

CSCI 465

Assignment 5: COBOL 250 points

In this assignment, we are continuing the development of program SALESRPT we began with Assignment 4. Copy your ASSIGN4 and name the new member ASSIGN5. This assignment will take some time. Its objective is to give you even more experience using the basics of the COBOL programming language. For this assignment, you will be building upon the report you created for Assignment 4.

After the stock market closes at the end of a trading business day, mutual fund managers meet and determine the day's closing price per share for the mutual fund they manage. This price per share is based on the daily closing value of the shares of different stocks and bonds the mutual fund holds in its hopefully diverse portfolio.

The bulk of the single input file represents sales transactions by brokers around the world, all for a single mutual fund. The *first record* of the transaction file provides the business day's closing share price and name of the mutual fund to be processed.

For reference, after the U. S. Stock Market closes, the mutual fund's portfolio managers determine the daily closing share price of the mutual fund based on how the fund's portfolio of stocks, bonds and other investment instruments performed during the trading day.

Each of the *remaining unknown number of records* in the input file represents the day's sales by a single broker. The branches where the brokers work are identified by the city in which they are located and the brokers are, of course, identified by their names.

The Data

The input records: KC02322.CSCI465.ASNDATA(ASN5DATA)

The First Record in the File:

Share Price:	5 bytes zoned decimal with two decimal places (lowest price per share is \$0.01 and the maximum price per share is \$999.99)
Mutual Fund Name:	35 bytes (centered in the 35 bytes)
Commission Percent 1:	6 bytes zoned decimal (Example: 100000 = 100.000%)
Commission Percent 2:	6 bytes zoned decimal (Example: 000025 = 0.025%)
Commission Percent 3:	6 bytes zoned decimal (Example: 000005 = 0.005%)
Unused:	22 bytes

The Remaining Records in the File:

Branch Name:	20 bytes character
Broker's Name:	25 bytes character
Deposit Amount:	10 bytes zoned decimal with two decimal places (max. \$99,999,999.99)
Unused:	4 bytes
Commission Percent Flag:	1 byte zoned decimal (value of either 1, 2 or 3)
Unused:	20 bytes

The Program

Write a COBOL program that creates two well-designed reports and write them to the *same* DD SYSOUT=*.

Get the date and time using the COBOL Intrinsic Date Function only ONCE, perhaps in a subroutine performed at the very beginning of your program before you open any files for reading or writing.

Open and read the first record from the file and save the daily share price of the mutual fund shares. Move the name of the mutual fund to your report header. Save the three commission percentages to use them to calculate broker commissions.

Begin reading the remaining records in the file, each representing a single broker's daily sales of the mutual fund. Read until end-of-file creating the report with detail lines for each record (broker sale) processed.

As you go through the file of broker sales records, you need to compute the share amount, i.e., number of shares sold. This is done by dividing the deposit amount (note that deposit amount and sales amount are the same thing) by the share price for the day. After that, you will need to determine whether or not a broker has sold **more than** 50,000.0000 *shares* of the mutual fund. If so, write **ONLY** the broker's name and the share amount **in packed decimal** (that you have computed) to a temporary data set. The LRECL for this temporary data set should only be large enough to hold the broker's name and the number of shares they sold **in a minimum of packed decimal bytes**. This means that you will have to open the temporary data set for output **BEFORE** reading the first broker sales record.

Note: To simplify things, though, get the first report done correctly and **THEN** you can come back to the processing described in the above paragraph.

The First Report

Using all 132 bytes available across the printed page. Spread the first report headers and detail lines and any summary totals lines at the end of the report across the entire 132 bytes but make sure they look as good and clear to read as possible and are appropriately spaced.

The first report should have three appropriate header lines, single spaced, at the top of each printed page. The first header line should include the date in the form MM/DD/YYYY in the upper left hand corner, the name of the mutual fund company (from the first record in the file) in the middle of the line and the page number in the form of PAGE: nnn in the upper right hand corner. Be sure that the month and day of the date show the leading 0 when months January through September and days 1 through 9 of each month. See the example output.

The second header line should include, directly under the date, the time in the form HH:MM. For this report, you must determine if it is AM or PM. If PM, subtract 12 from the hour and print the time with PM, otherwise print the time with AM. In the middle of the page, centered under the name of the mutual fund company, the text BROKER SALES AND COMMISSIONS REPORT for this first report. See the example output.

The third header line should include a label of SHARE PRICE: and the formatted current share price centered across the report under the previous two header lines. The largest share price is \$999.99 so the receiving field should be appropriately numeric-edited to display the floating dollar sign, suppressed leading zeros, the decimal and two decimal places. See the example output.

Each detail line should be double-spaced. Below the headers, print column headers for the information to be included in the detail lines below it such as:

BRANCH NAME BROKER NAME DEPOSIT AMOUNT SHARE AMOUNT etc.

Note: When creating column headers, it is always best to place headers for character data, like BRANCH NAME and BROKER NAME in this program, left-justified over the detail line columns, and, for numeric data, like DEPOSIT AMOUNT, right-justified over the detail line columns. It is also good to put some appropriately placed hyphens single-spaced underneath the column headers. They should indicate the maximum size of the field itself. If the column header is longer than the maximum size of the field itself, put a hyphen under every character of the column header.

There should be no more than 18 double-spaced detail lines (not including headers and column headers) per page of detail lines. Of course, be sure that the header lines are printed and the page number increased by one for each new page of the report, including the summary totals page.

Each detail line should include, in this order from left to right, the Branch Name, the Broker Name, the Sales Amount, the computed Share Amount (described below) and the computed Broker Commission Amount (which depends on the Commission Percent Flag).

See the *465 Assign 5 COBOL Exact Output.txt* in the Assignment 5 folder on Blackboard for comparison.

The First Report Totals

As you process records from the broker sales file, keep running totals of 1) the number of records, i.e., number of brokers processed, 2) the total deposit amount processed, 3) the total number of shares computed and 4) the total broker commission amount computed.

You will report the totals across a single summary line on a separate summary page at the end of the printed first broker sales report. Although on a new page, place the totals for deposits, shares, and broker commissions directly under the columns for those items in the detail lines. You can print the number of brokers on the same line but to the left of total deposits. You can even add new column headers on the final totals page for these totals.

See the exact output provided.

The Second Report

Just like the first report, use all 132 bytes available across the printed page. Spread the second report headers and detail lines and any summary totals lines at the end of the report across the entire 132 bytes but make sure they look as good and clear to read as possible and are appropriately spaced.

The second report should also have three appropriate header lines, single spaced, at the top of each printed page. The first header line should include the date in the form MM/DD/YYYY in the upper left hand corner, the name of the mutual fund company (from the first record in the file) in the middle of the line and the page number in the form of PAGE: nnn in the upper right hand corner. Be sure to reset your beginning page number to 1 for this report.

The second header line should include, directly under the date, the time in the form HH:MM. For this report, you must determine if it is AM or PM. If PM, subtract 12 from the hour and print the time with PM, otherwise print the time with AM. In the middle of the page (horizontally speaking), centered under the name of the

mutual fund company, the text `BROKER LARGE SALES REPORT` for this second report. Do not display the current share price in the headers for this report.

Each detail line should be double-spaced. Below the headers, print column headers for the information to be included in the detail lines below it such as:

```
BROKER  NAME                SHARE  AMOUNT
```

Note: Once again, when creating column headers, it is always best to place headers for character data, like `BROKER NAME` in this program, left-justified over the detail line columns, and, for numeric data, like `SHARE AMOUNT`, right-justified over the detail line columns. It is also good to put some appropriately placed hyphens single-spaced underneath the column headers. They should indicate the maximum size of the field itself. If the column header is longer than the maximum size of the field itself, put a hyphen under every character of the column header.

There should be no more than 18 double-spaced detail lines (not including headers and column headers) per page of detail lines. Of course, be sure that the header lines are printed and the page number increased by one for each new page of the report, including the summary totals page.

Each detail line should include, in this order from left to right, the Broker Name and the computed share amount.

See the exact output provided.

The Second Report Totals

As you process records from this high sales temporary file, keep a running total of 1) the number of records, i.e., number of brokers processed, and 2) the total number of shares.

You will report the totals across a single summary line on a separate summary page at the end of the printed broker high sales report. Display the number of high sales brokers and their high sale shares total in the middle of the page as there are only two numbers to display. You should add new column headers on this page for the two numbers you are displaying.

See the exact output provided.

The Output of Your Job

What you will hand in will be *one single three-step job .txt file* with an **instream** COBOL program followed by a Binder step followed by a fetch step similar to what you have done before.

Document both your COBOL program and your JCL as described in the *465 Coding and Documentation Guidelines* in *Course Notes* on Blackboard.

Additional Programming Notes:

- Deposit Amount and Sales Amount are the same thing! Refer to the fields in your code using `IN-DEP-AMT`, `OUT-DEP-AMT` and `DEP-AMT` (using the latter if defined in packed decimal in your `WORKING-STORAGE SECTION`). The column header should say `SALES AMOUNT`, though, for management's sake.

- $\text{Share Amount} = \text{Deposit Amount} / \text{Share Price}$. As in the real world, round the Share Amount to three decimal places but display this amount in a detail line with four decimal places and the final decimal place ALWAYS set to 0.
- In addition to their salaries, which we do not need to know for this report, brokers are paid a commission based on the Commission Percent Flag. Use Commission Percent 1 from the input file's first record to compute commission dollar amount for those brokers with a Commission Percent Flag = 1, use Commission Percent 2 from the input file's first record to compute commission dollar amount for those brokers with a Commission Percent Flag = 2, and use Commission Percent 3 from the input file's first record to compute commission dollar amount for those brokers with a Commission Percent Flag = 3.
- Commission is a dollar amount and should be rounded to two decimal places when computed.
- Be sure to edit all numbers to be displayed by suppressing leading zeros if not a dollar amount and adding commas and a floating dollar sign for any dollar amount.
- Please remove display commands used for debugging before you submit your file for grading.
- Be sure that EVERY byte of your output 132-byte records are either fields receiving data or in-between bytes initialized as spaces. ***Remember that there should be NO byte undefined.***
- Note the addition of the word TOTALS to the second header of each of the two reports' totals pages.
- Use the names for fields and other entities as provided in the document named *465 Required Variable Names.txt*.
- Note that you should not process any further if the SALE FILE, i.e., member ASN5DATA, is empty.