King Abdulaziz University

Faculty of Computing and Information Technology

Spring 2019 – 2nd – Term (2019)

Course Code: CPCS 203   Course Name: Programming II

Assignment #1 (Toyota Sales Analysis App)

Assigned Date	**Sunday, 27 /01/2019**
Delivery Date and Time	**Sunday, 10/02/2019 at 11:00 PM**

WARNING:

- This program must ONLY be submitted on the Blackboard!
- This assignment is worth 6% of the overall module marks (100%).
- NO assignment will be accepted after **Sunday, 10/02/2019 at 11:59 pm** for any reasons.
- Students can submit their assignments between 11 and 11:59 PM but in this case it, will be considered as late submission, and they will lose 2 points from the total mark of the assignment.
- For discussion schedule, check the teacher name, date and time on the blackboard. **Further information is provided in the course syllabus.**

Objectives

- **Learn how to use and implement multidimensional array.**
- **Performing procedure on array elements.**
- **Learn to use and implement String, File I/O (Reading/Writing from/to files).**

Delivery:

- Submit your assignment on the Blackboard ONLY.
- **Make sure to add your name / IDs / Section / course name / Assignment number, as comment at the beginning of your program**.

Description:

Abdul Latif Jameel (ALJ) – Toyota is one of the leading entities in the automotive sector in the Saudi Arabia.

Management of **Toyota** at ALJ wants to automate their Sales Analysis Process. For initial test of the system, management wants to automate their business for THREE cities and later to target all cities. System must automatically generate different sales report based on the command mentioned in the input file.

Basic Requirements:

- The program must read the data from a text file called "input.txt" that follows a specific pattern. If the file doesn't exist, print a message to let the user know what happened.– see Input file for more details.
- The program must generate a text file as the output called "print.txt" that contains the results of the commands written in the input file – see print file for more details.
- The program must load data dynamically from the given text file "input.txt" and user is not involved in data entry.

Toyota Sales Analysis App must store the following data:

- ✓ City name [Jeddah, Makkah, Madina].
- ✓ Branch name for Each City.
- ✓ Month name.
- ✓ Sales figure for all branches of each city.

The Initial Procedure of the Program:

You will use File I/O to read input from a given input file [input.txt]. Make sure the file exist or display a message that the file does not exist. The file consists of:

- 5 integers to determine array size for **Cities** , **Total Branches** for Each City, **Months** and **Sale records** [see input.txt file]:

  - ✓ The first number (3) in the file refers to the number of Cities to be stored in the System [means, system will accept ONLY THREE Cities name i.e. (Jeddah , Makkah, Madina)]
  - ✓ The second number (6) refers to the number of Branches in First City [means system will accept ONLY 6 branches name for city "Jeddah"]
  - ✓ The third number (5) refers to the number of Branches in Second City [means system will accept ONLY 5 branches name for city "Makkah"]
  - ✓ The fourth number (3) refers to the number of Branches in Third City [means system will accept ONLY 3 branches name for city "Madina"]
  - ✓ The fifth number (12) refers to the number of months [means system will accept sales figure for All 12 months]

The commands you will have to implement are as follows:

- **Add_City** – Your program must read City name and store in an array to be used in the system. [see input.txt]

  Add_City Jeddah Makkah Madina

  In above line **Add_City** is a command & Jeddah,Makkah,Madina are cities name.

- **Add_City_Branch**– Your program must read branch name of each city and store in an array to be used in the system. [see input.txt]

Add_City_Branch

Al_Woroud Al_Hindawiya As_Sinaiya Obhour_Al_Janobiya Al_Jamaa As_Sulaimaniya

Misfalah Al_Hindawiyyah Al_Ghassalah Al_Nakheel Al_Iskan

Wadi_Noor Quba_Road Madina_Highway

In above line **Add_City_Branch** is a command and

Al_Woroud Al_Hindawiya As_Sinaiya etc are branches name for city Jeddah similarly,

Misfalah Al_Hindawiyyah Al_Ghassalah etc are branches name for city Makkah and

Wadi_Noor Quba_Road etc. are branches name for city Madina .

- **Add_Month** – Your program must read month name and store in an array to be used in the system. [see input.txt]

Add_Month

January February March April May June July August September October November December

In above line **Add_Month** is a command and January, February etc. are month name.

- **Add_Sales** – Your program must read sales data and store in an array to be used in the system. [see input.txt]

Add_Sales

10000 20000 30000 15000 16000 29000 37000 95000 40000 70000 80000 35000

In above line **Add_Sales** is a command and

[first row] 10000 20000 30000 15000 16000 29000 37000 95000 40000 70000 80000 35000 are sales data for City Jeddah, Branch Al_Woroud and for Months January, Feb, March.. etc. [see figure 1]

Note: First **Six** Rows are for city jeddah and next **five** rows are for city Makkah and last **three** rows are for city Madina. [see input.txt / figure 1] and Think]

- **Print_Total_Sales_Branch**– Your program must automatically calculate and generate report based on **Branch wise Total sale** for **each city** and store the result in the output file. [see print.txt]

- **Print_Total_Sales_Month–** Your program must automatically calculate and generate report based on **Monthly Total sale** for **each city** and store the result in the output file. [see print.txt]

- **Print_Max_Sale_Branch**– Your program must automatically calculate and generate **Branch wise Maximum sale** report for **each city** and store the result in the output file. [see print.txt]

- **Print_Max_Sale_Month–** Your program must automatically calculate and generate **Monthly Maximum sale** report for **each city** and store the result in the output file. [see print.txt]

- **Print_Average_Sales_Branch**– Your program must automatically calculate and generate **Branch wise Average sale** report for **each city** and store the result in the output file. [see print.txt]

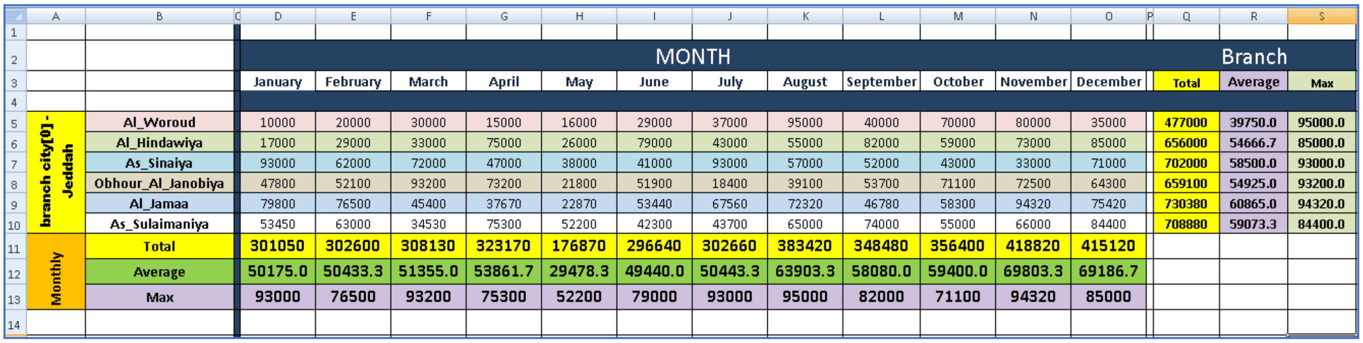
- **Print_Average_Sales_Month–** Your program must automatically calculate and generate **Monthly Average sale** for **each city** and store the result in the output file. [see print.txt]

Very Important Note: [YOU MUST GENERATE EXACTLY SAME OUTPUT FILE AS GIVEN TO YOU (PRINT.TXT)]

The Data Creation for the Program:

- Create a **Single Dimension array** to store City name and create a method that read city name from input.txt file and store in array.
    - // String array for the city name.
- Create a **Single Dimension array** to store month name and create a method that read month name from input.txt file and store in array.
    - // String array for the month name.
- Create a **Two Dimension array** to store branch name for each city and create a method that read branch name from input.txt file and store in array.
    - // String array for all branch name for each city.
- Create a **3-Dimentional array** to store sales data of each branch for all cities and create a method that read sales data from input.txt file and store in array.
    - // integer array for the sales data for each branch of all cities.

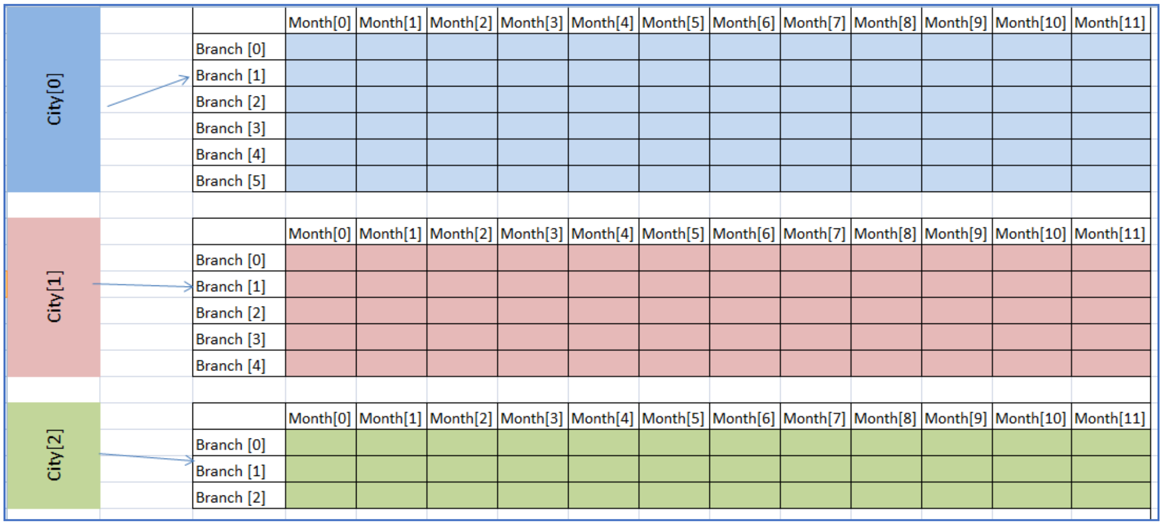
The 3- Dimensional array virtually link City array and branch array. You will use the 3 D array to store sales record for all branches of each city. So, this 3 Dimensional array should have different rows and columns based on the total branches in the city. Figure 1 and figure 2 illustrate the structure of the 3D array.



		MONTH												Branch		
		January	February	March	April	May	June	July	August	September	October	November	December	Total	Average	Max
branch city[0] - Jeddah	Al_Woroud	10000	20000	30000	15000	16000	29000	37000	95000	40000	70000	80000	35000	477000	39750.0	95000.0
	Al_Hindawiya	17000	29000	33000	75000	26000	79000	43000	55000	82000	59000	73000	85000	656000	54666.7	85000.0
	As_Sinaiya	93000	62000	72000	47000	38000	41000	93000	57000	52000	43000	33000	71000	702000	58500.0	93000.0
	Obhour_Al_Janobiya	47800	52100	93200	73200	21800	51900	18400	39100	53700	71100	72500	64300	659100	54925.0	93200.0
	Al_Jamaa	79800	76500	45400	37670	22870	53440	67560	72320	46780	58300	94320	75420	730380	60865.0	94320.0
	As_Sulaimaniya	53450	63000	34530	75300	52200	42300	43700	65000	74000	55000	66000	84400	708880	59073.3	84400.0
Monthly	Total	301050	302600	308130	323170	176870	296640	302660	383420	348480	356400	418820	415120			
	Average	50175.0	50433.3	51355.0	53861.7	29478.3	49440.0	50443.3	63903.3	58080.0	59400.0	69803.3	69186.7			
	Max	93000	76500	93200	75300	52200	79000	93000	95000	82000	71100	94320	85000			

Figure 1. Sales data and analysis for city Jeddah all branches - A 3 Dimension view.

Zoom 200 % for clear view.



		Month[0]	Month[1]	Month[2]	Month[3]	Month[4]	Month[5]	Month[6]	Month[7]	Month[8]	Month[9]	Month[10]	Month[11]
City[0]	Branch [0]												
	Branch [1]												
	Branch [2]												
	Branch [3]												
	Branch [4]												
	Branch [5]												

		Month[0]	Month[1]	Month[2]	Month[3]	Month[4]	Month[5]	Month[6]	Month[7]	Month[8]	Month[9]	Month[10]	Month[11]
City[1]	Branch [0]												
	Branch [1]												
	Branch [2]												
	Branch [3]												
	Branch [4]												

		Month[0]	Month[1]	Month[2]	Month[3]	Month[4]	Month[5]	Month[6]	Month[7]	Month[8]	Month[9]	Month[10]	Month[11]
City[2]	Branch [0]												
	Branch [1]												
	Branch [2]												

Figure 2. the structure of the 3D array (Zoom 200 % for clear view)

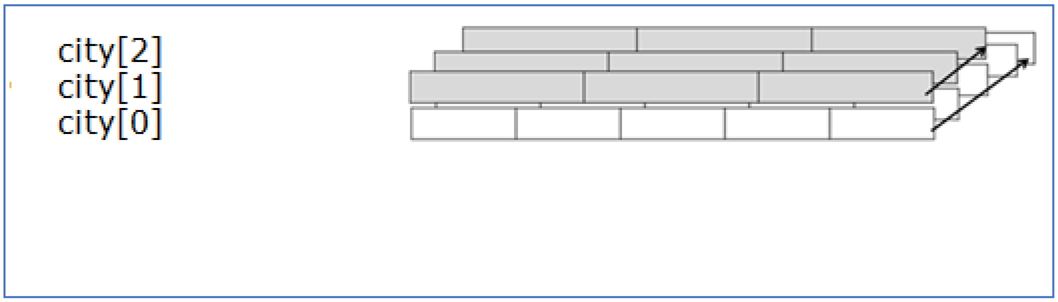


Figure 3 The structure of the 3D array

// Three Dimensional Array

Output File Pattern

The output file should include all the results of the commands that have been read from the input file [input.txt]. Your program must generate output in a similar format to the given sample output file [print.txt].

Deliverable

You have to submit only the java file of your code. The file and the class name should be "**Project_1_YourFirstName_YourLastName_YourUID**". Where "YourFirstName" is your first name, "YourLastName" is your last name, "YourUID" is your university ID.

NOTE: your name, ID, and section number must be included as comments in the file!

Important Notes:

- Your Code, output, results etc. must be in a readable form.
- Organize your code in separate methods.
- Repeat the program until Quit command is read by your program.
- Use comments in your code.
- Use meaningful variables.
- Use dash lines separator between each method.

Good Luck and Start Early!