```
************************************************************************
 -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
************************************************************************
************************************************************************
************************************************************************
```

```
MATMUL      COBOL          FILE NAME/TYPE= /COBOL/MATH/MATMUL.COB
MATMUL      COBOL

MATMUL      COBOL          CREATION DATE/TIME= 20-11-2025 14:10:44
MATMUL      COBOL
MATMUL      COBOL          FILE= 001   PAGES= 0002   LINES= 000104
MATMUL      COBOL
MATMUL      COBOL          SYSTEM= LINUX(6.16.8+KALI-AMD64)
MATMUL      COBOL
MATMUL      COBOL          SYSID= ACID    SYSUSER= ACID
MATMUL      COBOL
MATMUL      COBOL          FORM= SMALL
MATMUL      COBOL
MATMUL      COBOL          CHAR= FONTMONO
MATMUL      COBOL
MATMUL      COBOL          PRT1403 VERSION= 1.5.PRE-RELEASE


          CCCCCCC   OOOOOOO   BBBBBBBB   OOOOOOO   LL
          CCCCCCCCC OOOOOOOOO BBBBBBBBB OOOOOOOOO LL
          CC     CC OO     OO BB     BB OO     OO LL
          CC        OO     OO BB     BB OO     OO LL
          CC        OO     OO BBBBBBBB  OO     OO LL
          CC        OO     OO BBBBBBBB  OO     OO LL
          CC        OO     OO BB     BB OO     OO LL
          CC     CC OO     OO BB     BB OO     OO LL
          CCCCCCCCC OOOOOOOOO BBBBBBBBB OOOOOOOOO LLLLLLLLL
          CCCCCCC   OOOOOOO   BBBBBBBB   OOOOOOO   LLLLLLLLL


          M       M    AAA    TTTTTTTT  M       M UU     UU LL
          MM     MM   AAAAA   TTTTTTTT  MM     MM UU     UU LL
          MMM   MMM  AA   AA     TT     MMM   MMM UU     UU LL
          MMMM MMMM AA     AA    TT     MMMM MMMM UU     UU LL
          MM MMM MM AA     AA    TT     MM MMM MM UU     UU LL
          MM  M  MM AAAAAAAAA    TT     MM  M  MM UU     UU LL
          MM     MM AAAAAAAAA    TT     MM     MM UU     UU LL
          MM     MM AA     AA    TT     MM     MM UU     UU LL
          MM     MM AA     AA    TT     MM        MM UUUUUUUUU LLLLLLLLL
          MM     MM AA     AA    TT     MM        MM  UUUUUUU  LLLLLLLLL


                   00000       00000        1
                  0000000     0000000       11
                  00    00  00       00     111
                  00    00  00       00     11
                  00    00  00       00     11
                  00    00  00       00     11
                  00    00  00       00     11
                  00    00  00       00     11
                   0000000     0000000    111111
                    00000       00000     111111
```

```
************************************************************************
************************************************************************
************************************************************************
```

```
000001              IDENTIFICATION DIVISION.
000002              PROGRAM-ID. MatrixCalculation.
000003
000004              ENVIRONMENT DIVISION.
000005              DATA DIVISION.
000006
000007              WORKING-STORAGE SECTION.
000008
000009              01  M-SIZE          PIC 9(4) COMP VALUE 400.
000010
000011              01  RESULT1         PIC S9(14) COMP VALUE 0.
000012              01  RESULT2         PIC S9(14) COMP VALUE 0.
000013
000014              01  TIME1           COMP-2 VALUE 0.
000015              01  TIME2           COMP-2 VALUE 0.
000016
000017              01  M1.
000018                  05  M1-ROW OCCURS 400 TIMES.
000019                      10  M1-ELEMENTS OCCURS 400 TIMES PIC S9(10) COMP.
000020              01  M2.
000021                  05  M2-ROW OCCURS 400 TIMES.
000022                      10  M2-ELEMENTS OCCURS 400 TIMES PIC S9(10) COMP.
000023              01  M3.
000024                  05  M3-ROW OCCURS 400 TIMES.
000025                      10  M3-ELEMENTS OCCURS 400 TIMES PIC S9(10) COMP.
000026
000027              01  I               PIC S9(10) COMP.
000028              01  J               PIC S9(10) COMP.
000029              01  K               PIC S9(10) COMP.
000030
000031              01  START-TIME      PIC S9(10) COMP.
000032              01  END-TIME        PIC S9(10) COMP.
000033
000034              01  TEMP            PIC S9(10) COMP.
000035
000036              01  RESULT1_TXT     PIC 9(14).
000037              01  RESULT2_TXT     PIC 9(14).
000038              01  TIME1_TXT       PIC 9(3).9(6).
000039              01  TIME2_TXT       PIC 9(3).9(6).
000040
000041              PROCEDURE DIVISION.
000042
000043          * -------------------------------------------------
000044
000045              ACCEPT START-TIME FROM TIME.
000046
000047              MOVE 0 TO RESULT1.
000048
000049              PERFORM VARYING I FROM 1 BY 1 UNTIL 100 < I
000050                  PERFORM VARYING J FROM 1 BY 1 UNTIL 1000000 < J
000051                      ADD J TO RESULT1
000052                  END-PERFORM
000053              END-PERFORM.
000054
000055              ACCEPT END-TIME FROM TIME.
000056              COMPUTE TIME1 = (END-TIME - START-TIME) / 100.
000057
000058          * -------------------------------------------------
000059
000060              ACCEPT START-TIME FROM TIME.
```

```
000061
000062               PERFORM VARYING I FROM 1 BY 1 UNTIL M-SIZE < I
000063                  PERFORM VARYING J FROM 1 BY 1 UNTIL M-SIZE < J
000064                     ADD I TO J GIVING M1-ELEMENTS(I, J)
000065                     ADD I TO J GIVING M2-ELEMENTS(I, J)
000066                  END-PERFORM
000067               END-PERFORM.
000068
000069               PERFORM VARYING I FROM 1 BY 1 UNTIL M-SIZE < I
000070                  PERFORM VARYING J FROM 1 BY 1 UNTIL M-SIZE < J
000071                     MOVE 0 TO M3-ELEMENTS(I, J)
000072                     PERFORM VARYING K FROM 1 BY 1 UNTIL M-SIZE < K
000073                        MULTIPLY M1-ELEMENTS(I, K) BY M2-ELEMENTS(K, J)
000074                           GIVING TEMP
000075                        ADD TEMP TO M3-ELEMENTS(I, J)
000076                     END-PERFORM
000077                  END-PERFORM
000078               END-PERFORM.
000079
000080               MOVE 0 TO RESULT2.
000081
000082               PERFORM VARYING I FROM 1 BY 1 UNTIL M-SIZE < I
000083                  PERFORM VARYING J FROM 1 BY 1 UNTIL M-SIZE < J
000084                     ADD M3-ELEMENTS(I, J) TO RESULT2
000085                  END-PERFORM
000086               END-PERFORM.
000087
000088               ACCEPT END-TIME FROM TIME.
000089               COMPUTE TIME2 = (END-TIME - START-TIME) / 100.
000090
000091          * ----------------------------------------------------
000092
000093               MOVE RESULT1 TO RESULT1_TXT
000094               MOVE RESULT2 TO RESULT2_TXT
000095               MOVE TIME1   TO TIME1_TXT
000096               MOVE TIME2   TO TIME2_TXT
000097
000098               DISPLAY 'COBOL   : Result= ' RESULT1_TXT
000099                       ', Time= ' TIME1_TXT ' sec'
000100                       ', Result= ' RESULT2_TXT
000101                       ', Time= ' TIME2_TXT ' sec'.
000102
000103          STOP RUN.
000104
```