Seneca College
Applied Arts & Technology
SCHOOL OF COMPUTER STUDIES

JAC444 **Submission date:** **Oct 03, 2021**

Workshop 2

Description:
The following workshop lets you practice basic java coding techniques, creating classes, methods, inheritance, polymorphism.

Task 1: (2D array Challenge)

Use a two-dimensional array to solve the following problem:

- A company has
  - Four salespeople (1 to 4) who sell five different products (1 to 5).
- Once a day, each salesperson passes in a slip for each type of product sold. Each slip contains the following:
  1. The salesperson number
  2. The product number
  3. The total dollar value of that product sold that day
- Thus, each salesperson passes in between 0 and 5 sales slips per day.
- Assume that the information from all the slips for last month is available.

Write an application that will read all this information for last month's sales and summarize the total sales by salesperson and by product.

- All totals should be stored in the two-dimensional array sales.
- After processing all the information for last month, display the results in tabular format, with each column representing a salesperson and each row representing a particular product. Cross-total each row to get the total sales of each product for last month.
- Cross-total each column to get the total sales by salesperson for last month.
- Your output should include these cross-totals to the right of the totaled rows and to the bottom of the totaled columns.

Hints:

- I would recommend creating two classes for this problem at the minimum
  - SalesSlip to manage the class behaviors
    - getPerson()
    - getProduct()
    - getValue()
- 2D array to represent products and salesperson

- For last month sales slips use random --- for example create 100 sale slip records as single dimension array and store.

Prod/Person	1	2	3	4	Total
1	496.33	510.58	760.16	752.16	2519.23
2	418.87	1.00	183.67	292.81	896.36
3	444.39	96.29	350.39	756.10	1647.17
4	314.42	555.31	670.22	748.43	2288.38
5	592.64	685.95	482.26	437.49	2198.34
Total	2266.65	1849.13	2446.70	2987.00	

This output is generated using random numbers no user input required.

Task 2: (Class Practice)

The Canadian federal personal income tax is calculated based on filing status and taxable income. There are four filing statuses:

- single filers
- married filing jointly or qualified widow(er)
- married filing separately
- head of household.

The tax rates vary every year.

If you are, for example say, *single* with a taxable income of $10,000, the first $8,350 is taxed at 10% and the other $1,650 is taxed at 15%, so, your total tax is $1,082.50.

Design a class named *IncomeTax* to contain the following instance data fields (Chose the data fields types on your own):

1. filingStatus: One of the four tax-filing statuses:
   - 0—single filer
   - 1— married filing jointly or qualifying widow(er)
   - 2—married filing separately
   - 3—head of household.

2. Use the constants
   - SINGLE_FILER(0)
   - MARRIED_JOINTLY_OR_QUALIFYING_WIDOW(ER) (1)
   - MARRIED_SEPARATELY (2)
   - HEAD_OF_HOUSEHOLD (3)

   to represent the statuses.

3. A double-dimension array (You decide the type of it) named *intervals*: Stores the tax intervals/ brackets for each filing status.
4. A single-dimension array (You decide the type) named *rates*: Stores the tax rates for each interval.
5. A variable *taxableIncome*: Stores the taxable income.

6. Provide the getter and setter methods for each data field and the *getIncomeTax()* method that returns the tax.
7. Provide a no-arg constructor.
8. Provide the overloaded constructor *IncomeTax(filingStatus, intervals, rates, taxableIncome)*.

Write a program that prompt the user with a simple menu system of three choices:

- Compute personal income Tax
- Print the tax tables for taxable incomes (with range)
- Exit

❖ With choice one your program should prompt the user to enter the filing status and taxable income and compute the tax.

❖ With choice two your program should use the IncomeTax class to print the 2001 and 2009 tax tables for taxable income from (ask the user to input the amount) to (ask the user to input the amount) with intervals of $1,000 for all four statuses.

The tax rates for the year 2001 and 2009 are given in Tables below.

Table 1: 2001 Canadian Federal Personal Tax Rates				
Tax Rate	Single	Married Filing Jointly or Qualifying Widow(er)	Married Filing Separately	Head of House Hold
15%	Up to - $27,050	Up to - $45,200	Up to $22,600	Up to - $36,250
27.5%	$27,051 - $65,550	$45,201 - $109,250	$22,601 - $54,625	$36,251 - $93,650
30.5%	$65,551-$136,750	$109,251 - $166,500	$54,626 - $83,250	$93,651 - $151,650
35.5%	$136,751-$297,350	$166,501 - $297,350	$83,251 - $148,675	$151,651 - $297,350
39.1%	$297,351 +	$297,351 +	$148,676+	$297,351+

Table 2: 2009 Canadian Federal Personal Tax Rates				
Marginal Tax Rate	Single	Married Filing Jointly or Qualifying Widow(er)	Married Filing Separately	Head of House Hold
10%	$0 - $8,350	$0 - $16,700	$0 - $8,350	$0 - $11,950
15%	$8,351 - $33,950	$16,701 - $67,900	$8,351 - $33,950	$11,951 - $45,500
25%	$33,951-$82,250	$67,901 - $137,050	$33,951 - $68,525	$45,501 - $117,450
28%	$82,251-$171,550	$137,051 - $208,850	$68,526 - $104,425	$117,451 - $190,200
33%	$171,551-$372,950	$208,851 - $372,950	$104,426 - $186,475	$190,201 - $372,950
35%	$372,951 +	$372,951 +	$186,476 +	$372,951 +

For each filing status there are six tax rates. Each rate is applied to a certain amount of taxable income. For example, of a taxable income of $400,000 for single filers, $8,350 is taxed at 10%, (33,950 – 8,350) at 15%, (82,250 – 33,950) at 25%, (171,550 – 82,250) at 28%, (372,950 – 171,550) at 33%, and (400,000 – 372,950) at 35%.

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Possible output screen shots:
With choice 1:

```
0 - single filer
1 - married jointly or qualifying widow(er)
2 - married separately
3 - head of household)
Enter the filing status: 0
Enter the Taxable Income: $20000
Tax is: $2582.50
```

With choice 2:

Roll to the next page for output

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Enter the amount From: $50000
Enter the amount To: $60000
2001 tax tables for taxable income from $50,000 to $60,000

Taxable Income	Single	Married Joint or Qualifying Widow(er)	Married Separate	Head of a House
50000	10368.75	8100.00	10925.00	9218.75
51000	10643.75	8375.00	11200.00	9493.75
52000	10918.75	8650.00	11475.00	9768.75
53000	11193.75	8925.00	11750.00	10043.75
54000	11468.75	9200.00	12025.00	10318.75
55000	11743.75	9475.00	12311.25	10593.75
56000	12018.75	9750.00	12616.25	10868.75
57000	12293.75	10025.00	12921.25	11143.75
58000	12568.75	10300.00	13226.25	11418.75
59000	12843.75	10575.00	13531.25	11693.75
60000	13118.75	10850.00	13836.25	11968.75

2009 tax tables for taxable income from $50,000 to $60,000

Taxable Income	Single	Married Joint or Qualifying Widow(er)	Married Separate	Head of a House
50000	9846.50	7296.70	10398.50	8506.50
51000	10116.50	7566.70	10668.50	8776.50
52000	10386.50	7836.70	10938.50	9046.50
53000	10656.50	8106.70	11208.50	9316.50
54000	10926.50	8376.70	11478.50	9586.50
55000	11196.50	8646.70	11748.50	9856.50
56000	11466.50	8916.70	12018.50	10126.50
57000	11736.50	9186.70	12305.50	10396.50
58000	12006.50	9456.70	12605.50	10666.50
59000	12276.50	9726.70	12905.50	10936.50
60000	12546.50	9996.70	13205.50	11206.50
60000	11187.50	15205.70	11187.50	9852.50

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Workshop Header

/**
Workshop #
Course:*<subject type> - Semester*
Last Name:*<student last name>*
First Name:*<student first name>*
ID:*<student ID>*
Section:*<section name>*
This assignment represents my own work in accordance with Seneca Academic Policy.
Signature
Date:*<submission date>*
**/

Code Submission Criteria:

Please note that you should have:

- Appropriate indentation.
- Proper file structure
- Follow java naming convention
- Document all the classes properly
- Do Not have any debug/ useless code and/ or files in the assignment

Deliverables and Important Notes:

All these deliverables are supposed to be uploaded on the blackboard once done.

- You are supposed to create video/ record voice/ detailed document of your running solution. **(50%)**
  - Screen Video captured file should state your last name and id, like Ali_123456.mp4 (or whatever the extension of the file is)
  - Detailed document should include screen shots of your output, have your name and id on the top of the file and save the file with your last name and id, like Ali_123456.docx (or whatever the extension of the file is)
- A word/ text file which will reflect on learning of your concepts in this workshop. **(30%)**
  - Should state your Full name and Id on the top of the file and save the file with your last name and id, like Ali_123456.txt
- Submission of working code. **(20%)**
  - Make sure your follow the "**Code Submission Criteria"** mentioned above.
  - You should zip your whole working project to a file named after your Last Name followed by the first 3 digits of your student ID. For example, **Ali123.**zip.

- Your marks will be deducted according to what is missing from the above-mentioned submission details.
- Late submissions would result in additional 10% penalties for each day or part of it.

Remember that you are encouraged to talk to each other, to the instructor, or to anyone else about any of the assignments, but the final solution may not be copied from any