SdPd/java Lab Exam 3

Objective: Corrib Water HR Employee Record Maintenance

Corrib Water HR employee data is maintained using text files and arrays.

- 1. **Download** the lab exam 3 zip file and extract the folder, **Save** on the desktop (**not** your Network account, 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
- 2. Add your Program Id, Name & Program Description as comments at the top of the program
- 3. Warning: marks will be deducted for bad programming practices such as:
 - Lacking meaningful variable names, white-space, indentation, etc.
 - Ensure redundant code is deleted prior to program submission
- 4. **File Organisation:** verify using NotePad (or equivalent)
 - The number of Employee master and tx records are unknown with maximum 75 each
 - Both data files are unordered and terminated with a dummy 99999 integer sentinel
- 5. Constants/Variables/Arrays/Initialisation:
 - Declare constants, file objects, file variables, 1 & 2 dim arrays & any other variables required
 - Use meaningful names and appropriate data types
 - Initialise any necessary variables where appropriate especially counts, totals and booleans
- 6. **Employee Master file layout:** see screenshot 1 on page 4 Each record consists of the following details about each employee in the below order:

empld (int)	e.g. 123	Unordered unique 3 digit Employee Id		
empStatus (char)	e.g. A	Employee status: Active → a/A, Non-active → x/X		
empDepartment (String)	e.g. Sale	4 character (case insensitive) department code		
	or sAIE	1) Sale/s 2) Admn 3) IT 4) Dist/ribution otherwise None		
OverNights (int)	e.g. 1	Total number of employee Overnights		
Km (int)	e.g. 2	Total employee Mileage/Km driven		
Commission (int)	e.g. 3	Total employee Commission paid		
OverTime (int)	e.g. 4	Total employee Overtime paid		
Holidays (int)	e.g. 5	Total annual employee Holidays remaining		
Salary (int)	e.g. 6	Monthly employee Salary		
empName (String)	Jo Blogg	Combined employee First Name + Last Name (trim ?)		

7. Employee Tx file layout: see screenshot 2 on page 4

Each transaction record consists of the following details about employees in the below order which are then applied to the master file arrays:

txEmpld (int)	e.g. 123	Unordered non-unique 3 digit Employee Id
txCode (String)	e.g. sal	2/4 character (case insensitive) transaction code
txAmount (int)	e.g. 1	Integer transaction amount associated with the Tx code

SdPd/java Lab Exam 3 Gerry Agnew February 2016 Page 1 of 6

8. Valid Employee Tx codes table: see screenshot 2 on page 4

A Tx is rejected if the Employee Id is not found in the master Employee array A Tx is also rejected if the corresponding Tx code is not listed below					
nite +/- 999	Increment/decrement employee Overnights by the amount specified				
km +/- 999	Increment/decrement employee Mileage/Km by the amount specified				
comm +/- 999	Increment/decrement employee Commission by the amount specified				
	Commission is only applicable to Sales employees – otherwise rejected				
otim +/- 999	Increment/decrement employee Overtime by the amount specified				
hols +/- 999	Increment/decrement employee Holidays by the amount specified				
sal +/- 999	Increment/decrement employee monthly Salary by the amount specified				
ret +999	Change the employee Status from a/Active to R/etired (txAmount irrelevant)				
dept +999	Change the employee Department: map the department integer to the				
	associated department name e.g. 1→ Sale/s (as previously listed in part 6)				
new +999	New Employee Id (as specified); department = "none" & name = "No Name"				
	Adding new employees to the Arrays is quite complex and should only be				
	attempted once the remainder of the lab exam is completed.				
	Accordingly, screenshots have been designed to reject the "new" Tx initially.				
	Duplicate Employee Ids are not allowed with the new Tx being rejected.				

9. Header Output: see screenshot 3 on page 4

- Output the headers including your name as specified

10. Employee File Input into associated Arrays: see screenshot 3 on page 4

- Using an Initial/while/Subsequent File read 99999 sentinel controlled loop
- Read each Employee record from the master text file until the EOF sentinel is encountered
- Store the data in multiple appropriately named/typed 1 and 2-dim arrays the 7 integer values should be stored in a 2-dim integer array while the employee Status, Department and Name should be stored in appropriate single dimension arrays
- Arrays should only be populated with A/ctive records i.e. exclude x/X status records (note: you can complete the assignment without excluding any Employee records)
- Line output formatted Employee details from the associated arrays to verify that they have been populated correctly including the associated record counts as shown

11. Employee Tx File Input: see screenshot 4 on page 5

- Using an Initial/while/Subsequent File read 99999 sentinel controlled loop
- Read each Employee Tx record from the Tx file into file variables until EOF is encountered
- Line output formatted Employee Tx details from the file variables to verify that the records are read correctly including the associated record counts as shown

12. Employee 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 read the Tx file Employee records again
- Then using an inner while loop search the Employee array efficiently for the Tx Employee Id

13. Successful/Unsuccessful Employee Id Search: see screenshots 5 & 6 on page 5

- If successful then update the corresponding arrays with the transactions as specified
- If unsuccessful mismatched Employee Id (in the Tx file and not in the Array) records are not displayed and should be rejected/reported using the Mismatched Rejected Tx Report file
- Beware that some transactions may also be rejected at this point after a successful search according to the rules specified in the Valid Employee Tx Codes table above
- Line output formatted valid Employee Tx details to verify that the records are processed

SdPd/java Lab Exam 3 Gerry Agnew February 2016 Page 2 of 6

14. Output Updated Arrays: see screenshots 7 on page 6

- Using nested for loops line output formatted Employee array details (inc new employees)
- To verify that the Tx file changes have been correctly applied to the Employee arrays

15. Employee Name Search: see screenshot 8 on page 6

- Using an **outer** Initial/**while**/Subsequent read loop
- Prompt/input the Find Employee name (first name + last name)
- Until the "Quit" sentinel is encountered to end the loop

16. Unsuccessful Employee Name Search: see screenshot 9 on page 6

- Using an inner while loop search the Employee names string array case insensitively for the Find Employee name entered
- If unsuccessful output an error message and prompt/input another Find Employee name

17. Successful Employee Name Search: see screenshot 10 on page 6

- If successful prompt/input the required character option/action to be performed:
 Select D/isplay, H/olidays, N/ame or eXit and process/validate the option entered (switch)
- Then show the current array value e.g. Holidays = 10
- Prompt/Input/Amend the corresponding array element with the new value entered

18. Options Available: see screenshots 11, 12 & 13 on page 6

- Option d/D: Display/Output Employee details as before (clone part 14 nested for loops)
- Option h/H: Change the Employee Holidays
- Option n/N: Change the Employee Name
- Option x/X: Exit the operation and resume with another prompt/input Find Employee name

19. Exception Validation:

- Validate the character option/action (case insensitively) with switch validation: must be D/isplay, H/olidays, N/ame or eXit
- Validate the Employee name cannot be blank (hint trim & length) with **do..while** validation
- Validate the Employee Holidays min 5 and max 30 with **do..while** validation

20. Save updated Employee Arrays to a new Output File: see screenshot 14 on page 6

- Using nested for loops output/save the array contents when finished, including any changes, to a new text file called "EmployeeMasterNew.dat" (verified by NotePad or equivalent)
- With the exact same layout as the Employee master input text file (formatting optional)
- Remember to append the dummy EOF sentinel at the end of the output file
- Remember that no master records should be dropped especially the x/X status records
- However, records do not have to be written in any specific order (i.e. Rejected/Inactive first)

21. Close Files:

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

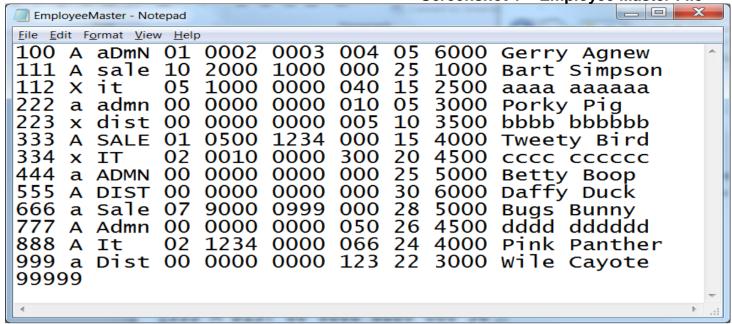
22. Save - The End: when finished Save and Exit TextPad

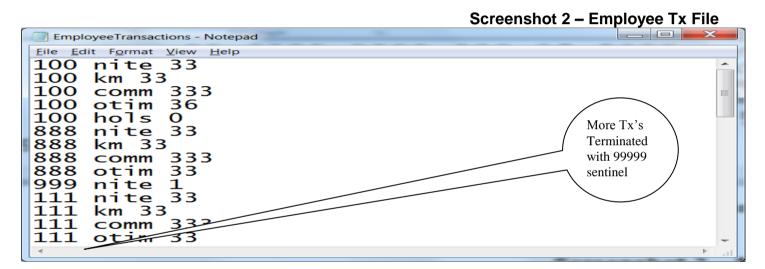
- Zip (R/click: Send Compressed) the LastNameFirstNameLabEx3 folder
- Upload the LastNameFirstNameLabEx3 zip file to the Moodle link provided
- Remember to submit your "Named" Algorithm sheet and Sign the attendance sheet

SdPd/java Lab Exam 3 Gerry Agnew February 2016 Page 3 of 6

Screenshot 1 - Employee Master File

Screenshot 3 - Employee Array Output





Gerry	Agnew	- Emplo	yee Red	cords -				
Emp Id St		Over Night	Car Km	Sale Comm	Over Time		Month Salary	Employee Name
100 A 111 A 222 A 333 A 444 A 555 A 666 A 777 A 888 A 999 A	sale admn sale admn dist sale admn it	1 10 0 1 0 7 0 2	2 2000 0 500 0 9000 0 1234	3 1000 0 1234 0 0 999 0	4 0 10 0 0 0 0 50 66 123	5 25 5 15 25 30 28 26 24 22	6000 1000 3000 4000 5000 6000 5000 4500 4000 3000	Gerry Agnew Bart Simpson Porky Pig Tweety Bird Betty Boop Daffy Duck Bugs Bunny dddd dddddd Pink Panther Wile Cayote
		unt: 13		cted:		pted:	10	•, • •••

SdPd/java Lab Exam 3 Gerry Agnew February 2016 Page 4 of 6

Screenshot 4 - Employee Before Tx File Output

Emp Id	Tx Code	Tx Amount
100	nite	33
100	km	33
100	comm	333
100	otim	36
100	hols	0
888	nite	33
888	km	33
888	comm	333
888	otim	33
999	nite	1
111	nite	33
111	km	33
111	comm	333
111	otim	33

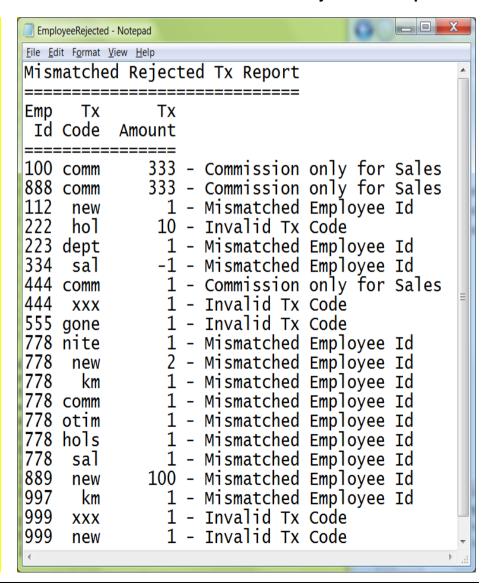
	S	creenshot 4 – En
112	new	1
222	hols	-6
222	hols	26
222	hols	10
222	hol	10
223	dept	1
333	sal	-3001
333	sal	6000
333	sal	1111
334	sal	-1
444	nite	1
444	km	1
444	otim	1
444	comm	1
444	hols	1
444	sal	1
444	XXX	1

201010 1X 1 II	Coulput		
gone	1		
nite	1		
new	2		
km	1		
comm	1		
otim	1		
hols	1		
sal	1		
dept	4		
new	100		
km	1		
sal	100		
XXX	1		
new	1		
45 Rej:	0 Acc:		
	new km comm otim hols sal dept new km sal xxx new		

Screenshot 5 – Employee After Tx File Output

Screenshot 6 - Mismatched/Rejected Tx Report File

Emp Id	Cod	Γx de Aι		TX nt	
	niii oti niii oti niii com ho ho sa sa	de Al	mour ===	nt == 33 33 33 33 33 33 33 33 33 33 33 33	
444 444	ho ¹	ıl 💮		1	
444 888 999	dep sa	ot	1/	1 4 00	
Tx:	45				25



SdPd/java Lab Exam 3 Gerry Agnew February 2016 Page 5 of 6

Screenshot 7 – Employee Updated Array Output

Emp Id St Dept	Over Night	Car Km	Sale Comm	Over Time		Month Salary	Employee Name
100 A admn 111 A sale 222 A admn 333 A sale 444 A admn 555 A dist 666 A sale 777 A admn 888 A Dist 999 A dist	34 43 0 1 1 0 7 0 35 1	35 2033 0 500 1 0 9000 0 1267 0	3 1333 0 1234 0 0 999 0	40 33 10 0 1 0 0 50 99 123	5 25 35 15 26 30 28 26 24 22	6000 1000 3000 8110 5001 6000 5000 4500 4000 3100	Gerry Agnew Bart Simpson Porky Pig Tweety Bird Betty Boop Daffy Duck Bugs Bunny dddd dddddd Pink Panther Wile Cayote
Employee Co	unt: 13	Reje	cted:	3 Acce	pted:	10	

Employee Name Search - Screenshot 8

Enter Employee Name (Quit to end): QUIT

Unsuccessful Employee Name Search – Screenshot 9

Enter Employee Name (Quit to end): Agnew Gerry
Sorry Employee name not found - please try again.

Successful Employee Name Search – Screenshot 10

Enter Employee Name (Quit to end): gErRy aGnEw Select D/isplay, H/olidays, N/ame or eXit:

Option: D/isplay - Screenshot 11

Select D/isplay, H/olidays, N/ame or eXit: Over Car Sale Hols Month **Employee** Over Night Time Name Id St Dept Κm Comm Left Salary 100 A admn 40 5 6000 Gerry Agnew Bart Simpson 1000 111 A sale 43 2033 1333 0 25 222 A admn 0 0 0 10 15 3000 Porky Pig

Employee Count: 15 Rejected: 3 Accepted: 12

Option: H/olidays - Screenshot 12

Select D/isplay, Current Holidays: H/olidays, N/ame or exit: Enter new Holidays (5..30):4 5 Holidays: urrent nter new Holidays urrent Holidays: (5..30): Enter 31 new Holidays (5..30): 15

Option: N/ame - Screenshot 13

Select D/isplay, H/olidays, N/ame or eXit: I Current Name: Gerry Agnew Enter new name (not blank): Current Name: Gerry Agnew Enter new name (not blank): Geraldo Agnewy

New Employee Master File - Screenshot 14

```
EmployeeNewMaster - Notepad
<u>File Edit Format View Help</u>
112 X
223 X
                                           2500 aaaa aaaaaa
3500 bbbb bbbbbb
         it
                05
                    1000
                          0000 040
                                      15
         dist 00
                   0000
                           0000 005 10
334 X
                    0010 0000
                                 300 20
                                           4500 cccc
         TT
                02
                                                        CCCCCC
                                                                           Gerry Agnew
Bart Simpson
100 A
                    34
                                                40
                                                                 6000
       admn
                              35
                                    1333
                                                          25
                    43
                           2033
                                                33
                                                                 1000
111
     Α
        sale
222
     Α
       admn
                     0
                               0
                                        0
                                                10
                                                          35
                                                                 3000
                                                                               Porky Pig
                                    1234
333
                            500
                                                          15
                                                                 8110
                     1
     Α
       sale
                                                 0
                                                                             Tweety Bird
                                                                              Betty Boop
Daffy Duck
444
       admn
                     1
                                        0
                                                  1
                                                          26
                                                                 5001
     Α
                     0
7
                                                  Ō
                                                          30
                                                                 6000
555
        dist
                               O
                                        O
     Α
       sale
                                     999
                                                          28
                                                                              Bugs Bunny
666
                           9000
                                                  0
                                                                 5000
    Α
                                                          26
24
22
                     Ò
777
     Α
       admn
                                        0
                                                50
                                                                4500
                                                                             dddd dddddd
                               0
                           1267
                                                99
888
    A Dist
                    35
                                        0
                                                                4000
                                                                           Pink Panther
999
                               0
                                               123
                                                                 3100
                                                                            Wile Cayote
       dist
    Α
99999
```

SdPd/java Lab Exam 3 Gerry Agnew February 2016 Page 6 of 6