

Unit 1 Review

CS 124 – Intro to Software Development

Macbeth – Lesson 4.2

Agenda

- Opening Prayer
- Spiritual Thought
- Review Unit 1 Practice Questions
- Project 04
- Looking Ahead

Spiritual Thought

Bonnie Oscarson, General YW President

"Ask your Heavenly Father to show you those around you who need your help and inspire you on how to best serve them. Remember that the Savior most often ministered to one person at a time."

Unit 1 Practice Test Questions

The practice test questions cover the following topics we learned in Unit 1

- How to create a basic C++ program
- How to use testBed, styleChecker, and submit tools
- Outputs with cout
- Variables and Inputs with cin
- Numeric Expressions with variables and the = sign
- Functions
 - Inputs passed by value
 - Inputs\Outputs passed by reference
 - Return Types (a single output)
 - Calling functions
 - Setting a variable equal to the value returned from a function
- Boolean expressions and if / else if / else statements

Project 04

`computeTax()`

In order to determine the tax burden, it is necessary to project the monthly income to yearly income, compute the tax, and reduce that amount back to a monthly amount. In each case, it is necessary to determine the tax bracket of the individual and to then apply the appropriate formula. The tax brackets for the 2006 year are:

If taxable income is over-- But not over--		The tax is:
\$0	\$15,100	10% of the amount over \$0
\$15,100	\$61,300	\$1,510.00 plus 15% of the amount over 15,100
\$61,300	\$123,700	\$8,440.00 plus 25% of the amount over 61,300
\$123,700	\$188,450	\$24,040.00 plus 28% of the amount over 123,700
\$188,450	\$336,550	\$42,170.00 plus 33% of the amount over 188,450
\$336,550	no limit	\$91,043.00 plus 35% of the amount over 336,550

The pseudocode for `computeTax()` is the following:

```
computeTax (monthlyIncome)
    yearlyIncome ← monthlyIncome * 12
    if ( $0 \leq \text{yearlyIncome} < \$15,100$ )
        yearlyTax ← yearlyIncome * 0.10
    if ( $\$15,100 \leq \text{yearlyIncome} < \$61,300$ )
        yearlyTax ←  $\$1,510 + 0.15 * (\text{yearlyIncome} - \$15,100)$ 
    if ( $\$61,300 \leq \text{yearlyIncome} < \$123,700$ )
        yearlyTax ←  $\$8,440 + 0.25 * (\text{yearlyIncome} - \$61,300)$ 
    if ( $\$123,700 \leq \text{yearlyIncome} < \$188,450$ )
        yearlyTax ←  $\$24,040 + 0.28 * (\text{yearlyIncome} - \$123,700)$ 
    if ( $\$188,450 \leq \text{yearlyIncome} < \$336,550$ )
        yearlyTax ←  $\$42,170 + 0.33 * (\text{yearlyIncome} - \$188,450)$ 
    if ( $\$336,550 \leq \text{yearlyIncome}$ )
        yearlyTax ←  $\$91,043 + 0.35 * (\text{yearlyIncome} - \$336,550)$ 

    monthlyTax ← yearlyTax / 12
    return monthlyTax
end
```

Looking Forward

- Before Class on Wednesday
 - Work on the practice unit test 1 problems (do not submit)
 - Work on your project 04
- Friday
 - Unit Test 1 – bring your laptop!
- Saturday
 - Project 04 is due