

# SdPd/java Lab Exam 3

## **Objective: Olympics Medal Table**

Olympic medal winner data is maintained using text files and arrays for participating countries.

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
  - Rename the starter **class name** as per your java file name
  - Verify the **2 data files** required for the assignment location and contents
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. **Country Medals file layout:** see screenshot 1 on page 3  
Each record consists of the following details about each country's medals:
  - countryName (String)                      – unique Country name (case insensitive) e.g. Ireland
  - countryMedals (integer \* 6)              – country medal count e.g. 55  
    each country has 6 medal counts for Gold, Silver and Bronze events for both male and female competitors
  - countryPoints (int)                      – points won total e.g. 36
  - countryDisqualified (int)              – points disqualified total e.g. 12
5. **Event Results Tx file layout:** see screenshot 2 on page 3  
Each transaction record consists of the following details about each Olympic event completed:
  - txCountry (String)    – non-unique Country name string (case insensitive) e.g. Ireland
  - txEvent (String)      – event description e.g. 100-m (without spaces)
  - txGender (char)      – m/Male or f/Female e.g. F
  - txMedal (String)     – medal type g/Gold, s/Silver or b/Bronze e.g. Bronze  
    with 5 points awarded for each Gold, 3 for Silver and 1 for Bronze medal winners
6. **File Organisation:** verify using NotePad (or equivalent)
  - The number of Country Medal and Event Result records are unknown with max 100
  - Both data files are unordered and terminated with a dummy "EOF" string sentinel
7. **Constants/Variables/Arrays/Initialisation:**
  - Declare any constants, file objects, file variables, 1 & 2 dim arrays and any other variables required
  - With meaningful names and appropriate types
  - Initialise any necessary variables especially counts, totals and booleans
8. **Header Output:** see screenshot 3 on page 4
  - Output the headers including **your name** as specified

9. **Country Medals File Input into associated Arrays:** see screenshot 3 on page 4
  - Using an Initial/**while**/Subsequent read sentinel controlled loop
  - Read each Country Medals record from the associated text file until the “EOF” sentinel is encountered
  - Store the data in multiple appropriately named/typed **1 and 2-dim** arrays
    - the 6 integer medal counts and associated points totals should be stored in a 2-dim integer array while the Country name should be stored in single dimension string array
  - Line output formatted Country Medals count details from the **arrays** to verify that they have been populated correctly
10. **Event Results Tx File Input:** see screenshot 4 on page 4
  - Using an Initial/**while**/Subsequent read sentinel controlled loop
  - Read each Event Results Tx record from the associated file using file variables (not Arrays) until the “EOF “ sentinel is encountered
  - Line output formatted Event Results Tx details to verify that these records are read correctly
11. **Event Results Tx File Processing:**
  - Remember to first close and then re-open the Tx file otherwise Tx records are not available
  - Duplicate the above **outer while** loop to search for the Country name from the Tx file
  - Using an **inner while** loop search the corresponding Country name array efficiently for the Tx Country name
  - Output is similar to the previous screenshot except that bad records are rejected and not displayed
12. **Successful Country Name Search:** see screenshots 5 & 6 on pages 4 & 5
  - If successful then update the corresponding Medals count array with the Tx Event Results according to the competitor gender (male or female) and update the associated points
  - Then line output formatted Event Results Tx details (as before) to verify that the records are being processed correctly including the before and after points totals
  - If unsuccessful mismatched Country names (in the Tx file and not in the Array) are not displayed and should be rejected/reported using the Mismatched Rejected Tx Report
  - Event records may also be rejected if the medal name is incorrect as indicated
13. **Output Updated Arrays:** see screenshots 7 on page 5
  - Using nested **for loops** line output formatted **array** Country Medals details
  - To verify that the Tx file changes have been correctly applied to the Medals array
14. **Country Name Processing:** see screenshot 8 on page 5
  - Using an **outer while** loop prompt/input the Find Country name (no spaces string)
  - Using the Initial/**while**/Subsequent read approach until “Stop” is entered to end the loop
15. **Unsuccessful Country name Search:** see screenshot 9 on page 5
  - Using an **inner while** loop search the Country names array case insensitively for the Find Country name entered
  - If unsuccessful output an error message and prompt/input another Find Country name
16. **Successful Country Name Search:** see screenshot 10 on page 5
  - If successful prompt/input the required character option/action to be performed:
    - Select **C**ountry, **D**isplay, **M**edal or **Q**uit and process/validate the option with a switch
  - Then show the current value (see below) e.g. Country name: Ireland
  - Prompt/Input/Amend the corresponding array element with the new value entered
17. **Options Available:** see screenshots 11, 12, 13 & 14 on pages 5 & 6
  - Option c/C: Change the Country name

- Option d/D: Display/Output Country Medals details as before (clone part 13 nested for loop)
- Option m/M: Change the associated Medal count according to the new value entered
- Option q/Q: Quit the operation and resume with another prompt/input Find Country name

## 18. Exception Validation:

- Validate the character option/action (case insensitively) with **switch** validation: must be **C**/ountry, **D**/isplay, **M**/edal or **Q**/uit
- Validate the Country name – cannot be blank (hint trim & length) with **do..while** validation
- Validate the Medal and Gender types – first letter only g/Gold, s/Silver or b/Bronze for the medal and m/Male or f/Female for the gender with **do..while** validation

## 19. Save Updated Medal Arrays to a new Output File: see screenshot 15 on page 6

- Using nested for loops output/save the array contents when finished, including any changes made, to a new text file called “**NewCountryMedals.dat**” (verified by NotePad or equivalent)
- With the exact same layout as the Country Medals input text file
- Remember to append the dummy “EOF” string sentinel at the end of the file

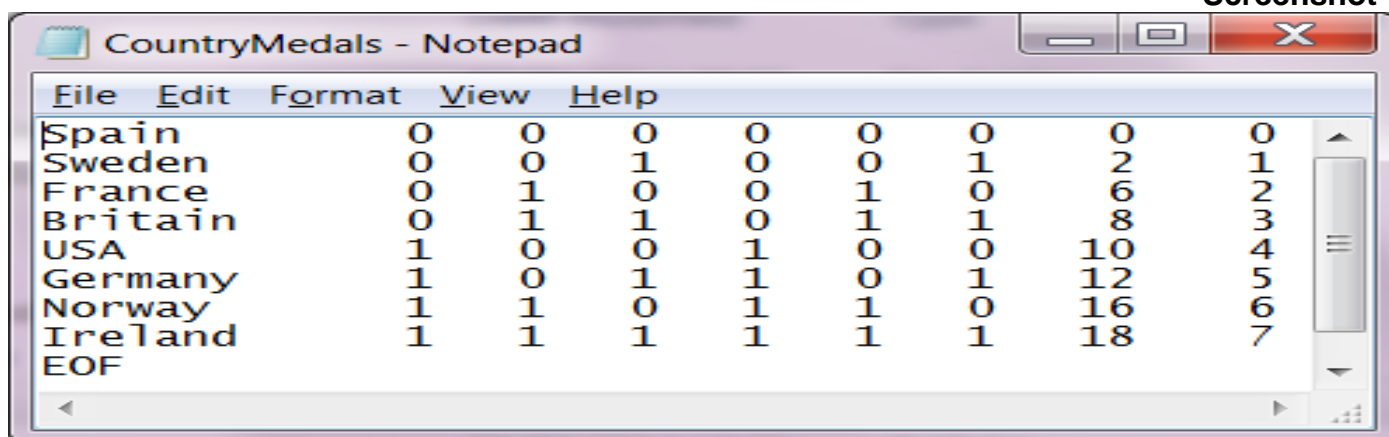
## 20. Close Files:

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

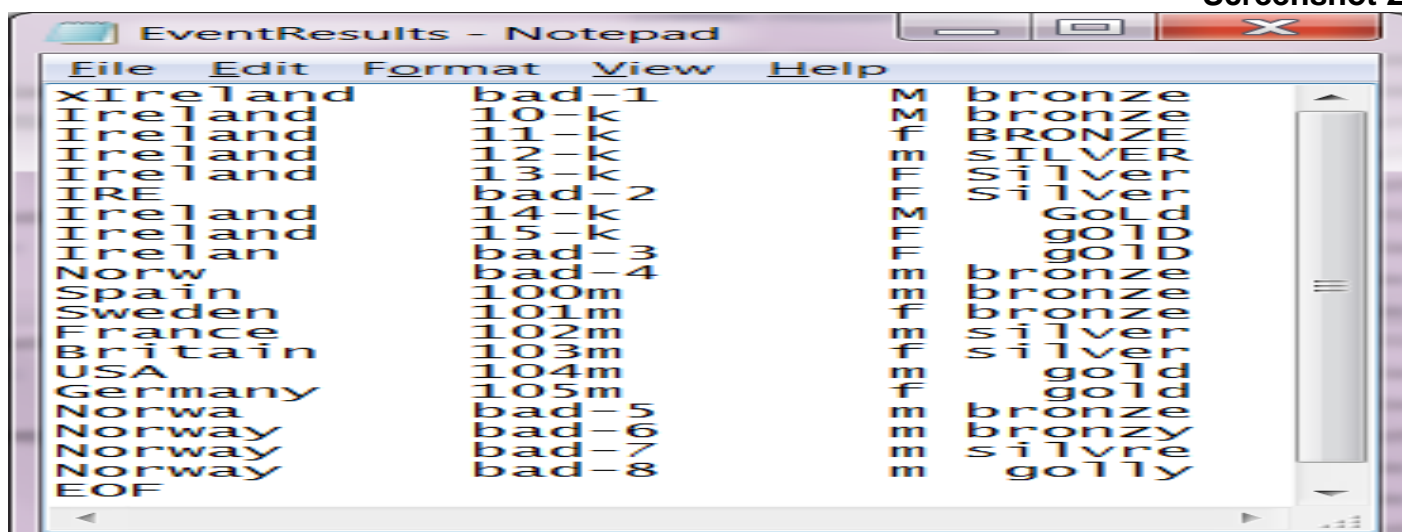
## 21. Save – The End: when finished Save and Exit TextPad

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

Screenshot 1



Screenshot 2



## Gerry Agnew - Olympic Medal Table - Lab Ex 3

Country	<----- Male ----->			<----- Female ----->			Points	Disq
	Gold	Silver	Bronze	Gold	Silver	Bronze		
Spain	0	0	0	0	0	0	0	0
Sweden	0	0	1	0	0	1	2	1
France	0	1	0	0	1	0	6	2
Britain	0	1	1	0	1	1	8	3
USA	1	0	0	1	0	0	10	4
Germany	1	0	1	1	0	1	12	5
Norway	1	1	0	1	1	0	16	6
Ireland	1	1	1	1	1	1	18	7

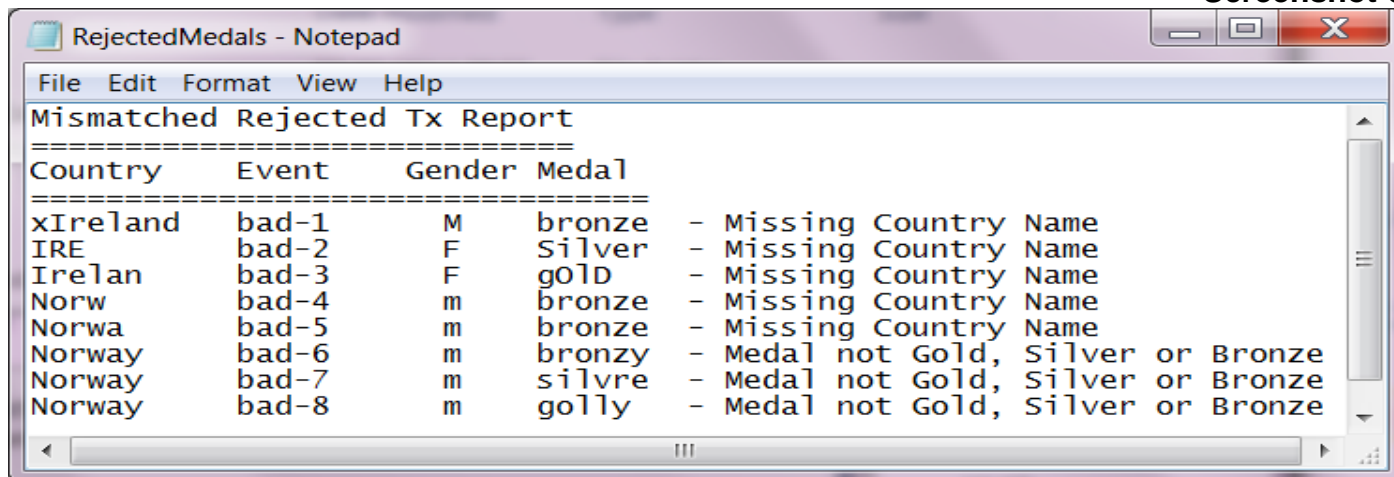
Country	Event	Gender	Medal
xIreland	bad-1	M	bronze
Ireland	10-k	M	bronze
Ireland	11-k	f	BRONZE
Ireland	12-k	m	SILVER
Ireland	13-k	F	Silver
IRE	bad-2	F	Silver
Ireland	14-k	M	GoLd
Ireland	15-k	F	gOLD
Ireland	bad-3	F	gOLD
Norw	bad-4	m	bronze
Spain	100m	m	bronze
Sweden	101m	f	bronze
France	102m	m	silver
Britain	103m	f	silver
USA	104m	m	gold
Germany	105m	f	gold
Norwa	bad-5	m	bronze
Norway	bad-6	m	bronzy
Norway	bad-7	m	silvre
Norway	bad-8	m	golly

Country	Event	Gender	Medal
Ireland	10-k	M	bronze
Ireland	11-k	f	BRONZE
Ireland	12-k	m	SILVER
Ireland	13-k	F	Silver
Ireland	14-k	M	GoLd
Ireland	15-k	F	gOLD
Spain	100m	m	bronze
Sweden	101m	f	bronze
France	102m	m	silver
Britain	103m	f	silver
USA	104m	m	gold
Germany	105m	f	gold

Bef: 18	Aft: 19	points
Bef: 19	Aft: 20	points
Bef: 20	Aft: 23	points
Bef: 23	Aft: 26	points
Bef: 26	Aft: 31	points
Bef: 31	Aft: 36	points
Bef: 0	Aft: 1	points
Bef: 2	Aft: 3	points
Bef: 6	Aft: 9	points
Bef: 8	Aft: 11	points
Bef: 10	Aft: 15	points
Bef: 12	Aft: 17	points

Screenshot 6



Screenshot 7

Country	<----- Male ----->			<----- Female ----->			Points	Disq
	Gold	Silver	Bronze	Gold	Silver	Bronze		
Spain	0	0	1	0	0	0	1	0
Sweden	0	0	1	0	0	2	3	1
France	0	2	0	0	1	0	9	2
Britain	0	1	1	0	2	1	11	3
USA	2	0	0	1	0	0	15	4
Germany	1	0	1	2	0	1	17	5
Norway	1	1	0	1	1	0	16	6
Ireland	2	2	2	2	2	2	36	7

Screenshot 8

Enter Country Name (Stop to end): Stop\_

Screenshot 9

Enter Country Name (Stop to end): myland  
 Sorry Country name not found - please try again.  
 Enter Country Name (Stop to end):

Screenshot 10

Enter Country Name (Stop to end): Ireland  
 Select C/ountry, Display, M/edal, Q/uit: X  
 Sorry must enter: C/ountry, Display, M/edal or Q/uit.  
 Enter Country Name (Stop to end):

C/ountry Name – Screenshot 11

Enter Country Name (Stop to end): Ireland  
 Select C/ountry, Display, M/edal, Q/uit: C  
 Current Country Name: Ireland  
 Enter new Country name (not blank):  
 Current Country Name: Ireland  
 Enter new Country name (not blank): Ire  
 Enter Country Name (Stop to end):

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Enter Country Name (Stop to end): Sweden
Select C/ountry, D/isplay, M/edal, Q/uit: d

```

	<----- Male ----->			<----- Female ----->				
Country	Gold	Silver	Bronze	Gold	Silver	Bronze	Points	Disq
Spain	0	0	1	0	0	0	1	0
Sweden	0	0	1	0	0	2	3	1
France	0	2	0	0	1	0	9	2

```

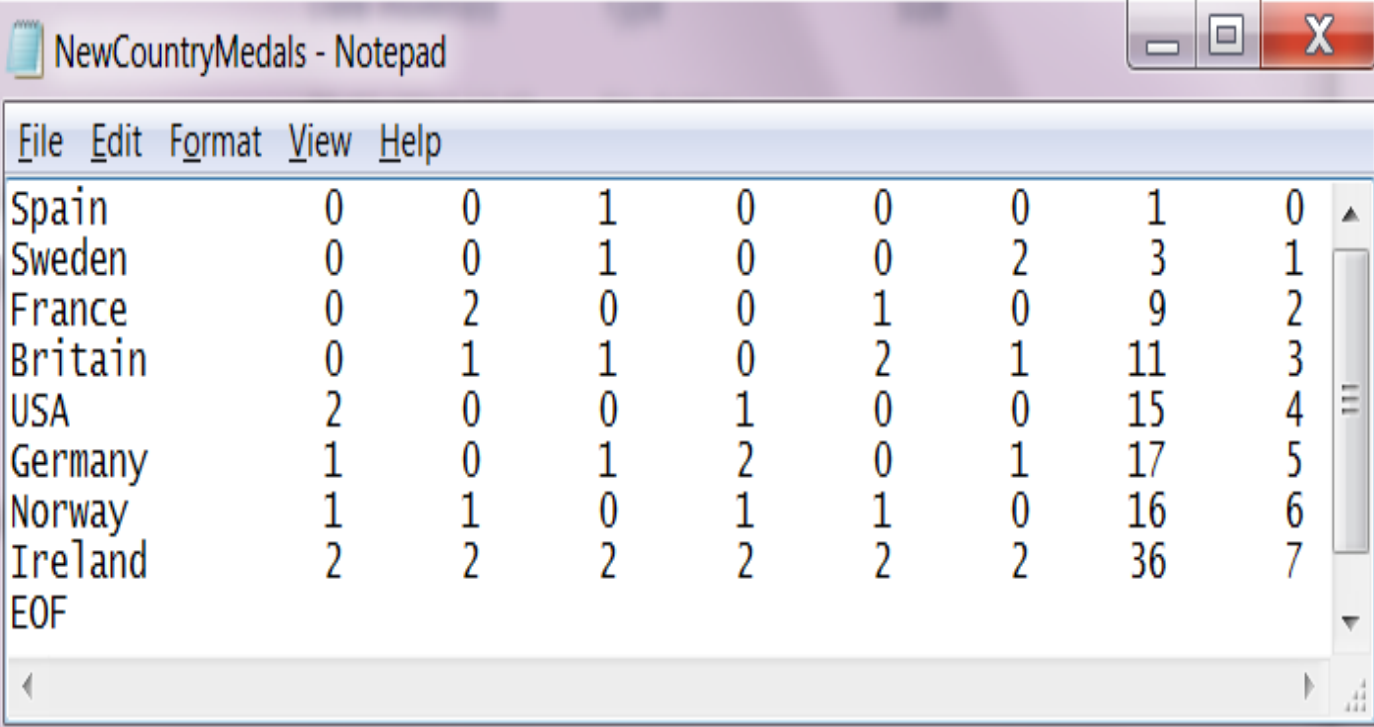
Enter Country Name (Stop to end): ireland
Select C/ountry, D/isplay, M/edal, Q/uit: M
Enter Medal type & Gender (G/old F/emale): xGold xMale
Enter Medal type & Gender (G/old F/emale): xGold Male
Enter Medal type & Gender (G/old F/emale): Gold xMale
Enter Medal type & Gender (G/old F/emale): gold male
Current Medal Count: 2
Enter Medal Count: 22

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Enter Country Name (Stop to end): USA
Select C/ountry, D/isplay, M/edal, Q/uit: Q
Enter Country Name (Stop to end): _

```



File	Edit	Format	View	Help				
Spain	0	0	1	0	0	0	1	0
Sweden	0	0	1	0	0	2	3	1
France	0	2	0	0	1	0	9	2
Britain	0	1	1	0	2	1	11	3
USA	2	0	0	1	0	0	15	4
Germany	1	0	1	2	0	1	17	5
Norway	1	1	0	1	1	0	16	6
Ireland	2	2	2	2	2	2	36	7
EOF								