University of Windsor

School of Computer Science - Fall 2019
COMP-3220-1: Object-Oriented Software Analysis and Design
Assignment-5
Due: November 22, 2019 @11:59pm

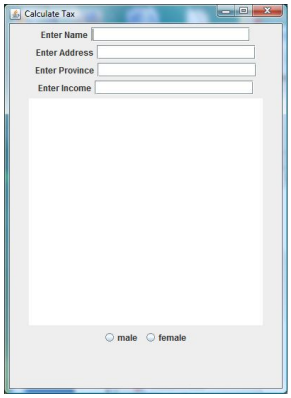
Objective:

The objective of this assignment is to understand and practice abstract factory pattern.

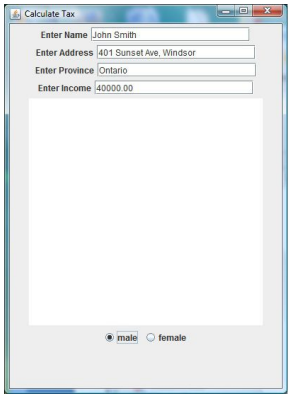
Assignment Specification:

Consider the problem of writing a tax processing program which handles the case of calculating the provincial taxes for Ontario and Quebec. The application works as follows: (50 marks)

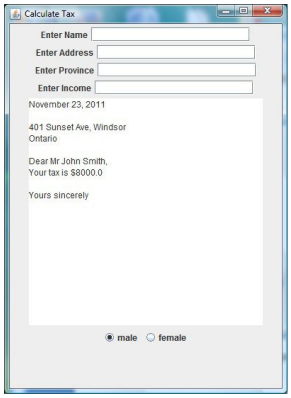
1. Display an object of the *JFrame* class as given below. The supplied application (uploaded in Blackboard) gives the actual code I used. You do not need to pay a lot of attention to the code since it is not relevant to the task you have. I have not attempted to deal with other details (such as error handling). Fig 1(a) shows the initial frame displayed.
2. The user has to fill in all details and press *Enter* after supplying the yearly income. Fig 1(b) shows a typical frame after the user has entered all details and before the user presses *Enter*.
3. The program calculates the tax payable in that province and displays a letter to be sent to the user. The frame after the user presses *Enter* is shown in Fig 1(c).
4. The final frame after entering information about a person from Quebec is shown in Fig 1(d).



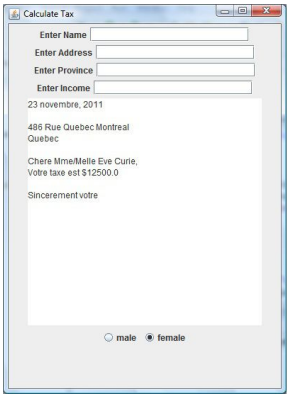
(a) *Initial frame displayed by the system.*



(b) *Frame after the user types all details and before pressing Enter.*



(c) *Frame after the user presses Enter.*



(d) *Appearance of frame for a female user from Quebec.*

Figure 1

Using the idea of **Abstract factory** pattern and rewrite the application. Hints: Consider the Fig 2. *Please note that you will not get any credit if you do not use the* ***Abstract factory*** *pattern in solving the problem.*

As a reference please see the "Abstract Factory Pizza" example in Lecture-7.3.

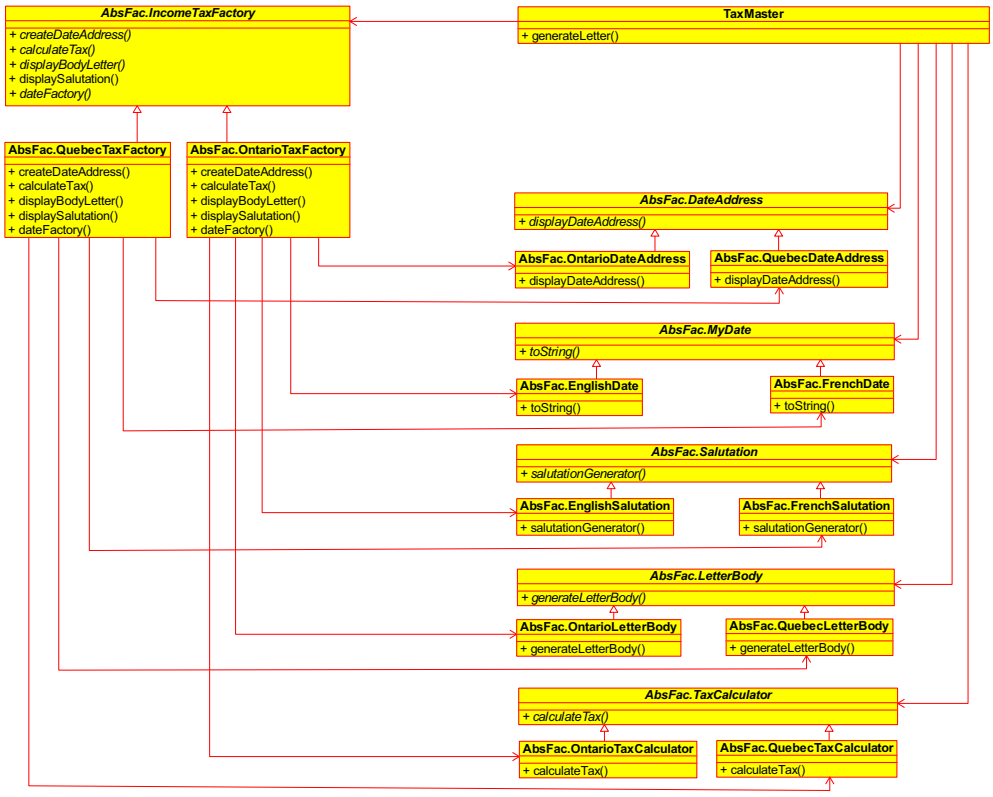


Figure 2

Submission Instructions:

Unzip and use Eclipse to open the uploaded java application. Use Eclipse IDE also to create java application. Compressed (zipped) your project folder with name `A5_yourSID` and submit to the Blackboard. For example, if your SID is `"123456789"`, then the submission file is `"A5_123456789"`. You can submit multiple times but the mark will be posted based on your latest attempt. Comment your program carefully so that it can be read and understood. If your program is not properly commented you may lose marks. See **marking scheme** for details.

Marking Scheme:

Comments in the program:	5
Complete program, no compile/logical error, and correct output:	45