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PROGRAM LIBRARY

DECUS NO.	FOCAL8-67
TITLE	T-TEST
AUTHOR	Jerry D. Burns
COMPANY	Exotic Environments Laboratory Arizona State University Tempe, Arizona
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SOURCE LANGUAGE	FOCAL

ABSTRACT: This program is designed to calculate Student's t-ratio for independent samples. The output format gives sample means and variances, standard error of the mean difference, the value of t, and the number of degrees of freedom upon which t is distributed.

OPERATION: The program should be loaded without the extended functions. The program is initiated by typing "GO". The carriage return is the terminal character for all lines in the program. The program will then ask "N-SAMPLE 1" which should be answered with the number of data entries in one of the samples. "N-SAMPLE 2" is similarly answered with the number of data entries in the remaining sample. The program will then ask for data input.

 If one desires to test the difference of a mean from 0 (z-statistic, etc.), this may be done by responding with a "1" to "N-SAMPLE 2" and by entering "0" as the data entry in sample 2.

 One should observe that the program is designed to always calculate a positive value of t. This is done by always making the numerator of the t-ratio a positive value, regardless of the order of sample entry. Examination of the means given as a part of the output will reveal direction of the difference.

C-FOCAL , 8/68

```
Ø1.Ø9    ERASE
Ø1.1Ø    A "N-SAMPLE 1",N1;A "N-SAMPLE 2"N2
01.15    T !!!, "SAMPLE 1",!!
Ø1.2Ø    F I=1,N1;DO 1.85
Ø1.25    T !, "SAMPLE 2",!!
Ø1.3Ø    F J=1,N2;DO 1.9Ø
Ø1.35    S S1= [(B)-(A↑2/N1)]/N1
Ø1.36    S S2= [(D)-(C↑2/N2)]/N2
Ø1.4Ø    T %8.Ø3,!!!, "MEAN-SAMPLE 1",A/N1,!;S M1=A/N1
Ø1.41    T %8.Ø3, "MEAN-SAMPLE 2",C/N2,! ;S M2=C/N2
Ø1.42    T "VAR-SAMPLE 1 ",S1,!
Ø1.43    T "VAR-SAMPLE 2 ",S2,!
Ø1.5Ø    S    H=FSQT(<(N1*S1+N2*S2)/(N1+N2-2)>*<(N1+N2)/(N1*N2)>)
Ø1.52    T "SD-DIFF        ",H,!!
Ø1.59    IF (M1-M2) 1.7,1.7,1.6
Ø1.6Ø    T "T",(M1-M2)/H;T %3, "        WITH DF",(N1+N2-2),!!;GOTO 1.8
Ø1.7Ø    T "T",(M2-M1)/H;T %3, "        WITH DF",N1+N2-2,!!
Ø1.8Ø    QUIT
Ø1.85    A X;S A=X+A;S B=X↑2+B
Ø1.9Ø    A Y;S C-Y+C;S D=Y↑2+d
*
```

```
*GO
N-SAMPLE 1:9
N-SAMPLE 2:9


SAMPLE 1

:27
:17
:28
:26
:26
:31
:23
:28
:30

SAMPLE 2

:32
:33
:29
:29
:15
:34
:23
:22
:24


MEAN-SAMPLE 1=    26.222
MEAN-SAMPLE 2=    26.778
VAR-SAMPLE 1=     15.506
VAR-SAMPLE 2=     34.617
SD-DIFF      =     2.503

T=    0.222    WITH DF=    16
```

```
*GO
N-SAMPLE 1:10
N-SAMPLE 2:12


SAMPLE 1

:43
:54
:53
:66
:67
:60
:60
:74
:66
:52

SAMPLE 2

:54
:51
:48
:59
:66
:55
:53
:69
:58
:49
:48
:54


MEAN-SAMPLE 1=      59.500
MEAN-SAMPLE 2=      55.333
VAR-SAMPLE 1 =      75.250
VAR-SAMPLE 2 =      41.389
SD-DIFF       =       3.384

T=    1.231    WITH DF=    20

*
```

```
*GO
N-SAMPLE 1:12
N-SAMPLE 2:1


SAMPLE 1

:1.6
:.27
:1.1
:.87
:.43
:2.11
:1.9
:.21
:-2.3
:.31
:-.87
:-1.2

SAMPLE 2

:Ø


MEAN-SAMPLE 1=      Ø.369
MEAN-SAMPLE 2=      Ø.ØØØ
VAR-SAMPLE 1 =      1.57Ø
VAR-SAMPLE 2=       Ø.ØØØ
SD-DIFF      =      1.362

T=    Ø.271    WITH DF=    11

*
```