CST8283 BUSINESS PROGRAMMING PROJECT 2

Investment Portfolio Management Program

Submitted by:

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Submission Date: 19/07/2024

1. Introduction

This document contains the Investment Portfolio Management Program developed as part of the CST8283 Business Programming Project 2.

The project involves reading investment records and stock symbol records from external files, producing an investment report, and maintaining an audit trail of the process.

The program reads input data from PORTFOLIO.txt and STOCKS.txt, processes the records, and generates an output file REPORT.txt, detailing the investment report with necessary calculations.

This document includes the program code, function chart, flowcharts, and sample output report.

2. Program Code

Below is the COBOL program code used for this project. The code is also included in the submission as .txt and .cbl files.

```
*>****************************************************************
*> Authors: Aditya Hirpara & Meet Maheta
*> Date: 12/07/2024
*> Purpose: Project 2
*> Tectonics: cobc
*>****************************************************************
IDENTIFICATION DIVISION.
PROGRAM-ID. InvestmentReport.

ENVIRONMENT DIVISION.
INPUT-OUTPUT SECTION.
FILE-CONTROL.
SELECT STOCKS-FILE ASSIGN TO 'STOCKS.txt'
ORGANIZATION IS LINE SEQUENTIAL. *> Assign STOCKS-FILE to 'STOCKS.txt' with
line sequential organization
SELECT PORTFOLIO-FILE ASSIGN TO 'PORTFOLIO.txt'
ORGANIZATION IS LINE SEQUENTIAL. *> Assign PORTFOLIO-FILE to 'PORTFOLIO.txt'
with line sequential organization
SELECT REPORT-FILE ASSIGN TO 'REPORT.txt'
ORGANIZATION IS LINE SEQUENTIAL. *> Assign REPORT-FILE to 'REPORT.txt' with
line sequential organization

DATA DIVISION.
FILE SECTION.
FD STOCKS-FILE.
01 STOCKS-RECORD.
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05 STOCK-SYMBOL PIC X(7). *> Stock symbol, 7 characters
05 STOCK-NAME PIC X(25). *> Stock name, 25 characters
05 CLOSING-PRICE PIC 9(4)V99. *> Closing price, 4 digits and 2 decimal places

FD PORTFOLIO-FILE.
01 PORTFOLIO-RECORD.
05 PORT-STOCK-SYMBOL PIC X(7). *> Portfolio stock symbol, 7 characters
05 NUMBER-OF-SHARES PIC 9(5). *> Number of shares, 5 digits
05 AVG-COST PIC 9(4)V99. *> Average cost, 4 digits and 2 decimal places

FD REPORT-FILE.
01 REPORT-RECORD.
05 REPORT-LINE PIC X(132). *> Report line, 132 characters

WORKING-STORAGE SECTION.
01 WS-STOCK-TABLE.
05 WS-STOCK-ENTRY OCCURS 20 TIMES. *> Stock table with 20 entries
10 WS-STOCK-SYMBOL PIC X(7). *> Stock symbol
10 WS-STOCK-NAME PIC X(25). *> Stock name
10 WS-CLOSING-PRICE PIC 9(4)V99. *> Closing price

01 WS-INDEX PIC 9(2) VALUE 1. *> Index for stock table
01 WS-MATCH-INDEX PIC 9(2) VALUE 1. *> Index for matching stock
01 EOF-PORTFOLIO PIC X VALUE 'N'. *> End-of-file flag for portfolio file
01 WS-COUNTERS.
05 WS-READ-COUNT PIC 9(5) VALUE 0. *> Counter for read records
05 WS-WRITE-COUNT PIC 9(5) VALUE 0. *> Counter for written records

01 ADJUSTED-COST-BASE PIC 9(9)V99. *> Adjusted cost base
01 MARKET-VALUE PIC 9(9)V99. *> Market value
01 GAIN-LOSS PIC S9(9)V99. *> Gain or loss
```

```
01 WS-REPORT-STOCK-NAME PIC X(25). *> Reported stock name

01 WS-REPORT-NUM-SHARES PIC Z(5). *> Reported number of shares

01 WS-REPORT-AVG-COST PIC $$$$,$$9.99. *> Reported average cost

01 WS-REPORT-CLOSING-PRICE PIC $$$$,$$9.99. *> Reported closing price

01 WS-REPORT-ADJUSTED-COST PIC $$$,$$,$$9.99. *> Reported adjusted cost base

01 WS-REPORT-MARKET-VALUE PIC $$$,$$,$$9.99. *> Reported market value

01 WS-REPORT-GAIN-LOSS PIC $$$,$$,$$9.99. *> Reported gain or loss


01 WS-REPORT-SUMMARY PIC X(132). *> Report summary line


01 COLUMN-HEADERS PIC X(132) VALUE
"================================================================================
====================". *> Column headers line

01 COLUMN-TITLES PIC X(132) VALUE "STOCK NAME #SHARES UNIT-COST AT-CLOSING
COST-BASE MARKET-VALUE GAIN/LOSS". *> Column titles line


PROCEDURE DIVISION.

0000-MAIN-PARA.

PERFORM 1000-INITIALIZATION. *> Perform initialization

PERFORM 2000-PROCESS-FILES. *> Perform file processing

PERFORM 3000-FINALIZATION. *> Perform finalization

STOP RUN. *> End of program


1000-INITIALIZATION.

OPEN INPUT STOCKS-FILE PORTFOLIO-FILE. *> Open input files

OPEN OUTPUT REPORT-FILE. *> Open output file

WRITE REPORT-RECORD FROM COLUMN-HEADERS. *> Write column headers

WRITE REPORT-RECORD FROM COLUMN-TITLES. *> Write column titles

WRITE REPORT-RECORD FROM COLUMN-HEADERS. *> Write column headers again

PERFORM VARYING WS-INDEX FROM 1 BY 1 UNTIL WS-INDEX > 20

READ STOCKS-FILE INTO STOCKS-RECORD
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```
AT END

MOVE ' ' TO WS-STOCK-SYMBOL (WS-INDEX) *> End of stocks file

EXIT PERFORM

NOT AT END

MOVE STOCK-SYMBOL TO WS-STOCK-SYMBOL (WS-INDEX) *> Move stock symbol to table

MOVE STOCK-NAME TO WS-STOCK-NAME (WS-INDEX) *> Move stock name to table

MOVE CLOSING-PRICE TO WS-CLOSING-PRICE (WS-INDEX) *> Move closing price to
table

END-PERFORM.


2000-PROCESS-FILES.

PERFORM UNTIL EOF-PORTFOLIO = 'Y'

READ PORTFOLIO-FILE INTO PORTFOLIO-RECORD

AT END

MOVE 'Y' TO EOF-PORTFOLIO *> End of portfolio file

NOT AT END

ADD 1 TO WS-READ-COUNT *> Increment read count

DISPLAY "Processing PORTFOLIO record: " PORT-STOCK-SYMBOL " " NUMBER-OF-
SHARES " " AVG-COST

PERFORM 2100-PROCESS-RECORD *> Process the record

END-PERFORM.


2100-PROCESS-RECORD.

MOVE 1 TO WS-MATCH-INDEX *> Initialize match index

PERFORM VARYING WS-INDEX FROM 1 BY 1 UNTIL WS-INDEX > 20

IF WS-STOCK-SYMBOL (WS-INDEX) = PORT-STOCK-SYMBOL

MOVE WS-INDEX TO WS-MATCH-INDEX *> Set match index if symbols match

EXIT PERFORM

END-IF

END-PERFORM
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```
IF WS-STOCK-SYMBOL (WS-MATCH-INDEX) = PORT-STOCK-SYMBOL

DISPLAY "Match found for: " PORT-STOCK-SYMBOL " with " WS-STOCK-SYMBOL (WS-
MATCH-INDEX)

COMPUTE ADJUSTED-COST-BASE = NUMBER-OF-SHARES * AVG-COST *> Calculate
adjusted cost base

COMPUTE MARKET-VALUE = NUMBER-OF-SHARES * WS-CLOSING-PRICE (WS-MATCH-INDEX)
*> Calculate market value

COMPUTE GAIN-LOSS = MARKET-VALUE - ADJUSTED-COST-BASE *> Calculate gain or
loss

MOVE WS-STOCK-NAME (WS-MATCH-INDEX) TO WS-REPORT-STOCK-NAME *> Prepare report
data

MOVE NUMBER-OF-SHARES TO WS-REPORT-NUM-SHARES

MOVE AVG-COST TO WS-REPORT-AVG-COST

MOVE WS-CLOSING-PRICE (WS-MATCH-INDEX) TO WS-REPORT-CLOSING-PRICE

MOVE ADJUSTED-COST-BASE TO WS-REPORT-ADJUSTED-COST

MOVE MARKET-VALUE TO WS-REPORT-MARKET-VALUE

MOVE GAIN-LOSS TO WS-REPORT-GAIN-LOSS

STRING WS-REPORT-STOCK-NAME DELIMITED BY SIZE

" " DELIMITED BY SIZE

WS-REPORT-NUM-SHARES DELIMITED BY SIZE

" " DELIMITED BY SIZE

WS-REPORT-AVG-COST DELIMITED BY SIZE

" " DELIMITED BY SIZE

WS-REPORT-CLOSING-PRICE DELIMITED BY SIZE

" " DELIMITED BY SIZE

WS-REPORT-ADJUSTED-COST DELIMITED BY SIZE

" " DELIMITED BY SIZE

WS-REPORT-MARKET-VALUE DELIMITED BY SIZE

" " DELIMITED BY SIZE

WS-REPORT-GAIN-LOSS DELIMITED BY SIZE

INTO REPORT-LINE

DISPLAY "Writing REPORT record: " REPORT-LINE

WRITE REPORT-RECORD FROM REPORT-LINE *> Write report record
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```
ADD 1 TO WS-WRITE-COUNT *> Increment write count
ELSE
DISPLAY "No match found for: " PORT-STOCK-SYMBOL
END-IF.

3000-FINALIZATION.
MOVE "Records read: " TO WS-REPORT-SUMMARY
STRING WS-READ-COUNT DELIMITED BY SPACE
" Records written: " DELIMITED BY SIZE
WS-WRITE-COUNT DELIMITED BY SPACE
INTO WS-REPORT-SUMMARY
WRITE REPORT-RECORD FROM COLUMN-HEADERS. *> Write column headers
WRITE REPORT-RECORD FROM WS-REPORT-SUMMARY. *> Write summary line
CLOSE STOCKS-FILE PORTFOLIO-FILE REPORT-FILE. *> Close all files
```

3. COVER PAGE

1. **NAME** Meet Maheta

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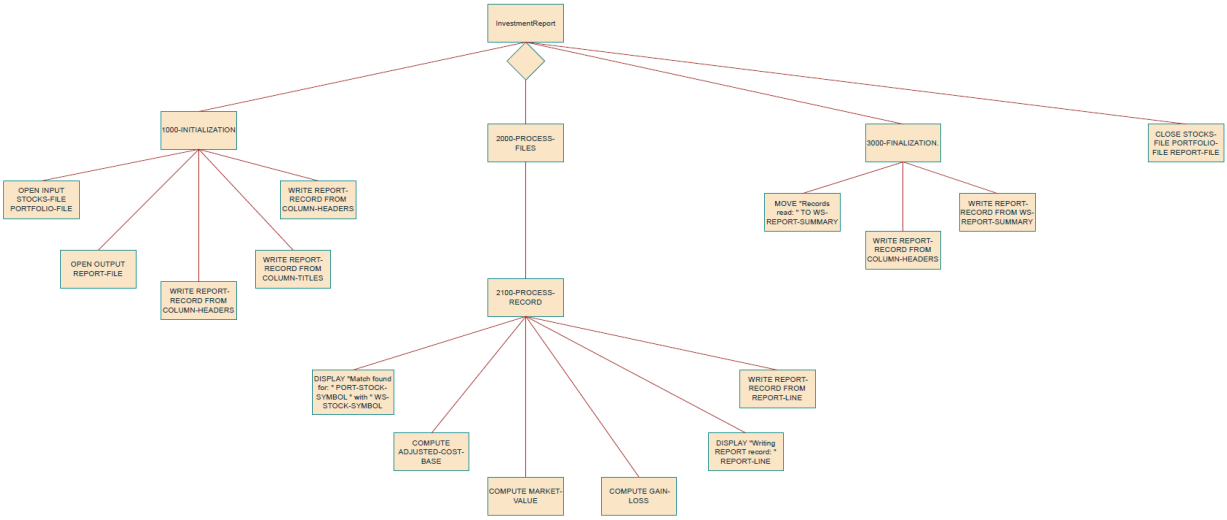
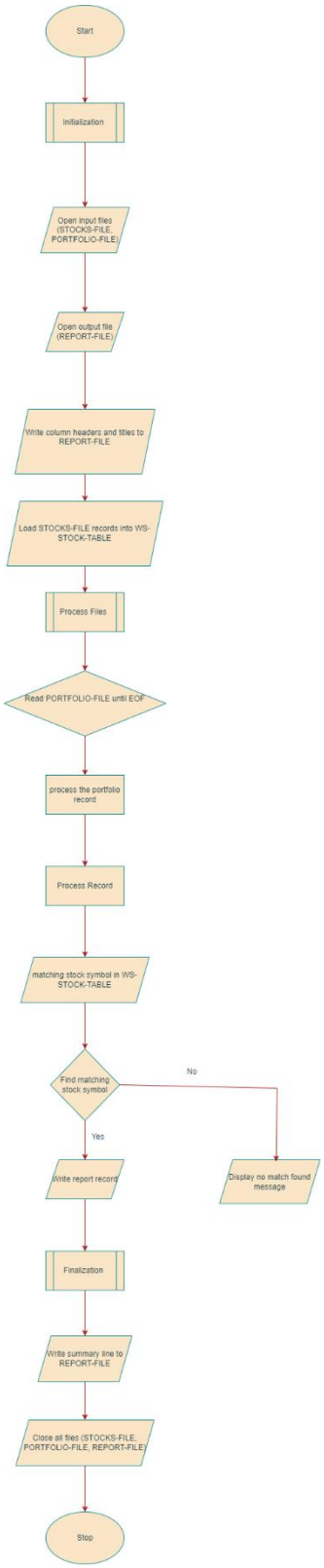
_____M.M.B._____ (Student Initials)

_____A.H._____ (Student Initials)

4. Function Chart



5. Flowchart


Start
Initialization
Open input files (STOCKS-FILE, PORTFOLIO-FILE)
Open output file (REPORT-FILE)
Write column headers and titles to REPORT-FILE
Load STOCKS-FILE records into WS-STOCK-TABLE
Process Files
Read PORTFOLIO-FILE until EOF
process the portfolio record
Process Record
matching stock symbol in WS-STOCK-TABLE
Find matching stock symbol
No
Yes
Write report record
Display no match found message
Finalization
Write summary line to REPORT-FILE
Close all files (STOCKS-FILE, PORTFOLIO-FILE, REPORT-FILE)
Stop

6. Output Report