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IF Statements

CS 124 – Intro to Software Development

Macbeth – Lesson 4.1

Agenda

- Opening Prayer
- Scripture
- Q&A
  - Review Assignment
- IF Statements
- Project 04
- Practice for Unit 1 Test
- Looking Ahead

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Scripture

Proverbs 3:5-6

Trust in the Lord with all thine heart;
and lean not unto thine own understanding.

In all thy ways acknowledge him,
and he shall direct thy paths.

Q&A

- Review Assignment
  - What was the hardest part?
  - How did you solve it?

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IF Statements

- "if" statements allow your code to make decisions
- The "if" statement uses Boolean expressions to determine if code should be executed

IF Statement	IF – ELSE Statement	IF, ELSE IF, and ELSE Statements

`if (temp > 90.0)`
`{`
`  cout << "It's hot!";`
`}`
	`if (temp > 90.0)`
	`{`
	`  cout << "Its hot!";`
	`}`
	`else`
	`{`
	`  cout << "Nice weather.";`
	`}`
		`if (temp > 90.0)`
		`{`
		`  cout << "Its hot!";`
		`}`
		`else if (temp > 60.0)`
		`{`
		`  cout << "Nice weather.";`
		`}`
		`else`
		`{`
		`  cout << "Need a jacket.";`
		`}`

- Using curly braces every time improves readability.
- Don't put a semicolon after an IF or ELSE.

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Example

- Write the function to display LDL Cholesterol level and return true if its okay or false if its borderline or too high
- If true is returned, then display an alert to the patient.

LDL (Bad) Cholesterol Level	LDL Cholesterol Category
Less than 100mg/dL	Optimal
100-129mg/dL	Near optimal/above optimal
130-159 mg/dL	Borderline high
160-189 mg/dL	High
190 mg/dL and above	Very High

Source: https://medlineplus.gov/magazine/issues/summer12/articles/summer12pg6-7.html

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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 ≤ yearlyIncome < $15,100)
            yearlyTax ← yearlyIncome * 0.10
      if ($15,100 ≤ yearlyIncome < $61,300)
            yearlyTax ← $1,510 + 0.15 *(yearlyIncome - $15,100)
      if ($61,300 ≤ yearlyIncome < $123,700)
            yearlyTax ← $8,440 + 0.25 *(yearlyIncome - $61,300)
      if ($123,700 ≤ yearlyIncome < $188,450)
            yearlyTax ← $24,040 + 0.28 *(yearlyIncome - $123,700)
      if ($188,450 ≤ yearlyIncome < $336,550)
            yearlyTax ← $42,170 + 0.33 *(yearlyIncome - $188,450)
      if ($336,550 ≤ yearlyIncome)
            yearlyTax ← $91,043 + 0.35 *(yearlyIncome - $336,550)

      monthlyTax ← yearlyTax / 12

      return monthlyTax
end
```

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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

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