CST8283 BUSINESS PROGRAMMING PROJECT 3

DUE DATE This project is due as indicated in Brightspace

You may verbally discuss the general approach to solving group Project with the students from other groups. And that is the only extent collaboration allowed. You are not allowed to work together, you are not allowed to share or read others code/deliverables of other groups. If your code or any other deliverables resemble with those of other groups, you will be reported to Academic Integrity Office for plagiarism investigation. When found plagiarized, if this is your first offence, then it will result in zero grade for the assignment, if this is the second offence (Note: those in the past in this or any other courses are counted as well) then will result in Fail Grade for CST8283. If this is your third offence (Note: those in the past in this or any other courses are counted as well), then it could result in your removal from the program of study**.**

You may consult any tools and information available external to the course but you must quote the reference in your submission. Failing that will result in Academic Integrity issue. Further, any content taken directly from these tools/information base and submitted will result in proportional reduction in grade. Any code obtained from generative AI tools such as chatGPT can't be submitted as your work and if done, that will be considered as plagiarized.

Project deliverables

This project can be submitted by a team of up to 4 members from the same lab. Make sure all team member's names and student numbers are recorded on the Team Cover Sheet. One person should be nominated as the group leader.

Your submission must include the following:

Cover Page (included);
Printout / Listing of your code (in both *.cob/cbl source code and as .txt file)
Printout /Listing of the output file.
(Use the Print function in WORD, Notepad, or WordPad)
Do Not use a copy and paste;
Screenshot of user interaction screens

Function Chart;
Flowcharts are not required.

Program Requirements

This project will use the same files as used in Project 2. However, the Portfolio file of Investment records (PORTFOLIO.txt) will first be converted into an Indexed Sequential file. The file for the Stock Symbol records (STOCKS.txt) will remain same as a Line Sequential file.

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First program. Convert the Portfolio file into an Indexed Sequential file with stock symbol as the primary key.
Second program. Update the Indexed Sequential Portfolio File with on-line (interactive) transactions using a Screen Section. The online transactions to be used will be provided. Note – you must use the Screen Section to handle the transactions needed to add/update the PORTFOLIO index file. This program would prompt the user to Buy any stock by accepting the stock symbol, and the number of stocks. It will then update the Indexed Sequential File to reflect the transaction. For the buy transaction if the stock does not exist, it will add a new record with all the suitable values. If the stock does exist, then it will update all the required field including the average stock price (= (#existing stock*average-cost+ #new stock*closing price)/ (#existing stock+#new stock). Note that, as in Project 2, the records from **Stock symbol file (**STOCKS.txt**)** must be loaded into a table in order to determine the closing price of the stock to be bought.
For all valid transactions, it will also display the updated investment record (of that stock) in the screen.

The transactions to be used in updating the Portfolio index file will be provided.

You can choose a suitable screen layout.

Third Program. Re-run the report program from Project 2 with the following amendments:

1) the Data Division component declaring the structure of the stock symbol table must be handled as a COPY member;

2) the code which calculates the Market Value, and Total Gain/Loss must be an externally executed program with a CALL function.

3) Use the Indexed sequential portfolio file output by Program 2 as the portfolio Input file for this program.

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Use the STOCKS.txt provided for loading the stocks table.

Record structures for all files (input and output) are the same as for Project 2 but are repeated below for reference.

Input Record Structures

The file to test your code will be the Indexed sequential portfolio file output by Program 2 , and STOCKS .txt for all the stock symbols.

Stock symbol (STOCKS **.txt) Record structure**

(Note – there will be a maximum of 20 occurrences of records)

STOCK SYMBOL 7 bytes alphanumeric

STOCK NAME 25 bytes alphanumeric

CLOSING PRICE 6 bytes numeric with two decimals

(**Note** – This file is to be loaded into a table for use in the program)

Investment Record structure

STOCK SYMBOL	7 bytes alphanumeric
#SHARES	5 bytes numeric
AVERAGE COST (PER SHARE)	6 bytes numeric with two decimals

Investment Report record Structure (for REPORT.txt)

The output record will be a structured on a single line as described below. You must use the ORGANIZATION clause as LINE SEQUENTIAL in the SELECT ASSIGN statement.

STOCK NAME

filler (3 space)

#SHARES 5 bytes numeric

filler (3 space)

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AVERAGE COST 9 bytes (numeric with two decimals, suitably edited with $, and . edit symbols)

filler (3 space)

CLOSING PRICE 9 bytes (numeric with two decimals, suitably edited with $, and . edit symbols)

filler (3 space)

Adjusted Cost Base (Choose a suitable number of bytes including edit symbols. This is a calculated field obtained by multiplying the number of shares by the AVERAGE COST PER SHARE)

filler (3 space)

Market value (Choose a suitable number of bytes including edit symbols). This is a calculated field obtained by multiplying the number of shares by the closing share price

filler (3 space)

Total Gain/Loss (Choose a suitable number of bytes including edit symbols. This is a calculated field obtained by subtracting Adjusted Cost Base from Market value)

Output Record Structure (Column Header)

You must have a Column Header Record at the top of the report with the column titles , STOCK NAME, #SHARES, UNIT COST, AT CLOSING, and COST BASE, MARKET VALUE, and GAIN/LOSS aligned with the corresponding records in the output records.

Refer to the sample output file REPORT.txt for more clarification.

Processing requirements Investment Report file

The report program will handle the same process as that for Project 2. However, some changes will be required.

1) That Cobol source code in the Data Division which declares the structure of the Stock Table must be removed from the program code. Place (save) that code in an external file. In the Report Program, you must use the COPY command in your source code to access that code when your program is compiled.

2) The procedure division code which calculates the Market Value, and Total Gain/Loss must be removed and set up as a separate program that will be accessed using the

CALL command.

3) Reference to the Indexed Sequential file for the Report Program will access the records in a sequential manner as with Project 2.

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TEAM COVER PAGE

NAME _____
STUDENT NUMBER _____
NAME _____
STUDENT NUMBER _____
NAME _____
STUDENT NUMBER _____
NAME _____
STUDENT NUMBER _____

NOTE If any student does not participate fully in the project, the group leader should identify that student and indicate what level of participation should be recognized and why. Use a range from zero (0) to ten (10)
(0 -- no participation 5 --- partial participation 10 – full participation)

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Marking Scheme (as applicable)

Refer to Notes Regarding Grading below for specific points that will be checked and influence the marks allocated.

Output format and content	___ / 20
Program listing	___ / 50
Documentation	___ / 30
TOTAL	**____ / 100**

Comments / feedback (to be made by instructor)

Notes Regarding Grading

The **program listing** will be examined primarily for:

1) relationship to function chart;
2) use of prescribed commands as required by the problem specifications;

3) application of standards and structures;
4) use of proper functional constructs (cohesion and coupling);
5) use of internal comments
6) Successful compilation and execution.

The **output reports (hard copy or screen displays if required)** will be examined for accuracy of the output information and the prescribed format as noted in the program requirements.

The **documentation** will be examined to ensure:

1) proper structure and content of structure/function/hierarchy charts;
2) clear and accurate report or screen layouts (if required);
3) clear description or comments of the program logic; and,
4) relationship to the program code.

Any violation of the established standards (Standards document in the Course Information content area of Brightspace) will result in a loss of at least 5 points.
Any discrepancy regarding the grading notes above will result in a loss of at least 5 points.