

### Problem 1. How Many Widgets?

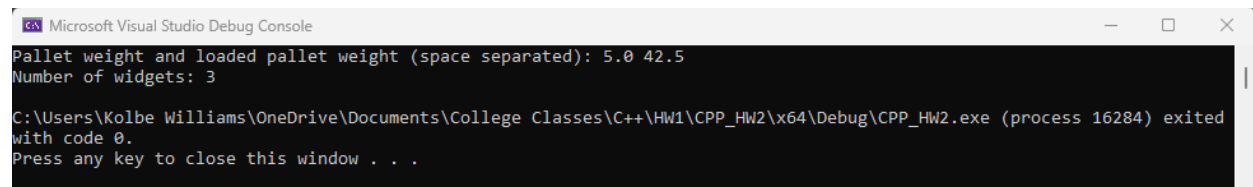
The Yukon Widget Company manufactures widgets that weigh 12.5 pounds each. Write a program that calculates how many widgets are stacked on a pallet, based on the total weight of the pallet. The program should ask the user how much the pallet weighs by itself and with the widgets stacked on it. It should then calculate and display the number of widgets stacked on the pallet.

Code:

```
//DO NOT MODIFY THIS SECTION
#include <iostream>
#include <iomanip>
using namespace std;
int main()
{
    const float widgetWeight = 12.5f;
    float palletWeight, loadedPalletWeight;
    int nWidgets;
    cout << "Pallet weight and loaded pallet weight (space separated): ";
    //ADD YOUR CODE FROM HERE
    cin >> palletWeight;
    cin >> loadedPalletWeight;
    nWidgets = (loadedPalletWeight - palletWeight) / widgetWeight;

    cout << "Number of widgets: " << nWidgets << endl;
}
```

Output:

A screenshot of the Microsoft Visual Studio Debug Console window. The window title is "Microsoft Visual Studio Debug Console". The output text is: "Pallet weight and loaded pallet weight (space separated): 5.0 42.5", "Number of widgets: 3", and "C:\Users\Kolbe Williams\OneDrive\Documents\College Classes\C++\HW1\CPP\_HW2\x64\Debug\CPP\_HW2.exe (process 16284) exited with code 0. Press any key to close this window . . .".

```
Microsoft Visual Studio Debug Console
Pallet weight and loaded pallet weight (space separated): 5.0 42.5
Number of widgets: 3
C:\Users\Kolbe Williams\OneDrive\Documents\College Classes\C++\HW1\CPP_HW2\x64\Debug\CPP_HW2.exe (process 16284) exited
with code 0.
Press any key to close this window . . .
```

### Problem 2. Interest Earned

Assuming there are no deposits other than the original investment, the balance in a savings account after one year may be calculated as

$$\text{Amount} = \text{Principal} * (1 + \text{Rate}/T)^T$$

Principal is the balance in the savings account, Rate is the interest rate, and T is the number of times the interest is compounded during a year ( T is 4 if the interest is compounded quarterly).

Write a program that asks for the principal, the interest rate, and the number of times the interest is compounded. It should display a report similar to:

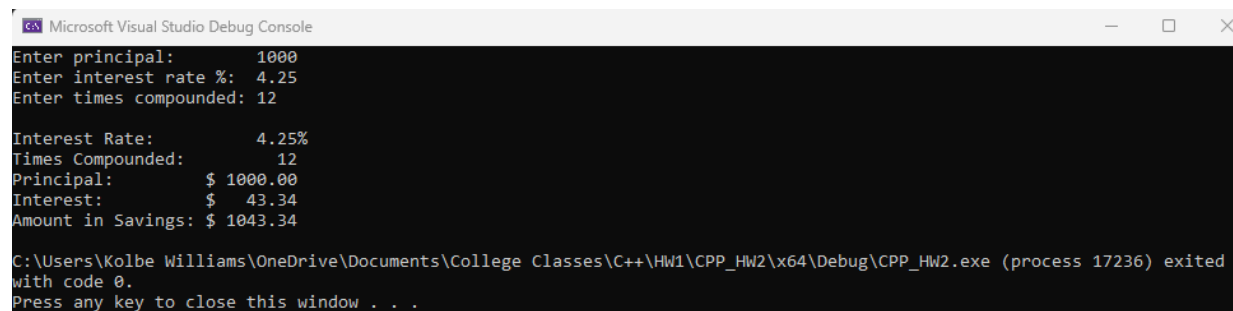
```
Interest Rate:          4.25%
Times Compounded:      12
Principal:             $ 1000.00
Interest:              $  43.34
Amount in Savings:     $ 1043.34
```

Code:

```
//DO NOT MODIFY THIS SECTION
#include <iostream>
#include <iomanip>
#include <math.h>
using namespace std;
int main()
{
    float principal, interestRate;
    float amount;
    int times;
    cout << "Enter principal:      ";
    cin >> principal;
    cout << "Enter interest rate %: ";
    cin >> interestRate;
    cout << "Enter times compounded: ";
    cin >> times;
    //ADD YOUR CODE FROM HERE
    float amountBase = (1 + ((interestRate / 100) / times));
    amount = principal * pow(amountBase, times);
    float intrest = amount - principal;

    cout << fixed << setprecision(2) << endl;
    cout << "Interest Rate:      " << setw(8) << interestRate << "%" << endl;
    cout << "Times Compounded:  " << setw(8) << times << endl;
    cout << "Principal:         $" << setw(8) << principal << endl;
    cout << "Interest:          $" << setw(8) << intrest << endl;
    cout << "Amount in Savings: $" << setw(8) << amount << endl;
}
```

Output:



The screenshot shows the Microsoft Visual Studio Debug Console window. The title bar reads "Microsoft Visual Studio Debug Console". The console output matches the program's output shown in the first block, displaying the input values and the calculated interest and savings. At the bottom, it shows the program path and exit status: "C:\Users\Kolbe Williams\OneDrive\Documents\College Classes\C++\HW1\CPP\_HW2\x64\Debug\CPP\_HW2.exe (process 17236) exited with code 0. Press any key to close this window . . .".

```
Microsoft Visual Studio Debug Console

Enter principal:      1000
Enter interest rate %: 4.25
Enter times compounded: 12

Interest Rate:          4.25%
Times Compounded:      12
Principal:             $ 1000.00
Interest:              $  43.34
Amount in Savings:     $ 1043.34

C:\Users\Kolbe Williams\OneDrive\Documents\College Classes\C++\HW1\CPP_HW2\x64\Debug\CPP_HW2.exe (process 17236) exited
with code 0.
Press any key to close this window . . .
```