



# DECUS

## PROGRAM LIBRARY

DECUS NO.	FOCAL8-103
TITLE	TEACH
AUTHOR	Edward Steinfeld
COMPANY	Digital Equipment Corporation Pittsburgh, Pennsylvania
DATE	July 10, 1970
SOURCE LANGUAGE	FOCAL

### ATTENTION

This is a USER program. Other than requiring that it conform to submittal and review standards, no quality control has been imposed upon this program by DECUS.

The DECUS Program Library is a clearing house only; it does not generate or test programs. No warranty, express or implied, is made by the contributor, Digital Equipment Computer Users Society or Digital Equipment Corporation as to the accuracy or functioning of the program or related material, and no responsibility is assumed by these parties in connection therewith.



## TEACH

DECUS Program Library Write-up

DECUS No. FOCAL8-103

This is an example of what could be accomplished in the computer aided instruction realm. TEACH is only a sample and does not carry the student beyond the first hour of instruction. The program is divided into three sections.

First the instruction segment. This explains to the student in a step by step method how to multiply two numbers together on a slide rule. It is assumed the student knows how to place his decimal and what an index is on a slide rule. He is given four problems to solve and with each the directions to solve them. The student types the answer he found and the computer prints the correct answer. If he answers all four correctly (3 place precision) he is then taken to the next section. If he incorrectly answers one or more the program will give him four more problems with explanations.

The second section comprises of six problems with answers but no explanation is given. Upon completion the student may elect to continue more of the same or proceed to the final section.

The last section is comprised of an explanation to multiply three numbers together followed by six problems. Here again the student has a choice. He may continue with more of the same or terminate the lesson.

It would be a very simple matter to continue this program to cover other operations of the slide rule.



.R FOCAL  
(DO NOT RETAIN FUNCTIONS)

\*LIB CALL TEACH

W  
C-FOCAL, 1969

01.10 S D=0;S X=0  
01.20 T ! "USE OF THE SLIDE RULE"! "NOTE THE TWO ADJACENT SCALES"  
01.30 T "MARKED 'C' AND 'D'. "  
01.40 T " TO MULTIPLY OR DIVIDE, THESE TWO SCALES ARE USED!"  
  
02.05 T ! "MULTIPLY THE FOLLOWING:"!  
02.10 S A=200\*(FRAN( )-.5);S B=200\*(FRAN( )-.5)  
02.15 S A=FITR(A); S B=FITR(B)  
02.20 T %2.0,!, "(,A,") (" ,B,")",!  
02.30 T ! "PLACE THE INDEX OF THE C SCALE OVER ONE NUMBER"  
02.40 T "ON THE D SCALE. MOVE THE CURSOR ALONG UNTIL THE"  
02.50 T "HAIRLINE IS OVER THE OTHER NUMBER ON THE C SCALE. "  
02.60 T "READ THE VALUE UNDER THE HAIRLINE ON THE D SCALE. "  
02.70 T "THIS IS YOUR ANSWER. "  
02.75 A "THE ANSWER IS ",C  
02.80 S D=D+FITR(.1\*(A\*B) )-FITR(.1\*C)  
02.90 T ! "THE COMPUTER CALCULATED ",%5.0,(A\*B),!  
  
03.10 F X=1,3;D 2.0  
03.20 I (D)3.30,4.05,3.30  
03.30 D 2.0  
  
04.05 T ! "NOW THAT YOU CORRECTLY ANSWERED FOUR CONSECUTIVE!"  
04.10 T "PROBLEMS WITH SOME AID, TRY THE FOLLOWING SIX. "  
04.80 D 2.05  
04.90 F X=1,6;D 6.10  
  
05.05 A ! "DO YOU WANT MORE PRACTICE? (1=YES, 0=NO) ",X  
05.10 I (X)5.05,6.05,4.80  
  
06.05 G 7.10  
06.10 D 2.10;D 2.15;D 2.20;D 2.75;D 2.90  
  
07.10 T ! "TO MULTIPLY THREE NUMBERS TOGETHER YOU SIMPLY!"  
07.20 T "MOVE THE INDEX OF THE C SCALE SO IT FALLS UNDER"  
07.30 T "THE HAIRLINE WHICH IS INDICATING THE PRODUCT OF"  
07.40 T "THE FIRST TWO NUMBERS. NOW MOVE THE CURSOR UNTIL"  
07.50 T "IT IS OVER THE THIRD NUMBER OF THE PROBLEM ON THE"  
07.60 T "C SCALE. THE ANSWER IS ON THE D SCALE. TRY THESE: "!"



```
08.10 S A=200*(FRAN( )-.5);S B=200*(FRAN( )-.5);S C=200*(FRAN( )-.5)
08.15 S A=FITR(A);S B=FITR(B);S C=FITR(C)
08.20 T %2.0, "(" A, ")" (" B, ")" (" C, ")";S L=(A*B*C)
08.30 A !, "YOUR ANSWER IS ",Q;T %5.0," THE COMPUTER CALCULATES ",L,!
09.10 F X=1,5;D 8.0
09.20 D 5.05;I (X)9.20,10.10,9.10
10.10 T !! "THAT'S ALL!"!!!!!!;QUIT
*
```





.R COPY

OPTION- COPY  
INPUT- D3:TEACH  
OUTPUT- TEACH

OPTION- ↑ BS  
.R FOCAL

SHALL I RETAIN LOG, EXP, ATN ?:NO

SHALL I RETAIN SINE, COSINE ?:NO

PROCEED.

\*LIB CALL TEACH  
\*GO

USE OF THE SLIDE RULE  
NOTE THE TWO ADJACENT SCALES MARKED 'C' AND 'D'.  
TO MULTIPLY OR DIVIDE, THESE TWO SCALES ARE USED

MULTIPLY THE FOLLOWING:

( = 21) ( = 47)

PLACE THE INDEX OF THE C SCALE OVER ONE NUMBER  
ON THE D SCALE. MOVE THE CURSOR ALONG UNTIL THE  
HAIRLINE IS OVER THE OTHER NUMBER ON THE C SCALE.  
READ THE VALUE UNDER THE HAIRLINE ON THE D SCALE.  
THIS IS YOUR ANSWER.

THE ANSWER IS :987

THE COMPUTER CALCULATED = 987

MULTIPLY THE FOLLOWING:

( = 79) ( = 8)

PLACE THE INDEX OF THE C SCALE OVER ONE NUMBER  
ON THE D SCALE. MOVE THE CURSOR ALONG UNTIL THE  
HAIRLINE IS OVER THE OTHER NUMBER ON THE C SCALE.  
READ THE VALUE UNDER THE HAIRLINE ON THE D SCALE.  
THIS IS YOUR ANSWER.

THE ANSWER IS :632

THE COMPUTER CALCULATED = 632



MULTIPLY THE FOLLOWING:

( = 32 ) ( = 60 )

PLACE THE INDEX OF THE C SCALE OVER ONE NUMBER ON THE D SCALE. MOVE THE CURSOR ALONG UNTIL THE HAIRLINE IS OVER THE OTHER NUMBER ON THE C SCALE. READ THE VALUE UNDER THE HAIRLINE ON THE D SCALE. THIS IS YOUR ANSWER.

THE ANSWER IS :1920

THE COMPUTER CALCULATED = 1920

MULTIPLY THE FOLLOWING:

( = 94 ) ( = 18 )

PLACE THE INDEX OF THE C SCALE OVER ONE NUMBER ON THE D SCALE. MOVE THE CURSOR ALONG UNTIL THE HAIRLINE IS OVER THE OTHER NUMBER ON THE C SCALE. READ THE VALUE UNDER THE HAIRLINE ON THE D SCALE. THIS IS YOUR ANSWER.

THE ANSWER IS :1690

THE COMPUTER CALCULATED = 1692

MULTIPLY THE FOLLOWING:

( = 43 ) ( = 74 )

PLACE THE INDEX OF THE C SCALE OVER ONE NUMBER ON THE D SCALE. MOVE THE CURSOR ALONG UNTIL THE HAIRLINE IS OVER THE OTHER NUMBER ON THE C SCALE. READ THE VALUE UNDER THE HAIRLINE ON THE D SCALE. THIS IS YOUR ANSWER.

THE ANSWER IS :3180

THE COMPUTER CALCULATED = 3182

NOW THAT YOU CORRECTLY ANSWERED FOUR CONSECUTIVE PROBLEMS WITH SOME AID, TRY THE FOLLOWING SIX.

MULTIPLY THE FOLLOWING:

( = 6 ) ( = 28 )

THE ANSWER IS :168

THE COMPUTER CALCULATED = 168

( = 56 ) ( = 90 )

THE ANSWER IS :5040

THE COMPUTER CALCULATED = 5040



( - 15) (= 40)

THE ANSWER IS :600

THE COMPUTER CALCULATED = 600

( = 70) (= 3)

THE ANSWER IS :210

THE COMPUTER CALCULATED = 210

( = 25) (= 52)

THE ANSWER IS :10050

THE COMPUTER CALCULATED = 1300

( = 85) (= 12)

THE ANSWER IS :1020

THE COMPUTER CALCULATED = 1020

DO YOU WANT MORE PRACTICE? (1=YES, 0=NO) :0

TO MULTIPLY THREE NUMBERS TOGETHER YOU SIMPLY MOVE THE INDEX OF THE C SCALE SO IT FALLS UNDER THE HAIRLINE WHICH IS INDICATING THE PRODUCT OF THE FIRST TWO NUMBERS. NOW MOVE THE CURSOR UNTIL IT IS OVER THE THIRD NUMBER OF THE PROBLEM ON THE C SCALE. THE ANSWER IS ON THE D SCALE. TRY THESE:

( = 36) (=66) (= 0)

YOUR ANSWER IS :XXX THE COMPUTER CALCULATES = 0

( = 22) (= 48) (= 80)

YOUR ANSWER IS :XXX THE COMPUTER CALCULATES = 84480

( = 9) (= 33) (= 61)

YOUR ANSWER IS :XXX THE COMPUTER CALCULATES = 18117

( = 96) (= 19) (= 44)

YOUR ANSWER IS :XXX THE COMPUTER CALCULATES = 80256

( = 76) (= 6) (= 29)

YOUR ANSWER IS :XXX THE COMPUTER CALCULATES = 13224

( = 57) (= 91) (= 16)

YOUR ANSWER IS :XXX THE COMPUTER CALCULATES = 82992

DO YOU WANT MORE PRACTICE? (1=YES, 0=NO) :0

THAT'S ALL!

\*

