ITEC 109: Problem solving and Programming

Homework 2 – Value added tax

>>>>>>> **Due Date: Friday, October 17th 10:00PM via D2L** <<<<<<<

In doing this homework, remember to abide by the RU Honor Code.
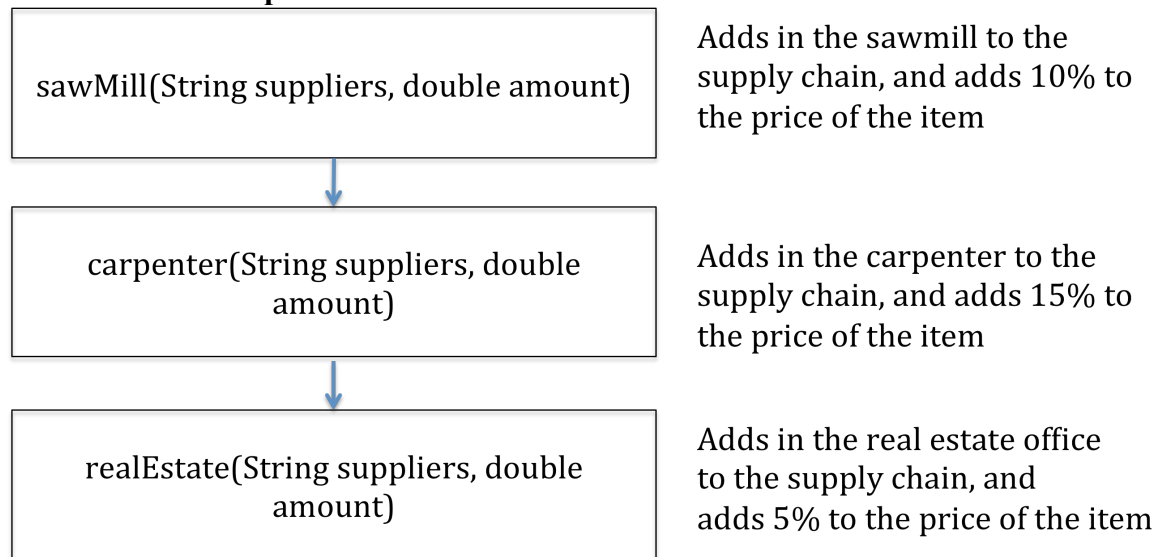

Problem 1
16 points

You are a new employee at the IRS and have been tasked with creating simulations for new tax ideas. Given the recent political climate with the tea party, your boss is eager to provide a new system of taxation that will make people happier. To illustrate how the taxation works from the ground up, your simulation will calculate the Value Added Tax (VAT) from the lumberjack, to the sawmill, to the carpenter, to the real estate agent. The goal for the simulation is to show what the tax is for each stage of an item's creation.

Because you are new, a senior developer has provided a description of the functions that you need to implement your project. The main program calls a header to indicate the program is starting, starts the processing for the tax calculation, and then calls a footer function indicating that the simulation is over.

The architecture description lists the different functions used in the program, their parameters, and the flow of execution.

Driver program:
```
header();
sawmill("Lumberjack", 200);
footer();
```

Architecture description:

sawMill(String suppliers, double amount)

Adds in the sawmill to the supply chain, and adds 10% to the price of the item

carpenter(String suppliers, double amount)

Adds in the carpenter to the supply chain, and adds 15% to the price of the item

realEstate(String suppliers, double amount)

Adds in the real estate office to the supply chain, and adds 5% to the price of the item

Reiteration of steps required in the architecture:
You will need to write five functions: header, footer, sawMill, carpenter, and realEstate. The main program will call the header function, then the sawMill function. The sawMill function will call the carpenter function, which will call the realEstate function. Lastly, when Driver4 resumes executing code, it calls the footer method, then exits.

Responsibility of each function:
Your program will start off with the lumberjack bringing in $200 worth of lumber. This information will be passed to the sawMill function which will add itself to the supply chain (String concatenation), print out how much VAT is added by the particular job, and send the new cost to the next function (carpenter). The carpenter function will repeat the same steps and will then send its updated price to the realEstate function which will repeat the same steps and will then exit.

Output Format:
Your program must match the following format exactly.

```
Begin VAT calculation program
Supply chain = Forester-Sawmill
Value added tax = 20.0
Supply chain = Forester-Sawmill-Carpenter
Value added tax = 33.0
Supply chain = Forester-Sawmill-Carpenter-RealEstate
Value added tax = 12.65
Total cost = 265.65
End VAT calculation program
```

Hints:
Write all of the functions with blank bodies (this will allow your program to run).
Write the header and footer functions first.
See me or a tutor if you need help.

After you are finished writing and testing your program, log into D2L and submit the python file under the homework 2 drop box.

Grading rubric
2 points – Compiles (no syntax errors)
2 points – Prints out header and footer properly
10 points – Produces correct output that conforms to the format described above.
2 points – Follows the design listed in the architecture description