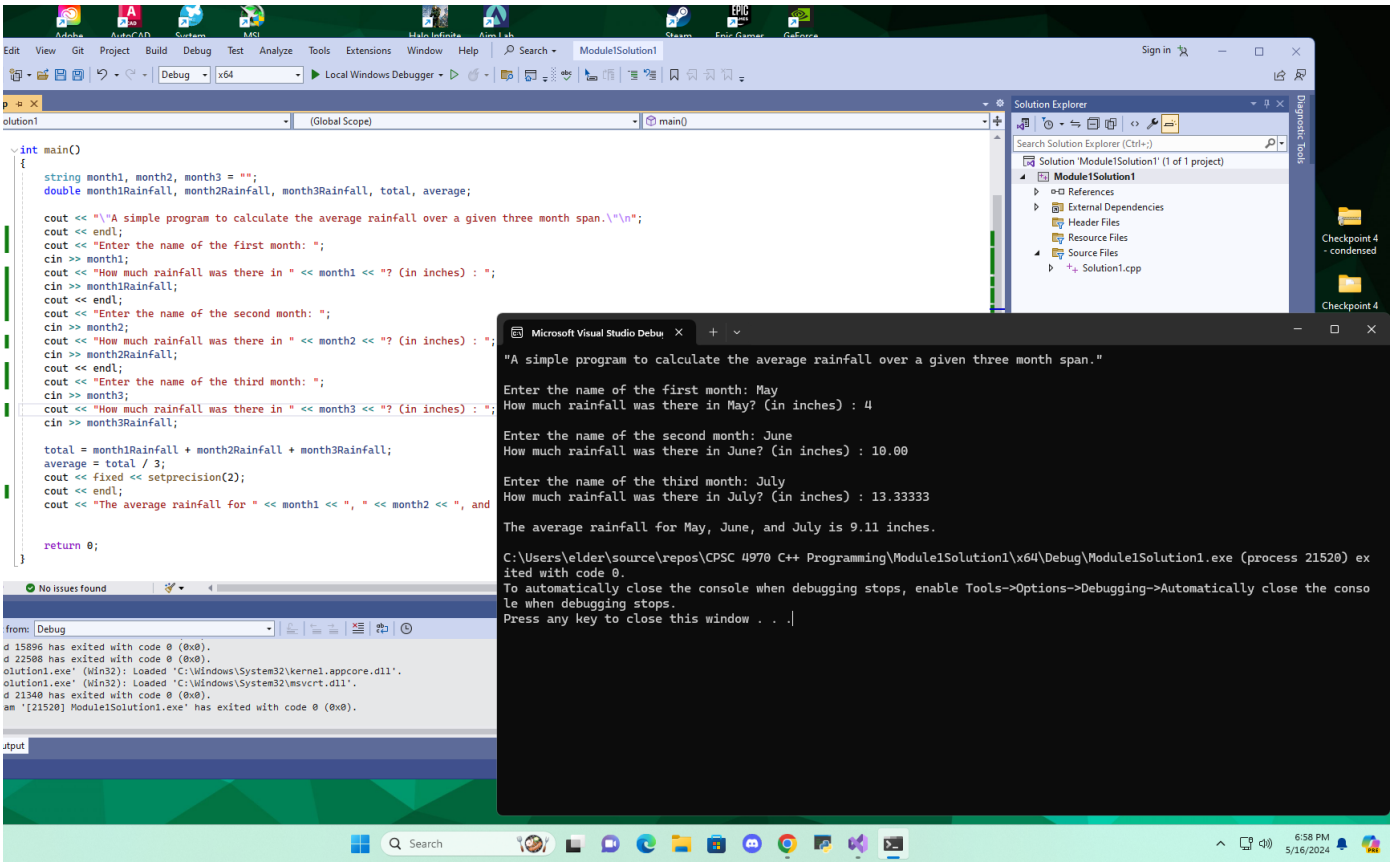
Jonathan Elder

CPSC 4970 – C++ Programming

Homework 1 Solutions and Screenshots

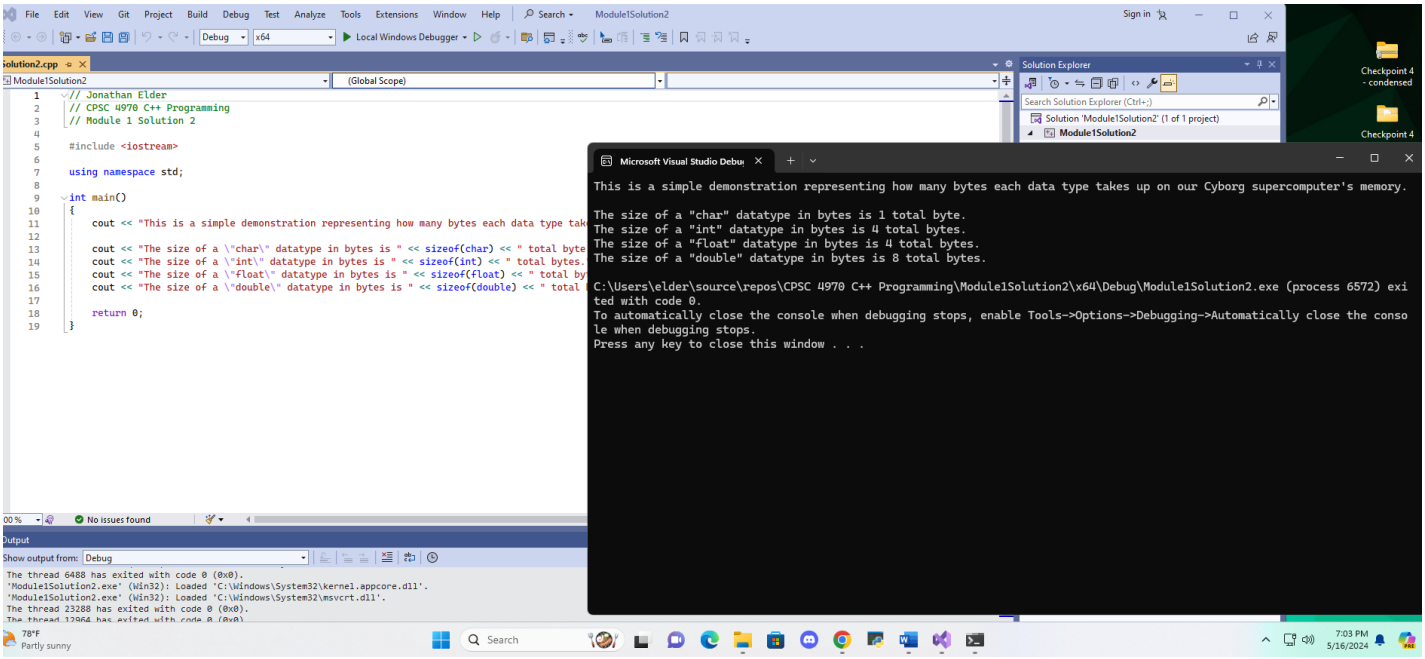
```
// Jonathan Elder
// CPSC 4970 C++ Programming
// Module 1 Solution 1

#include <iostream>
#include <string>
#include <iomanip>

using namespace std;

int main()
{
	string month1, month2, month3 = "";
	double month1Rainfall, month2Rainfall, month3Rainfall, total, average;

	cout << "\"A simple program to calculate the average rainfall over a given
three month span.\"\n";
	cout << endl;
	cout << "Enter the name of the first month: ";
	cin >> month1;
	cout << "How much rainfall was there in " << month1 << "? (in inches) : ";
	cin >> month1Rainfall;
	cout << endl;
	cout << "Enter the name of the second month: ";
	cin >> month2;
	cout << "How much rainfall was there in " << month2 << "? (in inches) : ";
	cin >> month2Rainfall;
	cout << endl;
	cout << "Enter the name of the third month: ";
	cin >> month3;
	cout << "How much rainfall was there in " << month3 << "? (in inches) : ";
	cin >> month3Rainfall;

	total = month1Rainfall + month2Rainfall + month3Rainfall;
	average = total / 3;
	cout << fixed << setprecision(2);
	cout << endl;
	cout << "The average rainfall for " << month1 << ", " << month2 << ", and "
<< month3 << " is " << average << " inches." << endl;


	return 0;
}
```

Solution 1 Screenshot



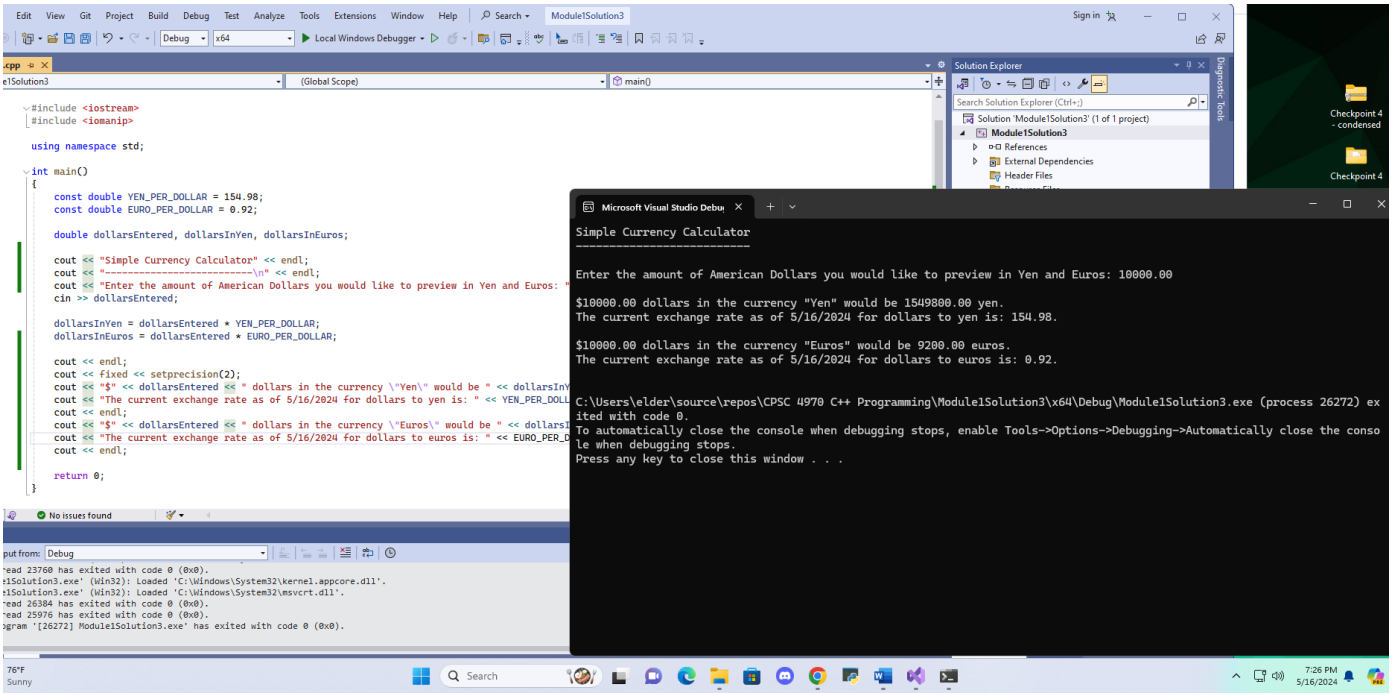
```cpp
// Jonathan Elder
// CPSC 4970 C++ Programming
// Module 1 Solution 2

#include <iostream>

using namespace std;

int main()
{
	cout << "This is a simple demonstration representing how many bytes each data type takes up on our Cyborg supercomputer's memory.\n" << endl;

	cout << "The size of a \"char\" datatype in bytes is " << sizeof(char) << " total byte." << endl;
	cout << "The size of a \"int\" datatype in bytes is " << sizeof(int) << " total bytes." << endl;
	cout << "The size of a \"float\" datatype in bytes is " << sizeof(float) << " total bytes." << endl;
	cout << "The size of a \"double\" datatype in bytes is " << sizeof(double) << " total bytes." << endl;

	return 0;
}
```

Solution 2 Screenshot



```cpp
// Jonathan Elder
// CPSC 4970 C++ Programming
// Module 1 Solution 3

#include <iostream>
#include <iomanip>

using namespace std;

int main()
{
    const double YEN_PER_DOLLAR = 154.98;
    const double EURO_PER_DOLLAR = 0.92;

    double dollarsEntered, dollarsInYen, dollarsInEuros;

    cout << "Simple Currency Calculator" << endl;
    cout << "--------------------------\n" << endl;
    cout << "Enter the amount of American Dollars you would like to preview in Yen
and Euros: ";
    cin >> dollarsEntered;

    dollarsInYen = dollarsEntered * YEN_PER_DOLLAR;
    dollarsInEuros = dollarsEntered * EURO_PER_DOLLAR;

    cout << endl;
    cout << fixed << setprecision(2);
    cout << "$" << dollarsEntered << " dollars in the currency \"Yen\" would be " <<
dollarsInYen << " yen." << endl;
    cout << "The current exchange rate as of 5/16/2024 for dollars to yen is: " <<
YEN_PER_DOLLAR << "." << endl;
    cout << endl;
    cout << "$" << dollarsEntered << " dollars in the currency \"Euros\" would be "
<< dollarsInEuros << " euros." << endl;
    cout << "The current exchange rate as of 5/16/2024 for dollars to euros is: " <<
EURO_PER_DOLLAR << "." << endl;
    cout << endl;

    return 0;
}
```

Solution 3 Screenshot



```cpp
// Jonathan Elder
// CPSC 4970 C++ Programming
// Module 1 Solution 4

#include <iostream>
#include <string>
#include <iomanip>

using namespace std;

int main()
{
    const double STATE_TAX = 0.04;
    const double COUNTY_TAX = 0.02;

    double totalTax = STATE_TAX + COUNTY_TAX;
    string month;
    int year;
    double totalCollected, salesForMonth, countySalesTax, stateSalesTax,
totalSalesTax;

    // Input month, year, and total amount collected in total for a given month. The
total entered will be broken down into total sales plus totalTax.
    cout << "For what month are you entering in the Sales Tax Report: ";
    getline(cin, month);
    cout << "For what year are you entering in the Sales Tax Report: ";
    cin >> year;
    cout << "Enter the total amount collected for " << month << " " << year << "
(including all applicable taxes) : $";
    cin >> totalCollected;

    // Calculates product sales for the month based on how it was described we
should do it in the assignment description.
    salesForMonth = totalCollected / (1 + totalTax);

    // Calculates county and state sales tax separately for representing in the
report.
    countySalesTax = salesForMonth * COUNTY_TAX;
    stateSalesTax = salesForMonth * STATE_TAX;

    // Calculates total sales tax for the month by multiplying sales for the month
by the total tax rate.
    totalSalesTax = salesForMonth * totalTax;

    // Output of the report that should match close enough for what was represented
in the hw assignment.
    cout << fixed << setprecision(2);
    cout << endl;
    cout << "\"Monthly Sales Tax Report\"\n";
    cout << "--------------------" << endl;
    cout << "Month: " << month << endl;
    cout << "Year: " << year << endl;
    cout << "--------------------" << endl;
```

```
    cout << "Total Collected:  $ " << totalCollected << endl;
    cout << "Total Sales:      $ " << salesForMonth << endl;
    cout << "County Sales Tax: $ " << countySalesTax << endl;
    cout << "State Sales Tax:  $ " << stateSalesTax << endl;
    cout << "Total Sales Tax:  $ " << totalSalesTax << endl;
    cout << endl;

    return 0;
}
```

Solution 4 Screenshot