locate the following Variables along with appropriate text objects accordingly:

vHowMany (to enter NUMBER of stocks)

vHighWhole (to enter the first number for HIGH value) for example, 66

vHighTop (to enter the top number for HIGH fraction) for example, 7

Place a Text Object with the Text '/' and un-check Use Border option.

vHighBottom (to enter the bottom number for HIGH fraction) for example, 8

vHigh (to display the calculated result of HIGH Value) for example, 66.875

vLowWhole (to enter the first number for LOW value) for example, 64

vLowTop (to enter the top number for LOW fraction) for example, 9

Place a Text Object with the Text '/' and un-check Use Border option.

vLowBottom (to enter the bottom number for LOW fraction) for example, 16

vLow (to display the calculated result of LOW Value) for example, 64.5625

vMean (to display the calculated MEAN value) for example, 65.7188

v$Value (to display current value in U.S. dollars) for example, $9,989.26

At the bottom of the form, place a [Push Button] with the properties of Button Text as [DONE] and Pre-Defined value of EXIT.

08. Do some FORM housekeeping:

. Do not use [Use Border] option in variable properties, when locating the following variables:
. vHighWhole
. vHighTop
. vHighBottom
. vLowWhole
. vLowTop
. vLowBottom

. When locating vHighTop, TextObject [/] and vHighBottom do not leave any space between the objects.

. Change property for vHighBottom to Left Justification.

. When locating vLowTop, TextObject [/] and vLowBottom do not leave any space between the objects.

. Change property for vLowBottom to Left Justification.

. Make sure to check the Field Settings option to allow:
[New Data can be Entered into the Field]
[Use can be Change the Data in the Field]
for the following variables:

. vHowMany
. vHighWhole
. vHighTop
. vHighBottom
. vLowWhole
. vLowTop
. vLowBottom

. Place appropriate Box Objects for titles along with custom property settings like, Border (more options available in 6.5!), Appearance, Shadow Box, Border, Shadow Box Color (6.5 only!), Background Color.

. Check Filed Order for every object, including Text Objects.

Layout > Change Field Order... >
Click on [Show Text Objects] to view entire list!

09. Finally, delete Screen Jump [x], Resolution Guideline border option to improve screen refesh rate when displaying the form!

10. SAVE the Form and go at the R> prompt.

File > Close Window > [Save]

11. Create a OSFC.RMD File with the following information:

```
--  OSFC.RMD
--  Specifically optimized for R:BASE 2000 (ver 6.5) for Windows
--  Author: A. Razzak Memon
--  April 2, 2000
    CLS
    CLEAR ALL VAR
    SET CAPTION ' '
    SET NULL ' '
    SET VAR RBTI_NoStatus = 1
    SET VAR vHowMany REAL = NULL
    SET VAR vHighWhole REAL = NULL
    SET VAR vHighTop REAL = NULL
    SET VAR vHighBottom REAL = NULL
    SET VAR vHigh REAL = NULL
    SET VAR vLowWhole REAL = NULL
    SET VAR vLowTop REAL = NULL
    SET VAR vLowBottom REAL = NULL
    SET VAR vLow REAL = NULL
    SET VAR vMean REAL = NULL
    SET VAR v$Value CURRENCY = NULL

    SET RBGSIZE CENTER CENTER 800 600

    CLS
    EDIT USING OSFCForm CAPTION 'On-Screen Financial Calculator'
    CLEAR ALL VAR
    CLS
    RETURN
```

12. At the R> prompt, type:

```
RUN OSFC.RMD
```

There you have it folks!

Note: Complete database with all forms, command files, etc., will be available to all R2K users at:

http://www.rbase2000.com/Updates

Meanwhile, if anyone else needs the database right away, please send me a private e-mail.

Enjoy and make sure to have fun!