

SdPd/java Lab Exam 3

Objective: Connaught Media Customer Maintenance

Connaught Media sells Tv, Phone and Internet services and maintains customer data using sequential text files and arrays.

- Download** the lab exam 3 zip file and extract the folder, **Save** in your root Network account (**not** your desktop, local C drive or USB)
 - Rename the **LastNameFirstNameLabEx3** folder and starter java file as per your own name
 - E.g. **AgnewGerryLabEx3** folder and **AgnewGerryLabEx3.java** file
 - To be **verified** by your lab supervisor
 - Ensure that the 2 input **data files** required for the assignment are present and contain data
- Add your **Program Id, Name & Program Description** as **comments** at the top of the program
- Warning:** marks will be deducted for **bad programming practices** such as:
 - Lacking meaningful identifier names, white-space, indentation, etc.
 - Ensure redundant code is deleted prior to program submission
 - Ensure that non-working code is commented out otherwise severe penalties will be incurred
- File Organisation:** verify using NotePad (or equivalent)
 - The number of Media master and Tx records are unknown with maximum 50 each
 - Both data files are **ordered** and terminated with a dummy **EOF/0** integer sentinel
- Constants/Files/Arrays/Variables:**
 - Declare constants, file objects, file variables, 1 & 2 dim arrays & any other variables required
 - Use meaningful names and appropriate data types
- Customer Media Master file layout/content:** see screenshot 1 on page 4
Each record consists of the following details about each Customer in the order listed:

custNum (int)	*	e.g. 123	Ordered unique 3 digit Customer Number
custStatus (char)		e.g. A	Customer status: Active → a/A, Non-active → non-A
custDistricts (String)		e.g. Barna	
custTv (int)	*	e.g. 1	0) None 1) Basic 2) Sports 3) Movies 4) Sport/Movies
custPhone (int)	*	e.g. 2	0) None 1) Pay 2) Offpeak 3) Free Calls
custInternet (int)	*	e.g. 3	0) None 1) Budget 2) High 3) Super
custCosts (double)		e.g. 4	Monthly customer package costs
custNames (String)		Joe Bloggs	Combined Customer First Name + Last Name (trim ?)
<i>Asterisk marked fields are saved in a 2 dim custServices array and the rest in 1 dim arrays</i>			

- Customer Media Tx file layout/content:** see screenshot 2 on page 4
Each record consists of the following details about customer transactions in the order listed which are subsequently applied to update the master file arrays:

txCustNum (int)	e.g. 123	Ordered non-unique 3 digit Customer Number
txCode (char)	e.g. 'A'	Single character (case insensitive) transaction code
txSubCode (String)	e.g. 'tv'	2/3 character (case insensitive) transaction sub code
txAmount (double)	e.g. 1.23	Double transaction amount associated with the Tx code
<i>The above fields are not saved in any arrays</i>		

8. Connaught Media Price List

Service	0	1	2	3	4
Tv	0.00	1.01	2.02	3.03	4.04
Phone	0.00	11.01	12.02	13.03	0.00
Internet	0.00	101.01	102.02	103.03	0.00

The priceList should be defined as a 2 dim double Array and populated directly in code
E.g. Selecting Tv **1** (1.01) + Phone **2** (12.02) + Internet **3** (103.03) costs €116.06 per month

9. Valid Customer Tx codes table:

A Tx is rejected if the Customer number is not found in the Customer Services array A Tx is also rejected if the corresponding Tx and Sub Tx codes are not listed below	
Tx Code	Description
'a/A'	A/dd a media service to the existing customer package Sub Tx code identifies the tv , ph /one or in /ternet service to be added Tx Amount double/int identifies the type of service (e.g. 1 = Basic)
'd/D'	D/eleate a media service from the existing customer package Sub Tx code identifies the tv , ph /one or in /ternet service to be deleted Tx Amount double/int identifies the type of service and is always 0
'c/C'	Adjust the existing customer package C osts by the amount specified Sub Tx code identifies the Per /centage increase/decrease or Fix to set the cost Tx Amount identifies the percentage amount or the cost to be applied (e.g. 9.99)
<i>Ensure that the monthly cost is updated correctly according to the Media price list when services are added or deleted (e.g. add/remove Phone 2 = €12.02 to/from the monthly costs)</i>	

10. Header Output: see screenshot 3 on page 4

- Output the lab exam headers including **your name** as specified

11. Media File Input into associated Arrays: see screenshot 3 on page 4

- Using an Initial/**while**/Subsequent File read and **EOF/0** sentinel controlled loop
- Read each Customer record from the master text file until EOF is encountered
- Store the data in multiple appropriately named/typed **1** and **2-dim** arrays
- The 4 integer values should be stored in a 2-dim integer array while the customer Status, Districts, Costs and Names should be stored in appropriate single dimension arrays
- Arrays should only be populated with A/ctive records i.e. exclude non-A status records (note: you can complete the assignment without excluding any Customer records)
- Line output formatted Customer details from the associated **arrays** to verify that they have been populated correctly including the associated record counts as indicated

12. Media Tx File Input (no arrays): see screenshot 4 on page 5

- Using an Initial/**while**/Subsequent File read and **EOF/0** sentinel controlled loop
- Read each Customer Tx record from the Tx file into file variables until EOF is encountered
- Line output formatted Customer Tx details from the file variables to verify that the records are processed correctly including the associated record counts as indicated

13. Media Tx File Reprocessing:

- Remember to first close and then re-open the Tx file otherwise Tx records are not available
- Duplicate the above **outer while** loop to re-read the Customer Tx file records again
- Search the Customer Services array efficiently (inner **while**) for the Tx Customer number

14. Successful/Unsuccessful Customer Number Search: see screenshots 4 & 5 on page 5

- If successful then update the corresponding arrays with the transactions as described above
- If unsuccessful mismatched Customer Number records (in the Tx file & not in the Array) are not displayed and should be rejected/reported using the Mismatched Rejected Tx Report file

- Beware that some transactions may also be rejected after a successful search according to the rules specified in the Valid Tx codes & sub Tx codes table listed above
- Line output formatted valid Customer Tx details to verify that the records are processed correctly including the associated record counts as indicated

15. Output Updated Customer Service Arrays: see screenshot 6 on page 6

- Using nested **for loops** line output formatted Customer **arrays** details
- To verify that the Tx file changes have been correctly applied to the arrays

16. Customer Name Search: see screenshot 7 on page 6

- Using an **outer Initial/while/Subsequent** keyboard read loop
- Prompt/input the Find Customer name (first name + last name)
- Until the **“Exit”** string sentinel is encountered (case insensitively) to terminate the loop

17. Unsuccessful Customer Name Search: see screenshot 8 on page 6

- Using an **inner while** loop search the Customer Names array (trimmed?) case insensitively for the Find Customer name entered
- If unsuccessful output an error message and prompt/input another Find Customer name

18. Successful Customer Name Search: see screenshot 8 on page 6

- If successful prompt/input the required character option/action to be performed: Select **C**/ost, **D**/istrict, **N**/ame, **V**/iew or **Q**/uit menu and process/validate the option entered (switch)
- Then show the current array value where appropriate e.g. Current Cost = 99.99
- Prompt/Input/Amend the corresponding array element with the new value entered

19. Menu Options Available: see screenshots 9, 10 & 11 on page 6

- Option c/C: Change the customer package Costs
- Option d/D: View customer details for the District/partial District entered (e.g. “na”= “barna”)
- Option n/N: Change the customer Name
- Option v/V: View current customer details (clone part 15 without the nested loops & output)
- Option q/Q: Quit the operation and resume with another prompt/input Find Customer name

20. Exception Validation:

- Validate the character option/action (case insensitively) with **switch** validation: must be **C**/ost, **D**/istrict, **N**/ame, **V**/iew or **Q**/uit error message
- Validate the Package Cost – min 0.01 and max 200.00 with **do..while** validation
- Validate the Customer name – cannot be blank (hint trim & length) with **do..while** validation

21. Save updated Customer Service arrays to an Output Text File: see screenshot 12 page 6

- Using nested for loops output/save the arrays contents, including any changes, when finished to a new text file called **“MediaNewMaster.dat”** (verified by NotePad or equivalent)
- With the exact same layout as the Media master input text file (formatting optional)
- Remember to append the dummy **EOF/0** sentinel at the end of the output file
- Ensure that no master records are dropped especially the rejected/non-A status records but records do not have to be written in any specific order (i.e. Rejected/Inactive first)

22. Close Files:

Close all file objects where appropriate or before you exit the program

23. Save – The End: when finished Save and Exit TextPad

- Zip (R/click: Send Compressed) your **LastNameFirstNameLabEx3** folder
- Upload your **LastNameFirstNameLabEx3** zip file to the Moodle link provided
- Remember to submit your “Named” Algorithm sheet and Sign the **attendance sheet**

Screenshot 1 – Customer Media Master File

MediaMaster - Notepad									
File	Edit	Format	View	Help					
101	A	barna	1	1	1	113.03	Gerry	Agnew	
102	A	BARNA	2	2	2	116.06	Micky	Mouse	
103	A	Barna	3	3	3	119.09	Mini	Mouse	
111	A	Mervue	0	0	0	0.00	Yogi	Bear	
112	?	bad	0	0	0	0.00	aaaa	aaaaaa	
222	a	Claddagh	0	0	0	0.00	Porky	Pig	
223	?	bad	0	0	0	0.00	bbbb	bbbbbb	
333	A	Claddagh	0	0	0	0.00	Tweety	Bird	
334	?	bad	0	0	0	0.00	cccc	cccccc	
444	a	Claddagh	0	0	0	0.00	Betty	Boop	
555	A	DIST	0	0	0	0.00	Daffy	Duck	
666	a	BARNA	0	0	0	0.00	Bugs	Bunny	
777	A	MERVUE	0	0	0	0.00	dddd	dddddd	
778	x	CLADDAGH	0	0	0	0.00	eeee	eeeeee	
888	A	barna	0	0	0	0.00	Donald	Duck	
999	a	claddagh	0	0	0	0.00	wile	Cayote	
0									

Screenshot 2 – Customer Media Tx File

MediaTx - Notepad								
File	Edit	Format	View	Help				
101	d	tv		0.00	223	d	ph	0.00
101	D	ph		0.00	333	A	in	3.00
101	d	in		0.00	334	D	IN	0.00
101	a	tv		3.00	444	A	Tv	4.00
101	A	ph		3.00	555	A	in	1.00
101	a	in		3.00	555	A	ph	2.00
102	d	tv		0.00	555	A	tv	3.00
102	d	in		0.00	666	X	tv	1.00
103	d	tv		0.00	666	A	yy	1.00
103	d	ph		0.00	666	A	TVy	1.00
103	d	in		0.00	777	C	fix	100.00
111	a	tv		1.00	888	C	fix	100.00
112	c	fix	99.99		888	C	per	10.00
222	A	ph		2.00	999	c	fix	100.00
					999	c	per	-10.00
					0			

Screenshot 3 – Customer Arrays Output

Your Name - Media Maintenance - Lab Ex 3 - Feb 2017							
Cust	Customer	Tv	Phone	Inet	Cost	Customer	
Num	St District	Pack	Pack	Pack	Pack	Name	
101	a barna	1	1	1	113.03	Gerry Agnew	
102	a barna	2	2	2	116.06	Micky Mouse	
103	a barna	3	3	3	119.09	Mini Mouse	
111	a mervue	0	0	0	0.00	Yogi Bear	
222	a claddagh	0	0	0	0.00	Porky Pig	
333	a claddagh	0	0	0	0.00	Tweety Bird	
444	a claddagh	0	0	0	0.00	Betty Boop	
555	a dist	0	0	0	0.00	Daffy Duck	
666	a barna	0	0	0	0.00	Bugs Bunny	
777	a mervue	0	0	0	0.00	dddd dddddd	
888	a barna	0	0	0	0.00	Donald Duck	
999	a claddagh	0	0	0	0.00	wile Cayote	
Customer Count:		16	Rejected:	4	Accepted:	12	

Screenshot 4 – Before & After Customer Media Tx File Output

Cust Num	Tx Code	Sub Code	Tx Amount
101	d	tv	0.00
101	D	ph	0.00
101	d	in	0.00
101	a	tv	3.00
101	A	ph	3.00
101	a	in	3.00
102	d	tv	0.00
102	d	in	0.00
103	d	tv	0.00
103	d	ph	0.00
103	d	in	0.00
111	a	tv	1.00
112	c	fix	99.99
222	A	ph	2.00
223	d	ph	0.00
333	A	in	3.00
334	D	IN	0.00
444	A	Tv	4.00
555	A	in	1.00
555	A	ph	2.00
555	A	tv	3.00
666	X	tv	1.00
666	A	yy	1.00
666	A	TVy	1.00
777	C	fix	100.00
888	C	fix	100.00
888	C	per	10.00
999	C	fix	100.00
999	C	per	-10.00

Tx: 29 Rej: 0 Acc: 29

Cust Num	Tx Code	Sub Code	Tx Amount
101	d	tv	0.00
101	d	ph	0.00
101	d	in	0.00
101	a	tv	3.00
101	a	ph	3.00
101	a	in	3.00
102	d	tv	0.00
102	d	in	0.00
103	d	tv	0.00
103	d	ph	0.00
103	d	in	0.00
111	a	tv	1.00
222	a	ph	2.00
333	a	in	3.00
444	a	tv	4.00
555	a	in	1.00
555	a	ph	2.00
555	a	tv	3.00
777	c	fix	100.00
888	c	fix	100.00
888	c	per	10.00
999	c	fix	100.00
999	c	per	-10.00

Tx: 29 Rej: 6 Acc: 23

Screenshot 5 – Mismatched/Rejected Tx Report File

MediaRejected - Notepad

File Edit Format View Help

Mismatched Rejected Tx Report

=====

Cust Num	Tx Code	Sub Code	Tx Amount
112	c	fix	99.99
223	d	ph	0.00
334	d	in	0.00
666	x	tv	1.00
666	a	yy	1.00
666	a	tv	1.00

=====

112 c fix 99.99 - Mismatched Employee Id

223 d ph 0.00 - Mismatched Employee Id

334 d in 0.00 - Mismatched Employee Id

666 x tv 1.00 - Invalid Tx code: x

666 a yy 1.00 - Invalid Tx sub code: yy

666 a tv 1.00 - Invalid Tx sub code: tv

Screenshot 6 – Customer Media Updated Arrays Output

Cust Num	St	Customer District	Tv Pack	Phone Pack	Inet Pack	Cost Pack	Customer Name
101	a	barna	3	3	3	119.09	Gerry Agnew
102	a	barna	0	2	0	12.02	Micky Mouse
103	a	barna	0	0	0	0.00	Mini Mouse
111	a	mervue	1	0	0	1.01	Yogi Bear
222	a	claddagh	0	2	0	12.02	Porky Pig
333	a	claddagh	0	0	3	103.03	Tweety Bird
444	a	claddagh	4	0	0	4.04	Betty Boop
555	a	dist	3	2	1	116.06	Daffy Duck
666	a	barna	0	0	0	0.00	Bugs Bunny
777	a	mervue	0	0	0	100.00	dddd ddddd
888	a	barna	0	0	0	110.00	Donald Duck
999	a	claddagh	0	0	0	90.00	Wile Cayote

Customer Count: 16 Rejected: 4 Accepted: 12

Customer Name Unsuccessful / Successful Search – Screenshots 7 & 8

Enter Customer Name (Exit to end): Unknown Name
Sorry Customer name not found - please try again.

Enter Customer Name (Exit to end): Gerry Agnew
Select C/ost, D/istrict, N/ame, V/view or Q/uit:

Options: C/ost, D/istrict & N/ame – Screenshots 9, 10 & 11

Select C/ost, D/istrict, N/ame, V/view or Q/uit: c
Current Cost: 119 Enter new Cost (0.01..200.00): 50.50

Enter District (sub string): na

Cust Num	St	Customer District	Tv Pack	Phone Pack	Inet Pack	Cost Pack	Customer Name
101	a	barna	3	3	3	50.50	Gerry Agnew
102	a	barna	0	2	0	12.02	Micky Mouse
103	a	barna	0	0	0	0.00	Mini Mouse
666	a	barna	0	0	0	0.00	Bugs Bunny
888	a	barna	0	0	0	110.00	Donald Duck

Current Name: Gerry Agnew
Enter new name (not blank): Larry Agnew

New Customer Master File (auto Tx only) – Screenshot 12

MediaNewMaster - Notepad							
File	Edit	Format	View	Help			
112	?	bad	0 0 0	0.00	aaaa	aaaaaa	
223	?	bad	0 0 0	0.00	bbbb	bbbbbb	
334	?	bad	0 0 0	0.00	cccc	cccccc	
778	x	BAD	0 0 0	0.00	eeee	eeeeee	
101	a	barna	3	3	3	119.09	Gerry Agnew
102	a	barna	0	2	0	12.02	Micky Mouse
103	a	barna	0	0	0	0.00	Mini Mouse
111	a	mervue	1	0	0	1.01	Yogi Bear
222	a	claddagh	0	2	0	12.02	Porky Pig
333	a	claddagh	0	0	3	103.03	Tweety Bird
444	a	claddagh	4	0	0	4.04	Betty Boop
555	a	dist	3	2	1	116.06	Daffy Duck
666	a	barna	0	0	0	0.00	Bugs Bunny
777	a	mervue	0	0	0	100.00	dddd ddddd
888	a	barna	0	0	0	110.00	Donald Duck
999	a	claddagh	0	0	0	90.00	wile Cayote
0							