

IS 2063 - JAVA: PA3 ASSIGNMENT

TOTAL POINTS: 100
DUE: CHECK BLACKBOARD BY 11:59 PM
<ul style="list-style-type: none">▪ READ CAREFULLY "ALL" THE INSTRUCTIONS!!!▪ Do not submit code that doesn't compile, run, or generate correct output.▪ No assistance given via email.▪ If needed, seek help during open tutoring or instructor office hours.

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UTSA HONOR CODE: As a UTSA student, you are **bound** by the honor code, so DO NOT cheat on any of your coursework. **By submitting this assignment, you affirm that there has been no cheating or collusion in its completion;** that the material you've used is from your textbook, professor, or Java tutors. Cheating can result in anyone, or combination, or all of the following: reduced or failing grade for the assignment, a signed statement of the infraction, reduced or failing grade for the course, reporting of student to the Department Chair, Dean's Office, and/or elevation to Student Conduct and Community Standards. It is not only cheating, but an infringement of copyright, if this assignment or any student's completed code is posted to any website for broad consumption or distribution; and, you are **obligated** by the Student Code of Conduct to report these infractions. The idea behind this assignment is not yours. The logic given to you for the assignment by the faculty is not yours. The code that is written embodies the idea.

OBJECTIVE (this is not the program purpose): Code a program that uses the concepts covered in chapters 1-11 and lecture.

PREP WORK: Material from chapters 1-11 (including instructor PowerPoint slides, demo programs, and completed exercises).

GRADING: You'll be graded on *how well* you follow the program instructions and the **accuracy of your output as reflected in the prompts, the output specifications, and the sample output.**

This includes spacing and line advancing. Each line of output can be associated with multiple points in the code! The UML diagrams with prompts and coding instructions, and output are what the user wants. You are **not** at liberty to change anything, but code to these requirements. You'll also be graded on the code given to you by your professor for this PA.

TEAM MEMBER RATING: Team members are to rate one another only if a member's performance is 3 or below out of 5, which can affect a team member's grade. Refer to Blackboard for details.

PROGRAM INSTRUCTIONS: There will be 3 classes in a project folder that generates sales reports for each sales rep, writes the sales reports to a file, and checks that the reports (as records) have been written. Don't forget to exit at the end of main(). *The prompts and the final output in the [sample output](#) show you the logical progression of your code, and along with the instructions in the UML give you an idea as to where to place your code.*

1. **Work and submit this PA in a group.**
2. **UML Diagrams** for the classes: *Data members are variables. The variables are derived from the prompts and/or the [final output](#).* **DO NOT code the methods in any way other than what is instructed.** The – sign means private, the + means public, and underlines mean static in the UML.

Class Name	SalesReport <i>This class is being given to you as it will be used to type the array in the SalesSystem class. You are not allowed to post this program anywhere per the UTSA Honor Code.</i> 1. You will insert comments for <ol style="list-style-type: none"> a. the program purpose, b. import statement purpose, c. each field's purpose, d. each method's purpose (comment boxes above the method headers). <i>Expect to be tested on the final exam regarding code behavior in the methods of this class for chapters 9 and 11.</i> 2. You will insert code for missing Java statements. 3. Read the instructions in the first comment box on how to locate the lines requiring your attention.
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Class Name	TeamMembersLastNamesAlphaOrderYourSectionNoPA3
imports	N/A
Class	N/A
Data	
Members	
Method	+main()
Data	sales: SalesSystem
Members	
Methods	+main(args: String[]): static void

1. Call start() from SalesSystem.
2. Exit statement.

Class Name	SalesSystem
imports	Scanner, Calendar, ArrayList, File, PrintWriter, IOException
Class Data	//Variables used in more than one method should be a //field or class variable.
Members	-reports: SalesReport[] (partial array creation) -input: Scanner -dateTime: Calendar -salesReports: ArrayList<String> -fileName: String -cont: char
Method Data Members	+processSalesReport() size, qtrCounter, monthCounter: int aSalesReport : String anotherObj: SalesReport (non-array SalesReport object) +writeSalesRepData() record: String outputFile: PrintWriter (partial object creation) fileError: boolean +checkInputFile() file: File inputFile: Scanner fileRecord: String fileNotFound: boolean
Methods	+SalesSystem() +start: void 1. Prompt: Priming read to enter the sales system. TANDEM ENTERPRISES Begin the processing of a sales report? Enter 'Y' or 'N': <i>If the answer is N, call exitMessage() to print an exit message.</i> 2. if cont is y a. Call processSalesReport() .

- b. Call [writeSalesRepData\(\)](#).
- c. Call [checkInputFile\(\)](#).
- 3. Call [exitMessage\(\)](#).

+processSalesReport(): void

1. Chapter 7, lesson 4 will help with Arrays of Objects.
2. Chapter 7, lesson 6 will help with ArrayList.
3. The set, get, calculate and other methods mentioned here are from the SalesReport class.
4. Code [local variables](#).
 - a. Assign to aSalesReport this string formatted with 2 line advances at the beginning: "TANDEM ENTERPRISES".
5. Call setProjectedSales().
6. Call setNoSalesReps().
7. Finish creating the SalesReport array.
8. In a for loop with i as the loop-control variable:
 - a. Re-initialize qtrCounter to 1.
 - b. At the current array location
 - i. create a **SalesReport** object.
 - ii. call setSalesRep() by sending it the sum of i + 1;
 - iii. call setNoQtrs();
 - iv. while qtrCounter is less than or equal to the call of getNoQtrs()
 - 1) Re-initialize monthCounter to 1.
 - 2) Call chooseQtr() by sending it qtrCounter.
 - 3) while monthCounter is less than or equal to the call of getNoMonths()
 - a) Call determineMonthNo() by sending it monthCounter.
 - b) Call setSalesRevenue().
 - c) Call calculateQtrlySales().
 - d) Pre-increment monthCounter.
 - 4) Pre-increment qtrCounter.
 - v. Call calculateAnnualSales().
 - vi. Add to aSalesReport the call to getSalesRepRevReport().
 - vii. Add to aSalesReport the call to getRepTargetMsg().
 - viii. add() to the ArrayList salesReports, aSalesReport.

- ix. Re-initialize aSalesReport to the a String literal formatted with 2 line advances at the beginning: "TANDEM ENTERPRISES".
- 9. In an enhanced for-loop assign each String object from salesReports to eachReport.
 - a. Print eachReport in a printf() using "%s".
- 10. Call getCompanyTargetMsg() using the non-array object for SalesReport.

+writeSalesRepData(): void

- 1. Code [local variables](#).
- 2. In a try block
 - a. *This prompt is coded with no line advances other than the one at the beginning. Enter SalesReports.txt as the name of the file.*
Enter the file name for sales report (WARNING: This will erase a pre-existing file!):
 - b. Open the file in PrintWriter.
 - c. Use a for-loop to *get* the data from the array into the record variable using these format specifiers: "%s, %d, %s, %.2f%n" in the order of the get methods for the date, number of quarters, sales rep, and quarterly sales.
 - i. Write the record to the file using printf().
- 3. In a catch block that catches an IOException into e
 - a. Use the err object from System to call printf() by sending it this message:
File cannot be created.
 - b. Re-initialize fileError to true.
- 4. Using a single-selection if, test for there is no fileError.
 - a. Close the outputFile.
 - b. Print the message:
Data written to the xxxxxxxxxxxx file.
 where the x's is the name of the file.

+checkInputFile(): void

- 1. Code [local variables](#).
- 2. In a try block
 - a. *Enter SalesReports.txt as the name of the file for this prompt.*
Enter the name for the sales report file:
 - b. Finish creating the File object with fileName.
 - c. Finish creating the Scanner object with file.
 - d. Use a while-loop by testing inputFile.hasNext() to
 - i. read the next line from the inputFile into fileRecord.

<ul style="list-style-type: none"> ii. print what was just read. Use a format specifier with a line advance at the beginning. e. Print a blank line using println().
<ul style="list-style-type: none"> 3. In a catch block that catches IOException into e <ul style="list-style-type: none"> a. Use the err object from System to call printf() by sending it this message: File not found! 4. In a catch block that catches NullPointerException into e <ul style="list-style-type: none"> a. Use the err object from System to call printf() by sending it this message: Record couldn't be accessed or read. 5. Using a single-selection if, test for there is no fileNotFound. <ul style="list-style-type: none"> a. Close the inputFile.
+exitMessage(): void
<ul style="list-style-type: none"> 1. Print: Exiting Sales System.

3. Use printf() with format specifiers where needed.
4. The prompts, the [final output specs](#), and the [sample output](#) show you in what order to place your code. To return from these links press Alt then left arrow.
5. You are to generate output from your program according the instructions in the [sample output](#) section.
6. Make sure your code is properly indented.
7. **Commenting Your Program:** Refer to the *Java Style Guide* posted in [Blackboard](#) for more commenting and formatting details.
 - a. In your program, YOU MUST insert a **program purpose** in the first comment box. The content of that first comment box was shown to you in the *Anatomy of a Java Program* lecture for chapter 1.
 - b. Use Javadoc comment boxes beginning with /** and ending with */ for your comment boxes.
 - c. Insert a Javadoc comment box above your methods explaining what is going on in the method that goes for the main() which is a method.
 - d. Line comment the import statements and the variables declared at the class level and/or in any method [including main()], and close braces.
8. **Formatting Rules:** **Always test** to validate your program is functioning properly with the correct output and spacing (line advances and spacing after punctuation). The %n can function differently when using separate printf statements versus one printf.

SALES REP OUTPUT SPECIFICATIONS: The Zs and 9s represent the output as formatted numbers. Zs indicate zero-suppression of leading numbers. 9s represent numbers printed as digits from 0-9. Xs are text. Zs, 9s, Xs are values that will change, everything else are headers, titles, and

labels. Use `System.out.printf()` and the appropriate format specifiers to properly format the output. The year is NOT to be hard coded into the header, instead, you will capture the system's date and format for the year only (refer to Appendix I). This is so the year corresponds to when the program is run. What is printed is for each sales rep.

Header (Title). Triple line advance uses 2 %n's with 2nd and 3rd lines of the header using 1 %n.

TANDEM ENTERPRISES
SALES REVENUE FOR 9 QUARTER(S) OF 9999
SALES REP: XXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX

Total Year-To-Date: \$ZZZ,ZZZ,ZZ9.99

Total Label with year-to-date sales figure which tells you your output variable. When printed, the \$ sign will not float to the leading digit.

*****END SALES REP OUTPUT SPECIFICATIONS*****

FINAL OUTPUT SPECIFICATIONS: Printed after the last sales rep.

CORPORATE SALES PERFORMANCE

It's been a GOOD year so far. There could be a year-end bonus of about 2-5% if we can keep on top of our sales goals. Thank you all and please continue your excellent effort!

OR

Sales are lagging projections. A year-end bonus may not be possible.

*****END FINAL OUTPUT SPECIFICATIONS*****

SUBMISSIONS REQUIREMENT:

1. The group will **submit only one project folder with all the files**. Create a project folder according to the instructions posted with the PA or as directed by your professor. This means **only one of the group members should submit the PA**. **ALL submissions** will be ignored if both group members post submissions. The **folder** and the **main() file** will reflect the **last names of both group members in alphabetical order**. E.g., **BunnyDuck001PA3**. Through line and method comments, group members will claim authorship and the work must be evenly distributed. Example:

```
int age = 0;    //By Bugs Bunny: STORES AN AGE
```

```
/**
```

```
* By Daffy Duck
* main() captures a first and last name, an age, and a zip code.
* It multiplies the age and zip code to get a product.
* Output will be made to the console screen and to a
* GUI window.
*/
```

2. **WARNING:** One group member CANNOT and MUST NOT carry the load for these assignments. All group members must be actively engaged in developing and writing code.

Deadlines set by the group for ultimate submission must be met. No correspondence by a group member to another group member is to be ignored. Your group member could be a possible contact for future employment or even your employer. **All group members** are to agree to the submission, **unless** the group agrees to convey that authority to the submitter.

3. Upload Your Submission in This Order

- a. **Word Document:** Copy your .java code into a Word document and save it with the same name as your program. Upload the document to Blackboard under this PA.
- b. **Zippping Folders:** Your Java files “must be” in a folder. This time it’ll be a project folder.
 - i. Create a project folder named for the program (excluding the file extension).
 - ii. Put your .java, .class, .java~ files in the proper subfolders.
 - iii. To zip the project folder, point to it then right click and
 - iv. **Filzip** if you have it **OR**
 - v. Click **Send To** then click **Compressed (zipped) Folder**
 - vi. Upload your zipped folder to Blackboard under this PA.

5. **Uploading to Blackboard:** Make sure your browser is properly configured for Blackboard (see syllabus).

- a. Your submissions are to be uploaded to Blackboard through **Assignments** only.
- b. **Upload your files no later than the due date by 11:55 pm**; otherwise, you don’t have time to recover from any problems and your assignment may not be accepted by Blackboard.
- c. Check to make sure your submission is uploaded. Please **do not ask your instructor** to check whether your assignment has been uploaded. You can do this yourself. Or upload during a tutoring session when someone can help you.
- d. If you submit your assignment before the due date, want to make changes or upload additional files, you can **re-upload** your files.

6. **NO ASSIGNMENTS WILL BE ACCEPTED LATE OR VIA E-MAIL. DO NOT UPLOAD PROGRAMS THAT DON’T COMPILE OR DON’T PRODUCE CORRECT OUTPUT.**

SAMPLE OUTPUT: Do not expect the output to look exactly like the output for the previous PAs. It is always good to test your code using sample data to see if your program meets the output specifications. **Run your program using the data in the following sample output. Copy and paste the output into a traditional comment box /* */ at the end of your PA3.java file. The comment box needs to be outside of the close brace for the application class. Change your font in DrJava to Monospaced or Courier New so your output is not out of alignment. Worth 5 points!** Your output will not print in bold.

SALES ON TRACK

TANDEM ENTERPRISES

Begin the processing of a sales report? Enter 'Y' or 'N': n

Exiting Sales System.

TANDEM ENTERPRISES

Begin the processing of a sales report? Enter 'Y' or 'N': y

What is the projected annual sales for Tandem? 500000 ← *Capital O's after 5*

Warning: You entered an invalid integer or floating-point value.

What is the projected annual sales for Tandem? 500000

How many sales reps work for Tandem? @

Warning: You entered an invalid integer or floating-point value.

How many sales reps work for Tandem? 2

Enter the name of a sales rep: ju!ian caesar

Invalid name! Please re-enter: julian caesar

Sales Rep Name: julian caesar

Is this name correct? 'Y' or 'N': y

lowercase 'L' ↓

Enter the number of quarters worked (no less than 1 or greater than 4): 1

Warning: You entered an invalid integer or floating-point value.

OUT OF RANGE! Re-enter the number of quarters worked (no less than 1 or greater than 4): 0 ← *All one line, text wrapped by MS Word here.*

OUT OF RANGE! Re-enter the number of quarters worked (no less than 1 or greater than 4): 5 ← *All one line, text wrapped by MS Word here.*

OUT OF RANGE! Re-enter the number of quarters worked (no less than 1 or greater than 4): 1 ← *All one line, text wrapped by MS Word here.*

1. First Quarter
2. Second Quarter
3. Third Quarter
4. Fourth Quarter

Choose the quarter in which sales were earned: !

Warning: You entered an invalid integer or floating-point value.

OUT OF RANGE!

1. First Quarter
2. Second Quarter
3. Third Quarter
4. Fourth Quarter

Choose the quarter in which sales were earned: 0

OUT OF RANGE!

1. First Quarter
2. Second Quarter
3. Third Quarter
4. Fourth Quarter

Choose the quarter in which sales were earned: 5

OUT OF RANGE!

1. First Quarter
2. Second Quarter
3. Third Quarter
4. Fourth Quarter

Choose the quarter in which sales were earned: 1

Enter the sales revenue for the 1st month of the First Quarter: !00000

Warning: You entered an invalid integer or floating-point value.

Enter the sales revenue for the 1st month of the First Quarter: 100000

Enter the sales revenue for the 2nd month of the First Quarter: 50000

Enter the sales revenue for the 3rd month of the First Quarter: 100000

Enter the name of the next sales rep: monique La femme

Sales Rep Name: monique La femme

Is this name correct? 'Y' or 'N': y

Enter the number of quarters worked (no less than 1 or greater than 4): 2

1. First Quarter
2. Second Quarter
3. Third Quarter
4. Fourth Quarter

Choose the quarter in which sales were earned: 1

Enter the sales revenue for the 1st month of the First Quarter: 100000

Enter the sales revenue for the 2nd month of the First Quarter: 75000

Enter the sales revenue for the 3rd month of the First Quarter: 25000

1. First Quarter
2. Second Quarter
3. Third Quarter
4. Fourth Quarter

Choose the next quarter in which sales were earned: 2

Enter the sales revenue for the 1st month of the Second Quarter: 10000

Enter the sales revenue for the 2nd month of the Second Quarter: 25000

Enter the sales revenue for the 3rd month of the Second Quarter: 30000

TANDEM ENTERPRISES
SALES REVENUE FOR 1 QUARTER(S) OF 2022
SALES REP: Julian Caesar

Total Year-To-Date: \$ 250,000.00

Keep up the GOOD work, Julian. There is a possible year-end bonus!

TANDEM ENTERPRISES
SALES REVENUE FOR 2 QUARTER(S) OF 2022
SALES REP: Monique La Femme

Total Year-To-Date: \$ 265,000.00

Keep up the GOOD work, Monique. There is a possible year-end bonus!

CORPORATE SALES PERFORMANCE

It's been a GOOD year so far. There could be a year-end bonus of about 2-5% if we can keep on top of our sales goals. Thank you all and please continue your excellent effort!

Enter the file name for sales report (WARNING: This will erase a pre-existing file!): SalesReports.txt

← All one line, text wrapped by MS Word here.

Data written to the SalesReports.txt file.

Enter the name for the sales report file: salesreports.txt

10/30/22, 1, Julian Caesar, 250000.00
10/30/22, 2, Monique La Femme, 265000.00

Exiting Sales System.

SALES NOT ON TRACK

TANDEM ENTERPRISES

Begin the processing of a sales report? Enter 'Y' or 'N': y

What is the projected annual sales for Tandem? 500000

How many sales reps work for Tandem? 1

Enter the name of a sales rep: stella brown

Sales Rep Name: stella brown

Is this name correct? 'Y' or 'N': y

Enter the number of quarters worked (no less than 1 or greater than 4): 1

1. First Quarter
2. Second Quarter
3. Third Quarter
4. Fourth Quarter

Choose the quarter in which sales were earned: 3

Enter the sales revenue for the 1st month of the Third Quarter: 150000

Enter the sales revenue for the 2nd month of the Third Quarter: 55000

Enter the sales revenue for the 3rd month of the Third Quarter: 80000

TANDEM ENTERPRISES
SALES REVENUE FOR 1 QUARTER(S) OF 2022
SALES REP: Stella Brown

Total Year-To-Date: \$ 285,000.00

Keep up the GOOD work, Stella. There is a possible year-end bonus!

CORPORATE SALES PERFORMANCE

Sales are lagging projections. A year-end bonus may not be possible.

Enter the file name for sales report (WARNING: This will erase a pre-existing file!): SalesReport.txt

← All one line, text wrapped
by MS Word here.

Data written to the SalesReport.txt file.

Enter the name for the sales report file: SalesReport.txt

10/30/22, 1, Stella Brown, 285000.00

Exiting Sales System.