Module 4 answers by User35 (Othman Emara)

Checkpoint - Defining Variables

```
7890|1234567890123456789012345678901234567890123456789012345
-------------------------------------------------
 01 HOSP-BED.
      10 BED-ID                     PIC X(14)
      10 ROOM-ID                    PIC X(8).
      10 COST                       PIC 9(6).
      10 MEDICATION.
         20 MED-NUMBER              PIC X(8).
         20 MED-NAME                PIC X(40).
         20 MED-PRICE               PIC S9(7)V999.
      10 WARD-ID                    PIC X(4).
      10 SPECIAL-CHARGES            PIC S9(7)V9(3).
      10 FILLER                     PIC X(30).
 77 REC-KTR                         PIC 99.
```

- How **many** variables are declared in total?
- How many digits are to the left and right of the implied decimal place in **SPECIAL-CHARGES**?
- Why is **HOSP-BED** declared in the A Margin?
- Why is **MED-NAME** declared in the B Margin?
- How many **Group** fields are declared
- What is the data type of **MED-PRICE**?
- What is the **max algebraic value** of **COST**?
- What is the **total length** of the **MEDICATION** group field?
- How many **signed numeric** fields are there in **HOSP-BED**?
- How many bytes can **REC-KTR** contain?
- How many bytes can **MED-NAME** contain?
- What is the difference between the PIC clauses of **MED-PRICE** and **SPECIAL-CHARGES**?

• How y many variables are declared in total?   9 this include all fields with Pic clause (except FILLER) .

• How many digits are to the left and right of the implied decimal place in SPECIAL- CHARGES?

 7 to left with 3 decimal places

• Why is HOSP- - BED declared in the A Margin?   01 and 77 data items must be declared in the A magin .

• Why is MED- NAME declared in the B Margin?   It's level number (20) is other than 01 / 66/77/88 so it's place should be B margin .

• How many Group fields are declared ?   two (HOSP-BED & Medication - those with no pic clause)

• What is the data type of MED- PRICE? Signed numeric

• What is the max algebraic value of COST? 999999

• What is the total length of the MEDICATION group field?

 8 + 40 + 10 = 58 (is there extra byte for the sign of med-price?)

• How many signed numeric fields are there in HOSP- BED?   two

• How many bytes can REC-KTR contain? two

• How many bytes can MED-NAME contain? 40

• What is the difference between the PIC clauses of MED-E PRICE and SPECIAL-charges? No difference.

Checkpoint -
MOVE Statements

From the screen capture ➔

  Given the following WORKING-STORAGE definitions

- Analyze each MOVE statement in the PROCEDURE DIVISION
- Determine what value ends up n the receiving field.
- Consider:
  - PIC X left-to-right MOVE execution
  - PIC 9 Algebraic assignment aligned on an implied decimal point - if one exists in the field definitions
  - Truncation
  - Loss of positive/negative sign in the receiving field
- After you've finished your answers:
  - Run: MOVXMPLS.JCL
    - Note that you will receive a O4 return code...why?
  - Run: MOVXMPLR.JCL
  - From the Job's SYSOUT file verify your expectations

```
WORKING-STORAGE SECTION.
01  NEG-1               PIC S9 VALUE -1.
01  EXP1                PIC 999 VALUE 5.
01  NAME-AND-AGE.
    05  FILLER          PIC X(12) VALUE 'MY NAME IS: '.
    05  FULLNAME.
        10  WS-FNAME    PIC X(4).
        10  WS-LNAME    PIC X(6).
    05  VITALS.
        10  FILLER      PIC X(16) VALUE 'AND MY AGE IS: '.
        10  WS-AGE      PIC 9(03) VALUE ZEROS.
77  NAME-AGE-OUT        PIC X(8).
77  FLD-IN              PIC X(20) VALUE 'I WILL BE BACK'.
01  NUMERIC-VARIABLES.
    05  FLD1            PIC 99.
    05  FLD1-SIGNED     PIC S99.
    05  RESULT-FLD1     PIC 9(9)V9(9).
    05  PRINCIPAL       PIC 9(9)    VALUE 2000000.
    05  INT-RATE        PIC V99     VALUE .01.
    05  INT-RATE-DEC    PIC 9(5)V99 VALUE 10.01.
PROCEDURE DIVISION.
    MOVE NEG-1          TO EXP1.
    MOVE EXP1           TO RESULT-FLD1.
    MOVE VITALS         TO FLD-IN.
    MOVE NAME-AND-AGE   TO NAME-AGE-OUT.
    MOVE INT-RATE       TO PRINCIPAL.
    MOVE INT-RATE-DEC   TO WS-AGE.
    MOVE FLD-IN         TO FULLNAME.
    MOVE NEG-1          TO FLD1-SIGNED.
```

```
IDENTIFICATION DIVISION.
PROGRAM-ID. MOVXMPLN.
DATA DIVISION.
WORKING-STORAGE SECTION.
01  NEG-1           PIC S9 VALUE -1.
01  EXP1            PIC 999 VALUE 5.
77  WS-AGE      PIC 9(03) VALUE ZEROS.
01  NUMERIC-VARIABLES.
   05 FLD1          PIC 99.
   05 FLD1-SIGNED      PIC S99.
   05 RESULT-FLD1      PIC 9(9)V9(9).
   05 PRINCIPAL        PIC 9(9)    VALUE 2000000.
   05 INT-RATE         PIC V99     VALUE .01.
   05 INT-RATE-DEC     PIC 9(5)V99 VALUE 10.01.
   05 FLD2             PIC 9(3)V99 VALUE 23.6.
   05 FLD2-OUT         PIC $$9.99.
   05 FLD3             PIC 9(5)V99 VALUE 0002131.
   05 FLD3-OUT         PIC $ZZ,ZZ9.99.
   05 FLD4             PIC 9(6)V99 VALUE 876543.21.
   05 FLD4-OUT         PIC $**,***.99.
   05 FLD5             PIC 9(7)V99 VALUE 234.56.
   05 FLD5-OUT         PIC $$9,999.9.
   05 FLD6             PIC S9(3)V99 VALUE -123.4.
   05 FLD6A-OUT        PIC -*,***.99.
   05 FLD6B-OUT        PIC *,***.99-.
   05 FLD7             PIC S9999 VALUE -1234.
   05 FLD7-OUT         PIC -ZZZ,ZZ9.
   05 FLD8             PIC S9(5)V99 VALUE 0000.
   05 FLD8-OUT         PIC $9,999.99 BLANK WHEN ZERO.
   05 FLD9             PIC  9999.
   05 FLD9-OUT         PIC -Z,ZZ9.
*
PROCEDURE DIVISION.
   PERFORM MOVE-STATEMENTS.
   PERFORM DISPLAY-RESULTS.
```

```
        GOBACK.
    *
    MOVE-STATEMENTS.
        MOVE NEG-1 TO EXP1.  (Sign lose & EXP1 is  now Positive!!)
        MOVE EXP1       TO RESULT-FLD1.
MOVE INT-RATE  TO PRINCIPAL. (mis match between the two fields  PRINCIPAL have no decimal positions  )
Compiler also detected the mismatch.
42  IGYPA3087-W  "INT-RATE (NUMERIC NON-INTEGER)" and "PRINCIPAL (NUMERIC INTEGER)" had no
digit positions in common.  The receiver will be set to zero at execution time.
Messages   Total   Informational   Warning   Error   Severe   Terminating
Printed:     1                1

        MOVE INT-RATE-DEC    TO WS-AGE. (mis match / data loss)
        MOVE NEG-1         TO FLD1-SIGNED.
        MOVE FLD2        TO FLD2-OUT.
        MOVE FLD3        TO FLD3-OUT.
        MOVE FLD4        TO FLD4-OUT.
        MOVE FLD5        TO FLD5-OUT.
        MOVE FLD6         TO FLD6A-OUT, FLD6B-OUT.
        MOVE -1234.99     TO FLD7.
        MOVE FLD7        TO FLD7-OUT.
        MOVE FLD8        TO FLD8-OUT.
        MOVE -1234       TO FLD9.
        MOVE FLD9         TO FLD9-OUT.
    * Note that the - (minus sign) in FLD9-OUT consumes a blank

    DISPLAY-RESULTS.
        DISPLAY "EXP1 " EXP1.
        DISPLAY "RESULT-FLD1 " RESULT-FLD1.
        DISPLAY "PRINCIPAL " PRINCIPAL.
        DISPLAY "WS-AGE " WS-AGE.
        DISPLAY "FLD1-SIGNED " FLD1-SIGNED.
        DISPLAY "FLD2-OUT " FLD2-OUT.
        DISPLAY "FLD3-OUT " FLD3-OUT.
        DISPLAY "FLD4-OUT " FLD4-OUT.
        DISPLAY "FLD5-OUT " FLD5-OUT.
        DISPLAY "FLD6A-OUT " FLD6A-OUT.
        DISPLAY "FLD6B-OUT " FLD6B-OUT.
        DISPLAY "FLD7-OUT " FLD7-OUT.
        DISPLAY "FLD8-OUT " FLD8-OUT "END OF FLD8-OUT".
        DISPLAY "END".
```

The resuls as
EXP1 001
RESULT-FLD1 000000001000000000
PRINCIPAL 000000000
WS-AGE 010
FLD1-SIGNED =>0J
FLD2-OUT 02360=>$23.60
FLD3-OUT 0213100=>$ 2,131.00
FLD4-OUT 87654321=>$76,543.21
FLD5-OUT 000023456=> $0,234.5
FLD6A-OUT 1234}=>-**123.40
FLD6B-OUT 1234}=>**123.40-
FLD7-OUT 123M=>- 1,234
FLD8-OUT 000000{=>   (blank when zero !!)   END OF FLD8-OUT

Maintenance Workshop 4.1

1. Open the COBOL program **MILLARD** and study the code. Analyze and predict the output.

2. Compile/Link and Run (COBOLCLG) MILLARD - and from the Job's **SYSOUT** file, review the results and reconcile them with what you expected.

3. Add Paragraphs and **PERFORM** statements to MILLARD: ➔
   - The only changes you need to make are in the PROCEDURE DIVISION

4. Again Compile/Link and Run MILLARD - and validate that the output your new version produces with the new PERFORMs and Paragraphs is the same as the previous version.

5. Fun Fact: Millard Fillmore had no vice president. So make his wife (Abigail) the VP. Modify the code in the program as follows:
   - Add a new **77-level** variable named: **VP**
   - Update the **ASSIGNMENT-PARAGRAPH** for Abigail the VP. Add a new:
     - MOVE statement
     - DISPLAY statement

```cobol
PROCEDURE DIVISION.
    PERFORM ASSIGNMENT-PARAGRAPH.
    PERFORM CONDITIONAL-SELLECTION.
    PERFORM DISPLAY-DATA-PARAGRAPH.
    GOBACK.
ASSIGNMENT-PARAGRAPH.
****** COBOL MOVE statements - Literals assigned to
    MOVE "Millard Fillmore" TO NAME.
    MOVE "61 Brigham Tavern Lane, Duxbury MA" TO AD
    MOVE "Week of: February 24th, 2020" TO DATE-WS.
    MOVE 19 TO HOURS.
    MOVE 23.50 TO RATE.
    MOVE "PRESIDENT" TO JOB.
    MOVE "Abigail" TO VP.
CONDITIONAL-SELLECTION.
****** Conditional expressions
    IF RATE > 18
        MOVE .25 TO BONUS-RATE
    ELSE
        MOVE ZERO TO BONUS-RATE.
    IF JOB = "PRESIDENT"
        MOVE .33 TO BONUS-RATE.
    MOVE "Week of: February 24th, 2020" TO DATE-WS.
DISPLAY-DATA-PARAGRAPH.
****** COBOL DISPLAY statements - Literals assigned
    COMPUTE GROSS-PAY =(HOURS * RATE) *(1 + BONUS-F
    DISPLAY "Name: " NAME.
```

IMS Explorer Task Launcher   MILLARD.cbl   COBUCLG.jcl   USER35.USER35G.JOB06955.D0000110.?.spool

```
----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
Name: Millard Fillmore
VP: Abigail
Job: PRESIDENT
Address: 61 Brigham Tavern Lane, Duxbury MA
Today's Date: Week of: February 24th, 2020
Hours Worked: 019
Hourly Rate: 02350
Bonus-Rate: 33
Gross Pay: 00059384
VP: Abigail
Millard Fillmore       61 Brigham Tavern Lane, Duxbury MA
```

Production Support Workshop 4.2

There seems to be a logic bug in the **FAHR2CEL** program ➜
…which calculates Celsius temperatures based on Fahrenheit temperatures.
Open the program and study it for a few minutes to understand how it works.

```
*-A-1-B--+----2----+----3----+----4----+----5--
 IDENTIFICATION DIVISION.
 PROGRAM-ID. FAHR2CEL.
 DATA DIVISION.
 WORKING-STORAGE SECTION.
 01  TEMPS-VARS.
     05 WS-FAHRENHEIT     PIC 999.
     05 WS-CELSIUS        PIC 999.
 PROCEDURE DIVISION.
```

Need to enlarge the celluses by one digit to avoid truncation .

```
IDENTIFICATION DIVISION.
PROGRAM-ID. FAHR2CEL.
DATA DIVISION.
WORKING-STORAGE SECTION.
01   TEMPS-VARS.
     05 WS-FAHRENHEIT       PIC 999.
     05 WS-CELSIUS          PIC 999V99.
     05 WS-CELSIUS-OUT      PIC 999.99.
PROCEDURE DIVISION.
     MOVE 300 TO WS-FAHRENHEIT.
     COMPUTE WS-CELSIUS ROUNDED =
            ( (WS-FAHRENHEIT - 32) * 5 ) / 9.
     DISPLAY "Fahrenheit: " WS-FAHRENHEIT.
     MOVE WS-CELSIUS TO WS-CELSIUS-OUT.
     DISPLAY "Celsius: " WS-CELSIUS-OUT.
     GOBACK.
```

```
----+----1----+----2----+
Fahrenheit: 300
Celsius: 148.89
```

Production Support Workshop 4.4

Compile, Link and Debug **PAYROL0B** ➜

Answer

```
----+----1----+----2----+----3----+----4----+----5----+----6----+----7--|-+----8
REPORT-DATE:2020/06/28
FULL-NAME:Millard Fillmore
ADDRESS: Added City        -000061 BRIGHAM TAVERN LANE           NC90210-1111
PAY-STUB:F055000000 Ponus Is 10
```

COBOL Structure Compare

▲ PROGRAM: PAYROL0B

COBOL Source Compare ▼

Local: PAYROL0B.cbl	Local history: PAYROL0B.cbl Jun 28, 2020, 7:15:22 AM
IDENTIFICATION DIVISION.	IDENTIFICATION DIVISION.
PROGRAM-ID. PAYROL0B.	PROGRAM-ID. PAYROL0B.
ENVIRONMENT DIVISION.	ENVIRONMENT DIVISION.
DATA DIVISION.	DATA DIVISION.
WORKING-STORAGE SECTION.	WORKING-STORAGE SECTION.
77 WS-SPACE PIC X(1) VALUE SPACE.	77 WS-SPACE PIC X(1) VALUE SPACE.
01 PAYSTUB-V20.	01 PAYSTUB-V20.
05 REPORT-DATE PIC XXXX/XX/XX.	05 REPORT-DATE PIC XX/XX/XXXX.
05 FULLNAME.	05 FULLNAME.
10 WS-FNAME PIC X(8).	10 WS-FNAME PIC X(4).
10 WS-LNAME PIC X(8).	10 WS-LNAME PIC X(6).
05 WS-ADDRESS.	05 WS-ADDRESS.
10 WS-CITY PIC X(20).	10 WS-CITY PIC X(20).
10 FILLER PIC X(01) VALUE '-'.	10 WS-STREET.
10 WS-STREET.	15 WS-STREET-NBR PIC 9(06).
15 WS-STREET-NBR PIC 9(06).	15 WS-STREET-NAME PIC X(10).
15 FILLER PIC X(01) VALUE ' '.	10 WS-STATE PIC X(02).
15 WS-STREET-NAME PIC X(30).	10 ZIP.
10 WS-STATE PIC X(02).	15 WS-ZIP-FIRST-5 PIC X(05).
10 ZIP.	15 FILLER PIC X(01) VALUE '-'.
15 WS-ZIP-FIRST-5 PIC X(05).	15 WS-ZIP-PLUS-4 PIC X(04).
15 FILLER PIC X(01) VALUE '-'.	05 WS-PAYROLL.
15 WS-ZIP-PLUS-4 PIC X(04).	10 WS-EMP-TYPE PIC X(01).
05 WS-PAYROLL.	88 FULL-TIME VALUE 'F'.
10 WS-EMP-TYPE PIC X(01).	88 PART-TIME VALUE 'F'.

COBOL Structure Compare

▲ PROGRAM: PAYROL0B

COBOL Source Compare ▼

Local: PAYROL0B.cbl	Local history: PAYROL0B.cbl Jun 28, 2020, 7:15:22 AM
10 WS-EMP-TYPE PIC X(01).	15 WS-ZIP-PLUS-4 PIC X(04).
88 FULL-TIME VALUE 'F'.	05 WS-PAYROLL.
88 PART-TIME VALUE 'P'.	10 WS-EMP-TYPE PIC X(01).
10 WS-FULL-TIME.	88 FULL-TIME VALUE 'F'.
15 WS-FULL-TIME-SALARY PIC 9(7)V99.	88 PART-TIME VALUE 'F'.
15 FILLER PIC X(10) VALUE	10 WS-FULL-TIME.
' Ponus Is '.	15 WS-FULL-TIME-SALARY PIC 9(3)V99.
15 WS-FULL-TIME-BONUS PIC V99.	15 WS-FULL-TIME-BONUS PIC 99.
10 WS-HOURLY.	10 WS-HOURLY.
* 15 FILLER PIC X(10) VALUE 'Hours are '.	15 WS-HOURS-WORKED PIC 9(02).
15 WS-HOURS-WORKED PIC 9(02).	15 WS-RATE PIC 9(3).
15 WS-RATE PIC 9(3).	15 WS-OT-COMP PIC V99.
15 WS-OT-COMP PIC V99.	15 WS-40-DIFF PIC V99.
15 WS-40-DIFF PIC V99.	15 WS-PART-TIME-SALARY PIC 9(6)V99.
15 WS-PART-TIME-SALARY PIC 9(6)V99.	*
*	PROCEDURE DIVISION.
PROCEDURE DIVISION.	PERFORM ASSIGNMENT-PARAGRAPH.
PERFORM ASSIGNMENT-PARAGRAPH.	PERFORM DISPLAY-DATA-PARAGRAPH.
PERFORM CONDITIONAL-SELECTION.	GOBACK.
PERFORM DISPLAY-DATA-PARAGRAPH.	ASSIGNMENT-PARAGRAPH.
GOBACK.	MOVE 'F' TO WS-EMP-TYPE.
ASSIGNMENT-PARAGRAPH.	MOVE "Millard Fillmore" TO FULLNAME.
MOVE 'F' TO WS-EMP-TYPE.	MOVE 61 TO WS-STREET-NBR.
MOVE "Millard " TO WS-FNAME.	MOVE 'BRIGHAM TAVERN LANE' TO WS-STREET-NAME.
MOVE "Fillmore" TO WS-LNAME.	MOVE FUNCTION CURRENT-DATE TO REPORT-DATE.

COBOL Structure Compare

▲ CBL PROGRAM: PAYROL0B

COBOL Source Compare ▼

Local: PAYROL0B.cbl | Local history: PAYROL0B.cbl Jun 28, 2020, 7:15:22 AM

```
            MOVE "Millard " TO WS-FNAME.          ASSIGNMENT-PARAGRAPH.
            MOVE "Fillmore" TO WS-LNAME.              MOVE 'F' TO WS-EMP-TYPE.
            MOVE "Added City" TO WS-CITY.             MOVE "Millard Fillmore" TO FULLNAME.
            MOVE 61 TO WS-STREET-NBR.                 MOVE 61 TO WS-STREET-NBR.
            MOVE 'BRIGHAM TAVERN LANE' TO WS-STREET-NAME.    MOVE 'BRIGHAM TAVERN LANE' TO WS-STREET-NAME.
            MOVE FUNCTION CURRENT-DATE TO REPORT-DATE.      MOVE FUNCTION CURRENT-DATE TO REPORT-DATE.
            MOVE 'NC' TO WS-STATE.                    MOVE 'NC' TO WS-STATE.
            MOVE '90210' TO WS-ZIP-FIRST-5.          MOVE '90210' TO WS-ZIP-FIRST-5.
            MOVE '1111' TO WS-ZIP-PLUS-4.            MOVE '1111' TO WS-ZIP-PLUS-4.
        CONDITIONAL-SELECTION.                       PERFORM CONDITIONAL-SELECTION.
            IF FULL-TIME                         CONDITIONAL-SELECTION.
                PERFORM FULL-TIME-PARA                IF FULL-TIME
            ELSE                                         PERFORM FULL-TIME-PARA
                IF PART-TIME                         ELSE IF PART-TIME
                    PERFORM PART-TIME-PARA                PERFORM PART-TIME-PARA
                ELSE                                 ELSE
                    DISPLAY 'BAD DATA'                   DISPLAY 'BAD DATA'
                END-IF.                              END-IF.
        FULL-TIME-PARA.                          FULL-TIME-PARA.
            MOVE 500000 TO WS-FULL-TIME-SALARY.      MOVE 500000 TO WS-FULL-TIME-SALARY.
            MOVE .10 TO WS-FULL-TIME-BONUS.          MOVE .10    TO WS-FULL-TIME-BONUS.
            COMPUTE WS-FULL-TIME-SALARY =            COMPUTE WS-FULL-TIME-SALARY =
                WS-FULL-TIME-SALARY +                    WS-FULL-TIME-SALARY + (WS-FULL-TIME-BONUS).
                (WS-FULL-TIME-BONUS * WS-FULL-TIME-SALARY).  PART-TIME-PARA.
        PART-TIME-PARA.                              MOVE 45 TO WS-HOURS-WORKED.
```

COBOL Structure Compare

▲ CBL PROGRAM: PAYROL0B

COBOL Source Compare ▼

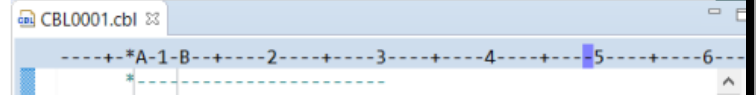Local: PAYROL0B.cbl | Local history: PAYROL0B.cbl Jun 28, 2020, 7:15:22 AM

```
                PERFORM PART-TIME-PARA                    PERFORM FULL-TIME-PARA
            ELSE                                     ELSE IF PART-TIME
                DISPLAY 'BAD DATA'                       PERFORM PART-TIME-PARA
            END-IF.                                  ELSE
        FULL-TIME-PARA.                                  DISPLAY 'BAD DATA'
            MOVE 500000 TO WS-FULL-TIME-SALARY.      END-IF.
            MOVE .10 TO WS-FULL-TIME-BONUS.      FULL-TIME-PARA.
            COMPUTE WS-FULL-TIME-SALARY =            MOVE 500000 TO WS-FULL-TIME-SALARY.
                WS-FULL-TIME-SALARY +                MOVE .10    TO WS-FULL-TIME-BONUS.
                (WS-FULL-TIME-BONUS * WS-FULL-TIME-SALARY).  COMPUTE WS-FULL-TIME-SALARY =
        PART-TIME-PARA.                                  WS-FULL-TIME-SALARY + (WS-FULL-TIME-BONUS).
            MOVE 45 TO WS-HOURS-WORKED.          PART-TIME-PARA.
            MOVE 15 TO WS-RATE.                      MOVE 45  TO WS-HOURS-WORKED.
            MOVE .2 TO WS-OT-COMP.                   MOVE 15  TO WS-RATE.
            COMPUTE WS-40-DIFF = WS-HOURS-WORKED - 40.   MOVE .2  TO WS-OT-COMP.
            COMPUTE WS-PART-TIME-SALARY =            COMPUTE WS-40-DIFF = WS-HOURS-WORKED - 40.
                (WS-HOURS-WORKED * WS-RATE).         COMPUTE WS-PART-TIME-SALARY =
            COMPUTE WS-PART-TIME-SALARY = WS-PART-TIME-SALARY +   (WS-HOURS-WORKED * WS-RATE).
                WS-40-DIFF * WS-RATE * WS-OT-COMP.   COMPUTE WS-PART-TIME-SALARY = WS-PART-TIME-SALARY +
        DISPLAY-DATA-PARAGRAPH.                          WS-40-DIFF * WS-RATE * WS-OT-COMP.
            DISPLAY "REPORT-DATE:" REPORT-DATE.  DISPLAY-DATA-PARAGRAPH.
            DISPLAY "FULL-NAME:" FULLNAME.           DISPLAY "FULL-NAME:" FULLNAME.
            DISPLAY "ADDRESS: " WS-ADDRESS.          DISPLAY "ADDRESS: " WS-ADDRESS.
            DISPLAY "PAY-STUB:" WS-PAYROLL.          DISPLAY "PAY-STUB:" WS-PAYROLL.
```

Module 4.5 - **Optional Maintenance Assignment**

COBOL maintenance assignments are 90% reading, discovery, understanding and 10% coding.

Open **CBL0001***** and read the code starting from the PROCEDURE DIVISION

```
cbl CBL0001.cbl ⊠
----+-*A-1-B--+----2----+----3----+----4----+--*5----+--6--
     *-----------------------------
```

Answer : Sure , understand and also modified (by adding columns heading)

```
IMS Explorer Task Launcher   JCL COBUCLD.jcl   cbl CBL0001.cbl   USER35D.JOB07248.spool   USER35.USER35D.JOB07248.D0000106.?.spool ⊠
        1         2         3         4         5        |6         7   |   8
ACCT-NO ACCT-LIMIT    ACCT-BALANCE LAST-NAME        FIRST-NAME      COMMENTS
17891797  $10,000.00      $188.74WASHINGTON         George          longed to retire to his fields at Mount Vernon
17971801  $10,000.00    $3,188.33ADAMS              John            retired to his farm in Quincy
18011809  $10,000.00    $7,008.13JEFFERSON          Thomas          retired to Monticello
18091817  $10,000.00      $503.13MADISON            James           retirement at Montpelier
18171825  $10,000.00   $31,313.13MONROE             James           Russia must not encroach southward
18251829  $10,000.00   $31,250.33ADAMS II           John Quincy     collapsed on the floor of the House from a stroke
18291837  $10,000.00    $3,318.30JACKSON            Andrew          that to the victors belong the spoils
18371841  $10,000.00      $325.00VAN BUREN          Martin          independent treasury system
18411841  $10,000.00      $313.50HARRISON           William Henry   ornate with classical allusions
18411845  $10,000.00      $121.65TYLER              John            opposed the Missouri Compromise
18451849  $10,000.00      $314.05POLK               James           health undermined from hard work
18491850  $10,000.00      $828.20TAYLOR             Zachary         acted at times as though he were above parties
18501853  $10,000.00      $373.10FILLMORE           Millard         signed the Fugitive Slave Act
18531857  $10,000.00      $315.07PIERCE             Franklin        he tried to persuade Spain to sell Cuba
18571861  $10,000.00        $7.90BUCHANAN           James           widening rift over slavery
18611865 $100,000.00      $313.13LINCOLN            Abraham         new birth of freedom
18651869 $100,000.00      $603.14JOHNSON            Andrew          freedmen were beginning to appear
18691877 $100,000.00   $32,318.30GRANT              Ulysses S.      he brought part of his Army staff to White House
18771881 $100,000.00    $5,860.55HAYES              Rutherford B.   appointments must be made on merit
18811881 $100,000.00    $5,600.27GARFIELD           James           dark horse nominee
18811885 $100,000.00   $31,070.23ARTHUR             Chester         suffering from a fatal kidney disease
18851889 $100,000.00   $99,313.10CLEVELAND          Grover          blunt treatment of the railroad strikers
18891893 $100,000.00    $5,003.13HARRISON           Benjamin        tariff was removed from imported raw sugar
18931897 $100,000.00   $40,050.24CLEVELAND II       Grover          faced an acute depression
18971901 $100,000.00   $31,950.13MCKINLEY           William         quietly stood for "the full dinner pail."
19011909$1,000,000.00 $781,319.43ROOSEVELT          Theodore        high-pitched voice, jutting jaw, and pounding fist
19091913$1,000,000.00   $40,199.73TAFT              William H.      his administration initiated 80 antitrust suits

Not connected                                    Read-Only    Insert    1 : 55    <No Current Work>
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