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1620 USERS GROUP PROGRAM REVIEW AND EVALUATION

Program No. _____ Date _____

Program Name: _____

1. Does the abstract adequately describe what the program is and what it does? Yes___ No___
   Comment _____

2. Does the program do what the abstract says? Yes___ No___
   Comment _____

3. Is the Description clear, understandable, and adequate? Yes___ No___
   Comment _____

4. Are the Operating Instructions understandable and in sufficient detail? Yes___ No___
   Comment _____
   Are the Sense Switch options adequately described (if applicable)? Yes___ No___
   Are the mnemonic labels identified or sufficiently understandable? Yes___ No___
   Comment _____

5. Does the source program compile satisfactorily (if applicable)? Yes___ No___
   Comment _____

6. Does the object program run satisfactorily? Yes___ No___
   Comment _____

7. Number of test cases run _____
   Are any restrictions as to data, size, range, etc. covered adequately in description? Yes___ No___
   Comment _____

8. Does the Program meet the minimal standards of the 1620 Users Group? Yes___ No___
   Comment _____

9. Please list any suggestions to improve the usefulness of the program. These will be passed on to the author for his consideration.
   Comment _____

Please return to:

Mr. Robert J. Robinson (PREP)
Marquette University
Computing Center
1515 W. Wisconsin Avenue
Milwaukee 3, Wisconsin

Your Name _____

Company _____

Address _____

User Group Code _____

THIS REVIEW FORM IS PART OF THE 1620 USER GROUP ORGANIZATION'S PROGRAM REVIEW AND EVALUATION PROCEDURE. NONMEMBERS ARE CORDIALLY INVITED TO PARTICIPATE IN THIS EVALUATION.

EXAMINATION ASSEMBLY PROGRAM

by

H. B. Kerr
Director, Computer Center

TENNESSEE POLYTECHNIC INSTITUTE
Cookeville, Tennessee

1620 Users Group Membership Code--3114
September 7, 1964

Modifications or revisions to this program, as they occur, will be announced in the appropriate Catalog of Programs for IBM Data Processing Systems. When such an announcement occurs, users should order a complete new program from the Program Information Department.

DECK KEY

1. Source Deck
2. Object Deck
3. Master Examination Questions Deck
4. Examination Question Number Requests Deck
5. Completed Examination Deck

TABLE OF CONTENTS

1620 USERS Group Library

Program Abstract

Title (If subroutine state in Title) EXAMINATION ASSEMBLY PROGRAM

Subject Classification 13.0

Author:Organization: H. B. Kerr, Tennessee Polytechnic Institute, Cookeville, Tennessee (3114)

Direct Inquiries to:
Name H. B. Kerr, Director, Computer Center **Address** Box 21A Tenn Tech
Tennessee Polytechnic Institute, Cookeville, Tenn **Phone** 526-2131 Ex. 123

Purpose/Description: This program package causes an examination to be made up by pulling examination questions from a pool of questions punched into cards. A new sequence number is given to the questions "pulled", and the examination may then be listed on ditto master on the 407 accounting machine.

Mathematical Method: N/A

Restrictions, Range: A maximum of 999 questions may be contained in the "pool" of questions. The questions may be of variable length with no limitation placed upon the maximum number of cards allowed.

Storage Requirements: Less than 20,000 digits

Equipment Specifications:
Memory 20K x 40K ___ 60K ___ K ___ **Automatic Divide:** Yes ___ No x
Indirect Addressing: Yes x No ___ **Other Special Features Required** TNS, TNF

Additional Remarks (Include at author's discretion: Language; Fixed/Float; Relocatability) (Optional: Running time; Approximate number of times run successfully; Programming Hours) Running time depends upon the number of questions in the "pool" of questions and upon the number of questions called for upon the examination being made up. The source language is SPS. Approximately 60 examinations have been made up using this program.

EXAMINATION ASSEMBLY PROGRAM

DESCRIPTION - THIS PROGRAM WAS DEVELOPED TO FACILITATE THE FORMULATION OF PUNCHED CARDS MAKING UP EXAMINATIONS PREPARATORY TO COPYING THE EXAMINATION ON A DITTO MASTER OR STENCIL. IN ORDER TO MAKE THIS PROGRAM WORK EFFECTIVELY, IT IS NECESSARY TO HAVE A POOL OF QUESTIONS ON PUNCHED CARD FROM WHICH THE EXAM QUESTIONS MAY BE DRAWN. THE QUESTIONS MAY BE OF VARIABLE LENGTH, TRUE-FALSE, MULTIPLE CHOICE OR ANY TYPE WHICH CAN BE PUNCHED INTO CARDS USING THE CHARACTERS AVAILABLE ON THE KEY PUNCH. THIS PROGRAM SEARCHES A DECK OF NUMBERED MASTER EXAMINATION CARDS FOR CERTAIN SPECIFIED QUESTIONS, ASSIGNS A NEW SEQUENCE NUMBER TO THE QUESTION AND PUNCHES ALL OF THE QUESTION CARDS INTO A NEW DECK WHICH CONSTITUTES THE EXAMINATION.

INPUT- THE INPUT TO THIS PROGRAM IS IN TWO PARTS -

(1) EXAMINATION QUESTION NUMBER REQUESTS - THE MASTER DECK NUMBERS OF THE QUESTIONS DESIRED IN THE EXAMINATION, ONE QUESTION NUMBER TOA CARD, IN THE FIRST THREE COLUMNS OF THE CARD, I. E., 001 FOR QUESTION NUMBER 1, 015 FOR QUESTION NUMBER 15, 161 FOR QUESTION NUMBER 161, ETC. THESE NUMBERS NEED NOT BE IN ANY PARTICULAR SEQUENCE AND THE NUMBER OF PERMISSABLE QUESTIONS IS VARIABLE TO A MAXIMUM OF 999 QUESTIONS.

(2) MASTER DECK OF EXAMINATION QUESTIONS - THE MASTER DECK OF EXAMINATION QUESTIONS MUST BE IN THE FOLLOWING FORMAT ...

(A) THE FIRST CARD IN THE SERIES OF CARDS FOR ANY ONE QUESTION ...

CARD COLUMN 1 - 11 ZONE PUNCH
CARD COLUMNS 5, 6, AND 7 - MASTER EXAMINATION QUESTION NUMBER
CARD COLUMNS 10 THROUGH 80 - THE FIRST LINE OF THE EXAMINATION QUESTION.

(B) 2ND, 3RD, ETC. CARDS IN A SERIES OF CARDS FOR ANY ONE QUESTION

CARD COLUMNS 1 THROUGH 9 - BLANK
CARD COLUMNS 10 THROUGH 80 - THE 2ND (ETC.) LINE OF THE EXAMINATION QUESTION

OUTPUT- THE OUTPUT WILL CONSIST OF A BLANK CARD FOLLOWED BY THE EXAMINATION QUESTION AS IT EXISTS IN THE MASTER DECK OF EXAMINATION QUESTIONS BUT WITH A NEW SEQUENCE NUMBER IN COLUMNS 5, 6, AND 7. THE SEQUENCE NUMBER STARTS WITH 001, THE SECOND QUESTION 002, THIRD 003, ETC.

OPERATING INSTRUCTIONS

A. SWITCH SETTINGS - NO PROGRAM SWITCHES CONSULTED. ALL ERROR CHECK SWITCHES SET TO STOP.

B. PROCEDURE

(1) CLEAR MEMORY. RESET, INSERT, TYPE IN ... 16 00010 00000, RELEASE AND START. AFTER ABOUT TWO SECONDS, PRESS INSTANT STOP AND THEN RESET.

(2) PLACE OBJECT PROGRAM, FOLLOWED BY THE EXAMINATION QUESTION NUMBER REQUESTS INTO THE READ HOPPER.

(3) PRESS LOAD (1622)

(4) WHEN MANUAL LIGHT COMES ON, PRESS START (1620)

(5) WHEN READ-NO-FEED LIGHT COMES ON, PRESS START (1622)

(6) THE CONSOLE TYPEWRITER WILL TYPE OUT ... LOAD MASTER QUESTION DECK ... AND GO INTO MANUAL MODE.

(7) STACK THE MASTER QUESTION DECK INTO THE READ HOPPER, PRESS START (1620), READ START (1622), AND PUNCH START (1622)

(8) THE EXAMINATION WILL BE PUNCHED OUT.

(9) WHEN ALL EXAMINATION QUESTIONS HAVE BEEN FOUND AND PUNCHED OUT, THE STATEMENT ... EXAM IS MADE UP ... WILL BE TYPED OUT. CLEAR ALL CARDS FROM THE COMPUTER.

(10) IF THE PROGRAM IS UNABLE TO FIND ONE OR MORE SPECIFIED MASTER QUESTIONS, THE STATEMENT ... QUESTION NUMBER XXX CANNOT BE FOUND ... AND THE EXAMINATION WILL BE COMPLETED LEAVING OUT THIS QUESTION (OR QUESTIONS).

(11) IF MORE EXAMINATIONS ARE TO BE MADE UP, PRESS START (1620) AND THE PROGRAM WILL BRANCH BACK TO THE BEGINNING, INITIALIZE THE SEQUENCE NUMBER COUNTER, AND CALL FOR NEW EXAMINATION QUESTION NUMBER REQUESTS TO BE READ. PLACE THE NEW EXAMINATION QUESTION NUMBER REQUESTS INTO THE READ HOPPER, PRESS START (1620), READ START (1622), AND GO BACK TO STEP NUMBER (5).

NOTE - SINCE THE LAST CARD INDICATOR IS CONSULTED IN THE CARD READ INSTRUCTIONS, VARIOUS INPUTS MAY NOT BE STACKED IN THE READ HOPPER.

SPECIAL FEATURES REQUIRED - INDIRECT ADDRESSING, TNF, TNS.

SPS PROGRAM LISTING

```
START TF   QUEST+599,CLR
      TFM  COUNT,0,9
      TFM  MOVE+6,QUEST+2
READ  RNCDINPUT
      SF   INPUT
MOVE  TF   QUEST+2,INPUT+2
      AM   MOVE+6,3
      BNLCREAD
      SM   MOVE+6,2
      TD   MOVE+6,RMK,6
      RCTY
      WATYLOAD
      H
READ1 RACDMASTER
      CM   MASTER,20,10
      BE   STRIP
      BNLCCHECK
      BNR  *+24,QUEST
      B    END
RCTY  RCTY
      TNF  ER+16*2-2,QUEST+2
      WATYER
      TR   QUEST,QUEST+3
      BNR  RCTY,QUEST
      H
      B    END
STRIP TNS  MASTER+7*2-2,HEAD
      TFM  COMP+6,QUEST+2
COMP  C    QUEST+2,HEAD
      BE   PUNCH
      AM   COMP+6,1
      BNR  *+36,COMP+6,11
      BNLCREAD1
      B    CHECK
      AM   COMP+6,2
      BNR  COMP,QUEST
      B    END
PUNCH AM   COUNT,1,9
      AM   COMP+6,1
      TF   RIGHT,COMP+6
      SM   COMP+6,3
      TR   COMP+6,RIGHT,611
      TNF  MASTER+7*2-2,COUNT
      WACDBLANK
      WACDMASTER
      BNLC*+24
      B    CHECK
DETL  RACDMASTER
      CM   MASTER,20,10
      BE   BNR
      WACDMASTER
      BNLCDETL
      B    CHECK
```



```
CHECK BNR READ1,QUEST
END   RCTY
      WATYSTATE
      H
      B    START
BNR   BNR STRIP,QUEST
      B    END
      DC   1,0
CLR   DS   599
QUEST DSS  600
INPUT DSS  80
MASTERDAS  80
      DC   1,0,MASTER-1
COUNT DC   3,0
RMK   DC   1,-
HEAD  DC   3,0
BLANK DAS  80
RIGHT DC   5,0
STATE DAC  16,EXAM IS MADE UP-
ER    DAC  33,QUESTION NO.      CANNOT BE FOUND-
LOAD  DAC  26,LOAD MASTER QUESTION DECK-
      DENDSTART
```

SAMPLE MASTER EXAMINATION QUESTIONS

1 FIXED POINT VARIABLES ARE RESTRICTED TO INTEGRAL VALUES.

2 FLOATING POINT NUMBERS MAY NOT BE LARGER THAN 999 MILLION IN ORDER TO BE HANDLED IN A FORTRAN PROGRAM.

3 FLOATING POINT CONSTANTS MAY BE EITHER POSITIVE OR NEGATIVE, IN A FORTRAN PROGRAM.

4 A FIXED POINT CONSTANT MUST NOT BE LARGER THAN 9999.

5 IN THE FORTRAN LANGUAGE, VARIABLES AND CONSTANTS MAY BE EXPRESSED AS EITHER FIXED OR FLOATING POINT NUMBERS.

6 FLOATING POINT CONSTANTS MAY BE WRITTEN IN TWO FORMS ... WITHOUT EXPONENTS OR WITH EXPONENTS.

7 IN SPECIFYING A FLOATING POINT CONSTANT, YOU MUST ALWAYS SPECIFY THE DECIMAL POINT

8 THE FIRST CHARACTER OF THE NAME FOR A FLOATING POINT VARIABLE MUST BE A NUMERICAL CHARACTER.

9 PARENTHESES MAY BE USED IN A FORTRAN STATEMENT IN ORDER TO SPECIFY THE ORDER OF OPERATIONS.

10 ALL THE VARIABLES AND CONSTANTS IN AN ARITHMETIC EXPRESSION IN FORTRAN MUST BE IN THE SAME MODE.

11 AN OPERATION SYMBOL (EXCEPTING THE EQUALITY SYMBOL) MUST NOT PRECEDE A PLUS OR A MINUS SIGN.

12 THE EQUALITY OPERATION (=) HAS A DIFFERENT MEANING IN THE FORTRAN LANGUAGE THAN IT DOES IN AN ALGEBRAIC EQUATION.

13 A NAME FOR A FLOATING POINT VARIABLE MUST BEGIN WITH EITHER A I, J, K, L, M, OR N.

14 A FIXED POINT CONSTANT ALWAYS HAS A DECIMAL POINT ASSOCIATED WITH IT.

15 A FLOATING POINT CONSTANT ALWAYS HAS A DECIMAL POINT ASSOCIATED WITH IT.

16 ALL FORTRAN STATEMENTS MUST HAVE A STATEMENT NUMBER.

17 THE STATEMENT NUMBERS IN ANY FORTRAN PROGRAM NEED NOT BE IN SEQUENCE.

18 ALL FORTRAN FORMAT STATEMENTS MUST HAVE A STATEMENT NUMBER.

19 ALL ... IF ... STATEMENTS MUST HAVE A STATEMENT NUMBER.

20 THE FORTRAN STATEMENT WHICH FOLLOWS AN ... IF ... STATEMENT MUST HAVE A STATEMENT NUMBER IF IT IS TO BE EXECUTED IN THE PROGRAM.

21 IT IS DESIRED TO CALCULATE THE TRIGONOMETRIC SINE OF A POSITIVE TWO DIGIT NUMBER TO BE PUNCHED INTO A CARD IN COLUMNS 1 AND 2. THE FOLLOWING PROGRAM WILL DO THIS ...

```
     READ 99,INDEX
99   FORMAT(I2)
     SOFX=SIN(INDEX)
     PUNCH 98,SOFX
98   FORMAT(F15.4)
     STOP
```


SAMPLE EXAMINATION QUESTION NUMBER REQUESTS

1
4
6
10
20
15
14
21

Note: Three digit numbers in columns 1, 2 and 3. One question to a card.

COMPLETED EXAMINATION

ENGR SCIENCE 364 QUIZ NO. 1 SEPTEMBER 19, 1964

1 FIXED POINT VARIABLES ARE RESTRICTED TO INTEGRAL VALUES.

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```
      READ 99,INDEX
99    FORMAT(I2)
      SOFX=SIN(INDEX)
      PUNCH 98,SOFX
98    FORMAT(F15.4)
      STOP
```

Note: Header card was made separately and added at time examination was listed.

```
START TF   QUEST&599,CLR
      TFM  COUNT,0,9
      TFM  MOVE&6,QUEST&2
READ  RNCDINPUT
      SF   INPUT
MOVE  TF   QUEST&2,INPUT&2
      AM   MOVE&6,3
      BNLCREAD
      SM   MOVE&6,2
      TD   MOVE&6,RMK,6
      RCTY
      WATYLOAD
      H
READ1 RACDMASTER
      CM   MASTER,20,10
      BE   STRIP
      BNLCCHECK
      BNR  *&24,QUEST
      B    END
RCTY  RCTY
      TNF  ER&16*2-2,QUEST&2
      WATYER
      TR   QUEST,QUEST&3
      BNR  RCTY,QUEST
      H
      B    END
STRIP TNS  MASTER&7*2-2,HEAD
      TFM  COMP&6,QUEST&2
COMP  C    QUEST&2,HEAD
      BE   PUNCH
      AM   COMP&6,1
      BNR  *&36,COMP&6,11
      BNLCREAD1
      B    CHECK
      AM   COMP&6,2
      BNR  COMP,QUEST
      B    END
PUNCH AM   COUNT,1,9
      AM   COMP&6,1
      TF   RIGHT,COMP&6
      SM   COMP&6,3
      TR   COMP&6,RIGHT,611
      TNF  MASTER&7*2-2,COUNT
      WACDBLANK
      WACDMASTER
      BNLC*&24
      B    CHECK
DETL  RACDMASTER
      CM   MASTER,20,10
      BE   BNR
      WACDMASTER
      BNLCDETL
      B    CHECK
CHECK BNR  READ1,QUEST
END   RCTY
```

COMPUTER TECHNOLOGY

```
          WATYSTATE
          H
          B    START
BNR       BNR  STRIP,QUEST
          B    END
          DC   1,0
CLR       DS   599
QUEST     DSS  600
INPUT     DSS  80
MASTERDAS 80
          DC   1,0,MASTER-1
COUNT     DC   3,0
RMK       DC   1,@
HEAD      DC   3,0
BLANK     DAS  80
RIGHT     DC   5,0
STATE     DAC  16,EXAM IS MADE UP@
ER        DAC  33,QUESTION NO.      CANNOT BE FOUND@
LOAD      DAC  26,LOAD MASTER QUESTION DECK@
          DENDSTART

3600072005003600201005004400012002762600059002742500011000002600090002690000
2600095002643100000002002600114002742500000000114900012000000000
2602321017211602564000001600468017243602322005003202322000002001004020046200
2601724023241100468000034700438009001200468000022500460256520010046200522000
3400000001023902835001004800000000003702403005001402403000K0Z0010052200582000
4600714012004701038009004500630017224901050000003400000001020010058200642000
7302799017243902769001003101722017254500630017224800000000020010064200702000
4001050000007202415025681600744017242401724025684600846012002001007020076200
1007440000145008100074M4700558009004901038000001100744000020010076200822000
4500738017224901050000001102564000011100744000012602734007442001008220088200
1200744000033100740027 3M7302415025643902571004003902403004002001008820094200
4700966009004901038000003702403005001402403000K0460109801200Z0010094201002000
3902403004004700966009004901038000004500558017223400000001020010100201062000
3902737001004800000000004900402000004500714017224901050000002001010620112200
0Z                                                                1010112201123 00014
0Z                                                                1010240202403 00015
000Z                                                              1010256202566 00016
000Z                                                              1010256602569 00017
00000Z                                                            1010273002735 00018
M5674154004962005441444500645702                                  1010273602768 00019
N864456263495655005556030000000004341555556630042Z               1010276802818 00020
4500465664554402                                                  1010281802834 00021
N3564144005441626345590058644562634956550044454352 0Z            1010283402886 00022
00000  L60000000500490000 0Z                                      080009600115 00023
3600100005003600172005003600244005003600316005003600000000500                  00024
0000000000001020304000204060800030609021004080216100500151020060218142002    00025
7041128200806142230090817263000000000050607080900121416181518112427202422    00026
8223635203530454036324844553249465360484654627544536271801234567891234562    00027
7890234567890J34567890JK4567890JKL567890JKLM67890JKLMN7890JKLMNO890JKLMNZ     00028
M8000000000049004020P90JKLMNOPQZ    L10038800019M90000000000M90003600000       00029

-   001   FIXED POINT VARIABLES ARE RESTRICTED TO INTEGRAL VALUES.
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```
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99    FORMAT%I2□
      SOFX#SIN%INDEX□
      PUNCH 98,SOFX
98    FORMAT%F15.4□
      STOP
```

001
004
006
010
020
015
014
021

ENGR SCIENCE 364 QUIZ NO. 1 SEPTEMBER 19, 1964

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99    FORMAT%I2¤
      SOFX#SIN%INDEX¤
      PUNCH 98,SOFX
98    FORMAT%F15.4¤
      STOP
```